

all relevant, analogous prior art, and the obviousness analysis may take into account the inferences and creative steps that a POSA would employ.

27. I also understand that prior-art references can be combined under several different circumstances. For example, it is my understanding that one such circumstance is when a proposed combination of prior-art references results in a system that represents a predictable variation, which is achieved using prior-art elements according to their established functions. It is also my understanding that prior art references can be combined when the combination could be performed using known techniques, and if the corresponding results would have been predictable to a POSA.

28. I further understand that whether there is a reasonable expectation of success from combining references in a particular way is also relevant to the analysis. I understand there may be a number of rationales that may support a conclusion of obviousness, including:

- Combining prior art elements according to known methods to yield predictable results;
 - substitution of one known element for another to obtain predictable results;
 - use of a known technique to improve similar devices (methods, or products) in the same way;
 - applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
 - "obvious to try" — choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
 - known work in one field of endeavor which may prompt variations for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- or

- some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art teachings to arrive at the claimed invention.

29. I understand that whether a prior art reference renders a claim unpatentable as obvious is determined from the perspective of a POSA. I have also been told that, while there is no requirement for the prior art to contain an express suggestion to combine known elements to achieve the claimed invention, a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually, as filtered through the knowledge of one skilled in the art. In addition, I have been told that the inferences and creative steps a POSA would employ are also relevant to the determination of obviousness.

30. I also understand that when a work is available in one field, design alternatives and other market forces can prompt variations of it, either in the same field or in another. I have also been told that if a POSA can implement a predictable variation and would see the benefit of doing so, that variation is likely to be obvious. I have been told that in many fields, there may be little discussion of obvious combinations, and in these fields market demand—not scientific literature—may drive design trends. I have been told that, when there is a design need or market pressure and there are a finite number of predictable solutions, a POSA has good reason to pursue those known options.

31. I have been told there is no rigid rule prescribing that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references. But I also have been told that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the prior art. I have been told this test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and that it seeks to counter impermissible hindsight analysis.

32. I understand that certain objective indicia can be important evidence regarding whether a patent is obvious or nonobvious. Such indicia include: commercial success of products covered by the patent claims; a long-felt need for the invention; failed attempts by others to make the invention; copying of the invention by others in the field; unexpected results achieved by the invention as compared to the closest prior art; praise of the invention by the infringer or others in

the field; the taking of licenses under the patent by others; expressions of surprise by experts and those skilled in the art at the making of the invention; and the patentee proceeded contrary to the accepted wisdom of the prior art.

VI. Level of Ordinary Skill in the Art

33. A POSA would have had knowledge of electronic communications and/or wireless/mobile communications and various related technologies, as of 2004.

34. Based on the disclosure of the '970 patent, one of ordinary skill in the art would have either: (1) a Bachelor of Science degree in Electrical Engineering or an equivalent field, with three to five years of academic or industry experience in the field of electronic communications; or (2) a Master of Science degree in Electrical Engineering or an equivalent field, with two to four years of academic or industry experience in the same field.

35. By equivalent field, I mean that the required levels of educational and industry experience are on a sliding scale relative to each other. For example, a person of ordinary skill could have a more advanced educational degree with less industry experience.

VII. The Substantial New Questions (SNQs) herein each provide new and non-cumulative references and arguments not previously considered by the Office.

36. Reexamination of the '970 patent is requested because the allegedly patentable subject matter of the '970 patent is entirely taught by the combination of Kubala and Hammond, and the combination of Hammond, Johnson, and Pepe. I understand that the request for reexamination is requested of claims 2 and 10-13 of the '970 patent. These claims may be referred to individually, or collectively, as the "Requested Claims" or claims or the claims subject to reexamination. Each element of the claims for which reexamination has been requested is found in one or more of the new references provided, as described in detail below. Therefore, a substantial new question of patentability is raised by the combination of these new references.

37. The table below summarizes the substantial new questions of patentability (SNQs) and the manner and pertinency of applying the cited prior art in the Request for reexamination.

SNQ#	Statute	Cited Prior Art	Claims
1	§103	Kubala and Hammond	2 and 10-13
2	§103	Hammond, Johnson, and Pepe	2 and 10-13

VIII. Overview of the '970 Patent

A. The '970 patent describes sending and receiving responses to forced message alerts.

38. At a high level, the '970 patent is directed to sending and receiving responses to “forced message alerts.” ('970 patent, 1:19-23.) The '970 patent explains, “[t]he heart of the invention lies in the forced message alert software application program provided in each PC or PDA/cell phone.” (*Id.*, 4:47-49; *see also id.*, 7:8-16.) The '970 patent describes sending the forced-message alerts to a receiving device (*see id.*, 7:43-8:15, FIGS. 3A, 3B) and then receiving, acknowledging and responding to the forced-message alerts received from the sending device. (*See id.*, 8:16-57, FIG. 4.) And, when the sending device receives no acknowledgment from the receiving device, the '970 patent explains that the sending device can continue to transmit the forced-message alert until acknowledged. (*Id.*, 8:25-39.) Before describing the intrinsic record in detail, however, a brief overview of the '970 patent family is provided.

39. The '970 patent is directed to a system and method for a personal computer (PC) or PDA/cell phone with a specialized software application that creates and sends a forced message alert, as well as receive a forced message alert. ('970 patent, Abstract.) A forced message alert is comprised of a text or voice message and a forced alert software packet. (*Id.*, 2:9-13, 8:20-25.)

40. The specification states that it is desirable for a user to be able to simultaneously send a message to cell phones or PCs using Digital Smart Message Service (SMS) and TCP/IP messages that are transmitted using cellular technology such as the various versions of GSM and CDMA or via a WiFi local area network. The specification indicates that what is needed is a method in which a sender of a text or voice message can force an automatic acknowledgement upon receipt from a recipient's cell phone or PC, and a manual response from the recipient via the recipient's cell phone or PC. (*Id.*, 1:4951-67.) The specification discloses that “[t]he heart of the

invention lies in the forced message alert software application program provided in each PC or PDA/cell phone.” (*Id.*, 4:47-49.) The specialized software application provides the ability to:

- (a) allow an operator to create and transmit a forced message alert from a sender PDA/cell phone to one or more recipient PCs and PDA/cell phones within the communication network;
- (b) automatically transmit an acknowledgement of receipt to the sender PDA cell phone upon the receipt of the forced message alert;
- (c) periodically resend the message to the recipient PCs and PDA/cell phones that have not sent an acknowledgement;
- (d) provide an indication of which recipient PCs and PDA/cell phones have acknowledged the forced message alert;
- (e) provide a manual response list on the display of the recipient PC and PDA/cell phone’s display that can only be cleared by manually transmitting a response; and
- (f) provide an indication on the sender PDA/cell phone of the status and content the manual responses.

(’970 patent, Abstract.)

B. Prosecution History

41. The application that led to the ’970 patent was filed on November 26, 2008. The ’970 Prosecution History is attached as Exhibit 1002. Unlike the previous applications in the priority chain, the application that led to the ’970 patent was directed to “forced message alerts”—i.e., electronic messages that required the recipient to respond. The ’970 patent explains that “[t]he heart of the invention lies in the forced message alert software application program provided in each PC or PDA/cell phone.” (’970 patent, 4:47-49.) These forced message alerts “allow[] a participant to send a text or voice message to a group of people and force an automatic acknowledgment of receipt and a manual response.” (*Id.*, 3:22-28.)

42. About two years after the application was filed, the Examiner issued a Non-final Office Action on September 20, 2010. In reply, the Applicant amended certain claims to require that “a manual response list” is displayed on “the recipient PC or PDA/cell phone” and that the received message “can only be cleared by manually selecting and transmitting a response to the

manual response list.” (’970 Prosecution History, 81-92.) The Examiner then issued a new rejection in a Final Office Action on March 11, 2011.

43. In response to the Final Office Action, the Applicant amended the independent claims to include “requiring a required manual response from the response list by the recipient in order to clear recipient’s response list from recipient’s cell phone display.” (*Id.*, 120-131.) After an Advisory Action mailed on October 7, 2011, the Applicant and the Examiner had an interview and the Examiner allowed after-final claim amendments. (*Id.*, 142-145.) Thereafter, a Notice of Allowance was mailed on April 25, 2012 with an Examiner’s amendment to remove “PC” from the claims.

44. In the Notice of Allowance, the examiner included a statement of reasons for allowance for the allowed claims 2-14 which correspond to claims 1-13 of the ‘970 patent:

The following is an examiner’s statement of reasons for allowance:
claims 2-14 have been found to be novel and the inventive because prior art record fails to show or teach means for attaching a forced message alert software packet to a voice or text message **creating a forced message alert** that is transmitted by said sender PDA/cell phone to the recipient PDA/cell phone, said forced message alert software packet containing a list of possible required responses and requiring the **forced message alert software** on said recipient PDA/cell phone to transmit an automatic acknowledgment to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone; means for requiring a required manual response from the response list by the recipient in order to clear recipient’s response list from recipient’s cell phone display; means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged the forced message alert and which recipient PDA/cell phones have not automatically acknowledged the forced message alert.

(’970 Prosecution. History, 158.)¹

45. The Examiner did not cite or review any of the references relied on here. As will be seen, the references in combination meet the above claim limitations in the appropriate context.

C. Patent Trial an Appeals Board (P.T.A.B.) History

46. Google LLC filed a Petition for *inter partes* review of different claims than the Requested Claims, but with overlapping prior art cited in the reexamination request. The P.T.A.B. granted institution of the Petition for claims 1 and 3–9 of the ’970 Patent (*see Google*, IPR2018-01079, Pet.) and ultimately issued a FWD concluding: “For the foregoing reasons, Petitioner has demonstrated, by a preponderance of the evidence, that claim 1 of the ’970 patent is unpatentable under § 103 as obvious over the combination of Kubala with Hammond.” (*Id.*, FWD at 60.)

47. The FWD included decisions with regard to the priority date of the ’970 Patent, claim construction, and prior art analysis as described below.

1. The FWD concluded that Kubala and Hammond are prior art to the the ’970 Patent, thus Johnson and Pepe are also prior art to the ’970 Patent.

48. I provided expert support for IPR2018-01079. In that proceeding, the P.T.A.B. determined in a Final Written Decision that claims 1 and 3-9 of the ’970 patent are unpatentable in view of Kubala and Hammond. (*Google*, IPR2018-01079, FWD). Thus, the P.T.A.B. confirmed that Kubala and Hammond are prior art to the ’970 patent that was filed on November 26, 2008. My understanding is that since Johnson and Pepe issued before Kubala and Hammond were even filed, Johnson and Pepe are also prior art to the ’970 patent.

49. Kubala published on September 28, 2006—more than one year before the ’970 patent filing date of November 26, 2008. (*See Kubala*, (43).) Thus, Kubala is prior art under 35 U.S.C. § 102(b). Hammond issued on February 8, 2005—more than one year before November 26, 2008. (*See Hammond*, (45).) Thus, Hammond is also prior art under 35 U.S.C. § 102(b) with respect to the ’970 patent’s actual filing date. Johnson issued on June 28, 1994 (*see Johnson*,

¹ All emphasis is added, except where otherwise indicated.

(45)) and is, therefore, prior art under 35 U.S.C. § 102(b). Pepe issued on April 21, 1998 (see Pepe, (45)) and is, therefore, also prior art under 35 U.S.C. § 102(b).

50. Accordingly, Kubala, Hammond, Johnson, and Pepe all pre-date the '970 patent's actual filing date and are prior art to the '970 patent.

2. The FWD construed constructions for claim limitations 1.2 and 1.5-1.9.

51. The FWD also issued claim constructions for claim limitations 1.2 and 1.5-1.9 (*Google*, IPR2018-01079, FWD at 11-29) that are consistent with the claim constructions in Section VIII.F below.

3. The FWD concluded that Kubala teaches the “take control” limitation.

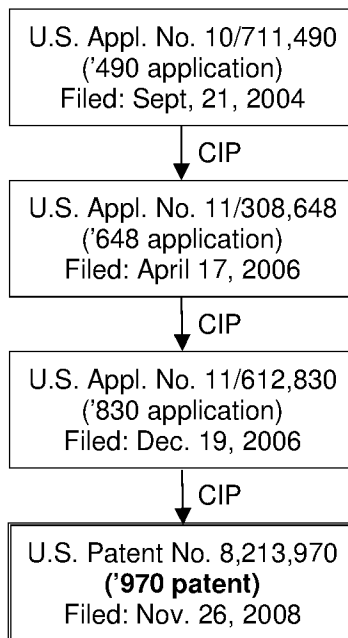
52. The Requested Claims are claims 2 and 10-13. The primary difference between previously unchallenged claim 2 and previously challenged claim 1 is a so-called “take control” limitation. (*See Google*, IPR2018-01079, FWD at 51-54.) This “take control” limitation also distinguishes previously unchallenged claim 10 from previously challenged claim 6. The Board noted, however, that Kubala teaches this “take control” limitation. (*Id.*) Thus, as set forth in more detail below, claims 2 and 10-13 are obvious in view of Kubala and Hammond.

53. In addition, Hammond, Johnson, and Pepe also teach or suggest all of the limitations of claims 2 and 10-13, including the “take control” limitation. But, this combination was not considered by the P.T.A.B. in the FWD of IPR2018-01079 because, according to the Board, the Petition (*id.*, Pet.) did not distinctly specify what portion of Hammond or Johnson discloses a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 6. Even though Google explained, in the Petitioner's Reply (*id.*, Pet. Reply at 19), how the Petition showed that Hammond and Johnson teach these claim limitations, the P.T.A.B. did not consider these teachings in issuing the FWD with regard to the combination of Hammond, Johnson, and Pepe. (*See id.*, FWD at 71-75.) In the reexamination Request, however, the explanations of the portions of Hammond and Johnson that disclose a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 10 are included. Thus, as shown below in more detail, claims 2 and 10-13 are also obvious in view of Hammond, Johnson, and Pepe.

D. None of the earlier-filed applications provide sufficient written-description support for at least a forced-message alert software-application program, as required by each independent claim of the '970 patent.

54. The Board previously agreed that the '970 patent is not entitled to priority to any earlier-filed applications, and is only entitled to a priority date of November 26, 2008—its actual filing date. (*Google*, IPR2018-01079, FWD and DI, at 6-8). The '970 patent claims priority to three earlier-filed applications: (i) U.S. Application No. 10/711,490 (EX1011, '490 application), filed on September 21, 2004; (ii) U.S. Application No. 11/308,648 (EX1012, '648 application), filed on April 17, 2006; and (iii) U.S. Application No. 11/612,830 (EX1013, '830 application), filed on December 19, 2006. In my opinion, none of these earlier-filed applications disclose the concept of a forced message alert software application program, as required by each independent claim of the '970 patent.

55. The following is a diagram illustrating the relationship of the three applications to the '970 patent:



56. First, the '490 application is directed to employing cellular telephone communications to monitor locations, initiate cellular calls and conference calls with other cellular telephones of a plurality of communications net participants by touching a display screen, and cause a remote cellular phone to annunciate audio announcements or call another phone number. ('490 application, Abstract, 8-32.) The '490 application notes that each cellular phone can poll the other cell phones to transmit their location and status. But each of the cellular

phones that poll does not include a “forced message alert” in the poll, nor do they track the poll responses. (*Id.*, 14, ¶14.) And, in contrast with the ’970 patent, the ’490 application allows a sending PDA/cell phone to remotely control a recipient PDA/cell phone *without action by the remote phone operator*:

In spite of the rapid advance in cellular phone technology, it would also be desirable to actuate a remote cellular phone to announce an audio message to alert the remote user that there is an emergency (or for another reason) . . . and cause the remote phone to call another phone number (as an example, to automatically establish an 800 number conference call), to vibrate, or increase the loudness of an announcement *without any action by the remote phone operator*.

(’490 application, 9, ¶4.) Thus, the ’490 application performs steps for remotely controlling recipient phones without a manual response from the recipient remote phone operator. A POSA would not understand the ’490 application to disclose a “forced message alert software application program” as described and claimed in the ’970 patent.

57. Second, the ’648 application also does not disclose a forced message alert as required by the independent claims of the ’970 patent. The ’648 application is directed to automatically shifting from GPRS/EDGE/CDMA/1XEVD0 to SMS when any cellular phone of a plurality of cellular phones of communication net participants makes or receives a voice call and shift back upon completion of the voice call. (’648 application, Abstract, 16-61.) Embodiments also include causing an alert (audible voice alert, beep) to emanate from a user’s display when an incoming message arrives, show a location of the sender of a message on the user’s display, and cause an alert (verbal announcement, vibration, or text) when another participant of the communication net participants is within a predetermined distance. (*Id.*, 42-44, ¶¶69, 72, 74.) But nowhere does the ’648 application disclose at least a “forced message alert,” let alone the “forced message alert software application program” as described and claimed in the ’970 patent.

58. Third, the ’830 application also does not disclose a forced message alert as required by the independent claims of the ’970 patent. The ’830 application is directed to a plurality of cellular phone/PDA/GPS devices of communication net participants with advanced

communication software (ACS) application programs that can: poll other cell phone/PDA/GPS devices of the plurality for location, status, and identity; and remotely control one or more of the other cell phone/PDA/GPS devices of the plurality. ('830 application, 7-8 (specification pages 3:6-4:2), 5-40.) At best, the '830 application generically mentions the ability of one phone to control *certain* functions on another phone:

Each cell phone has the ability to remotely control from one cellular phone/PDA/GPS any of the other cellular phone/PDA/GPS systems phones including the ability to control remote cellular phones to make verbal prerecorded announcements, place return calls, place calls to another phone 15 number, vibrate, execute text to speech software, change sound intensity, remotely control software and functions resident on the remote phone and process and display information by touching the display screen at their location on the PDA display and selecting the appropriate soft switch; the ability to layer a sufficient number of switches or buttons on the PDA display to perform the above functions without overlaying the map; and the ability to change the 20 nomenclature of a series of soft switches and symbology for different operating environments.

(*Id.*, 23 (spec. pages 19:11-20); *see also id.*, 6 (spec. pages 2:14-18).) But nowhere does the '830 application disclose the concepts of (i) a manual response list or (ii) requiring a manual response from such a response list in order to clear the response list from the recipient's phone—two concepts that were explicitly added during prosecution in order to gain allowance of the independent claims of the '970 patent. (*See* '970 Prosecution History, 120-131.)

59. Because the '970 patent is not entitled to priority to any of the earlier-filed applications, it is entitled to a priority date of only November 26, 2008—its actual filing date. Kubala, Hammond, Johnson, and Pepe all pre-date the '970 patent's actual filing date and are prior art to the '970 patent.

E. Independent Claims

60. The '970 patent issued with three independent claims — claims 1, 6, and 10. Independent claim 1 has four dependent claims: claims 2-5. Independent claim 6 has three

dependent claims: claims 7-9. Independent claim 10 has three dependent claims: claims 11-13. Independent claims 1 and 10 are discussed below.

1. Independent Claim 1

For ease of reference, claim 1 is reproduced below:

[1.P] A communication system for transmitting, receiving, confirming receipt, and responding to an electronic message, comprising:

[1.1] a predetermined network of participants, wherein each participant has a similarly equipped PDA/cell phone that includes a CPU and a touch screen display a CPU [sic] and memory;

[1.2] a data transmission means that facilitates the transmission of electronic files between said PDA/cell phones in different locations;

[1.3] a sender PDA/cell phone and at least one recipient PDA/cell phone for each electronic message;

[1.4] a forced message alert software application program including a list of required possible responses to be selected by a participant recipient of a forced message response loaded on each participating PDA/cell phone;

[1.5] means for attaching a forced message alert software packet to a voice or text message creating a forced message alert that is transmitted by said sender PDA/cell phone to the recipient PDA/cell phone, said forced message alert software packet containing a list of possible required responses and requiring the forced message alert software on said recipient PDA/cell phone to transmit an automatic acknowledgment to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone;

[1.6] means for requiring a required manual response from the response list by the recipient in order to clear recipient's response list from recipient's cell phone display;

[1.7] means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged the forced message alert and which recipient PDA/cell phones have not automatically acknowledged the forced message alert;

[1.8] means for periodically resending said forced message alert to said recipient PDA/cell phones that have not automatically acknowledged the forced message alert; and

[1.9] means for receiving and displaying a listing of which recipient PDA/cell phones have transmitted a manual response to said forced message alert and details the response from each recipient PDA/cell phone that responded.

(*970 patent, 8:65-9:39, brackets and numbering added.)

2. Independent Claim 10

Claim 10 is a claim to a method for a recipient PDA/cell phone. For ease of reference, claim 10 is reproduced below:

[10.] A method of receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone, wherein the receipt, acknowledgment, and response to said forced message alert is forced by a forced message alert software application program, said method comprising the steps of:

[10.1] receiving an electronically transmitted electronic message; identifying said electronic message as a forced message alert, wherein said forced message alert comprises of a voice or text

message and a forced message alert application software packet, which triggers the activation of the forced message alert software application program within the recipient PDA/cell phone;

[10.2] transmitting an automatic acknowledgment of receipt to the sender PDA/cell phone, which triggers the forced message alert software application program to take control of the recipient PDA/cell phone and show the content of the text message and a required response list on the display recipient PDA/cell phone or to repeat audibly the content of the voice message on the speakers of the recipient PDA/cell phone and show the required response list on the display recipient PDA/cell phone; and

[10.3] transmitting a selected required response from the response list in order to allow the message required response list to be cleared from the recipient's cell phone display, whether said selected response is a chosen option from the response list, causing the forced message alert software to release control of the recipient PDA/cell phone and stop showing the content of the text message and a response list on the display recipient PDA/cell phone and or stop repeating the content of the voice message on the speakers of the recipient PDA/cell phone;

[10.4] displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone; and

[10.5] providing a list of the recipient PDA/cell phones [that] have automatically acknowledged receipt of a forced alert message and their response to the forced alert message.

('970 patent, 10:55-12:6, brackets and numbering added.)

F. Understanding of Certain Claim Terms

61. For the purpose of my opinion, I have determined that the claim terms of the '970 patent should receive their ordinary and customer meanings, with the exception of the following means-plus-function terms. Here, a POSA would have had either: (1) a Bachelor of Science degree in Electrical Engineering or an equivalent field, with three to five years of academic or industry experience in the field of electronic communications; or (2) a Master of Science degree in Electrical Engineering or an equivalent field, with two to four years of academic or industry experience in the same field.

1. “data transmission means”

62. The “data transmission means” is recited in independent claim 1. The function of the “data transmission means” is to facilitate the transmission of electronic files between said PDA/cell phones in different locations. (*See* '970 patent, 8:65-9:39 (claim 1), 9:64-65 (claim 3).) The corresponding structure is a PDA/cell phone with forced alert software installed that communicates a forced message alert using TCP/IP or another communications protocol. (*See id.*, 2:7-16, 3:43-45.) This construction is consistent with the FWD of *Google*, IPR2018-01079, FWD at 14 and 28.

2. “means for attaching . . .”

63. The “means for attaching . . .” limitation is recited in independent claim 1. The recited function is to attach a forced-message alert software packet to a voice or text message creating a forced message alert that is transmitted by a sender PDA/cell phone to a recipient PDA/cell phone, said forced message alert software packet containing a list of possible required responses and requiring the forced message alert software on said recipient PDA/cell phone to transmit an automatic acknowledgement to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone. (*See* '970 patent, 8:65-9:39 (claim 1).) The corresponding structure is a PDA/cell phone configured to perform a portion of the forced-message alert software-application program that allows a user to create a message, select recipients of that message, select a default or new response list to be sent with the message, and then send the message to the recipients. (*See id.*, 2:7-16, 7:8-20, 7:43-63, 8:25-30, FIG. 3A.) The P.T.A.B. agrees that this is the corresponding structure. (*See Google*, IPR2018-01079, FWD at 19 and 28.)

64. Further, a “forced message alert” is a message created by attaching a forced message alert software packet to a voice or text message. (*See* ’970 patent, 2:7-16, 9:14-15 (claim 1), 10:62-65 (claim 10).) The P.T.A.B. agrees with this definition of a forced message alert. (*See Google*, IPR2018-01079, FWD at 24-25.)

3. “means for requiring . . .”

65. This “means for requiring . . .” limitation is recited in independent claim 1. The recited function is to require a manual response from the response list by the recipient in order to clear the recipient’s response list from the recipient’s cell phone display. (*See* ’970 patent, 8:65-9:39 (claim 1).) The corresponding structure is the forced-message alert software-application program on the recipient PDA/cellular phone that causes the message and manual response list to be displayed on the screen of the recipient PDA/cellular phone and clears the forced alert text data when a response is selected from the manual-response list. (*See id.*, 8:39-46, FIG. 4.) The P.T.A.B. agrees that this is the corresponding structure. (*See Google*, IPR2018-01079, FWD at 20, 28.)

4. “means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged . . .”

66. This “means for means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged . . .” limitation is recited in independent claim 1. The recited function is to receive and display a listing of which recipient PDA/cell phones have automatically acknowledged the forced-message alert and which recipient PDA/cell phones have not automatically acknowledged the forced-message alert. (*See* ’970 patent, 8:65-9:39 (claim 1).) The corresponding structure is hardware on the sender’s PDA/cell phone including a display, such as display 16, and a wireless receiver and/or transceiver that receives electronic transmissions with acknowledgement receipts. (*See id.*, 4:7-11, 8:1-5, 8:12-15, FIG. 1.) The P.T.A.B. agrees that this is the corresponding structure. (*See Google*, IPR2018-01079, FWD at 23, 28-29.)

5. “means for periodically resending . . .”

67. This “means for periodically resending . . .” limitation is recited in independent claim 1. The recited function is periodically resending a forced-message alert to a recipient PDA/cell phone that has not automatically acknowledged the forced-message alert. (*See* ’970 patent, 8:65-9:39 (claim 1).) The corresponding structure is the forced-message alert software-

application program on the sender PDA/cell phone that will “periodically resend the forced message alert to the PC or PDA/cell phone that have [sic] not acknowledged receipt.” (*Id.*, 8:6-8, FIG. 3B.) The P.T.A.B. agrees that this is the corresponding structure. (*See Google*, IPR2018-01079, FWD at 22, 29.)

6. “means for receiving and displaying a listing of which recipient PDA/cell phones have transmitted . . .”

68. This “means for means for receiving and displaying a listing of which recipient PDA/cell phones have transmitted . . .” limitation is recited in independent claim 1. The recited function is receiving and displaying a listing of which recipient PDA/cell phones have transmitted a manual response to a forced-message alert and details the response from each recipient PDA/cell phone that responded. (*See* ’970 patent, 8:65-9:39 (claim 1).) The corresponding structure is the hardware on the sender’s PDA/cell phone including a display, such as display 16, and a wireless receiver and/or transceiver that receives electronic transmissions with manual responses and displays those responses on the sender’s PDA/cell phone. (*See id.*, 4:7-11, 8:1-5, 8:12-15, FIG. 1.) The P.T.A.B. agrees that this is the corresponding structure. (*See Google*, IPR2018-01079, FWD at 23, 29.)

7. “means for transmitting the acknowledgment of receipt . . .”

69. This “means for transmitting the acknowledgment of receipt . . .” limitation is recited in dependent claim 2. The recited function is to transmit the acknowledgment of receipt to the sender PDA/cell phone immediately upon receiving a forced message alert from the sender PDA/cell phone. (*See* ’970 patent, 9:40-63 (claim 2).) The corresponding structure is the forced message alert software on the recipient PDA/cell phone. (*See id.*, 8:25-30, FIG. 4 at step 1.)

8. “means for controlling of the recipient PDA/cell phone upon transmitting . . .”

70. This “means for controlling of the recipient PDA/cell phone upon transmitting . . .” limitation is recited in dependent claim 2. The recited function is to control the recipient PDA/cell phone upon transmitting the automatic acknowledgment and cause, in cases where the force message alert is a text message, the text message and a response list to be shown on the display of the recipient PDA/cell phone or cause, in cases where the forced message alert is a voice message, the voice message to be periodically repeated by the speakers of the recipient PDA/cell phone while the response list is shown on the display. (*See* ’970 patent, 9:40-63 (claim

2).) The corresponding structure is the forced message alert software on the recipient PDA/cell phone. (*See id.*, 8:37-44, 8:46-50, FIG. 4 at step 2.)

9. “means for allowing a manual response to be manually selected from the response list or manually recorded . . .”

71. This “means for allowing a manual response to be manually selected from the response list or manually recorded . . .” limitation is recited in dependent claim 2. The recited function is to allow a manual response to be manually selected from the response list or manually recorded and to transmit the manual response to the sender PDA/cell phone. (*See* ’970 patent, 9:40-63 (claim 2).) The corresponding structure is the forced message alert software on the recipient PDA/cell phone. (*See id.*, 8:52-57, FIG. 4 at step 3.)

10. “means for clearing the text message and a response list from the display . . .”

72. This “means for clearing the text message and a response list from the display . . .” limitation is recited in dependent claim 2. The recited function is to clear the text message and a response list from the display of the recipient PDA/cell phone or stop the repeating voice message and clear the response list from the display of the recipient PDA/cell phone once the manual response is transmitted. (*See* ’970 patent, 9:40-63 (claim 2).) The corresponding structure is the forced message alert software on the recipient PDA/cell phone. (*See id.*, 8:44-46, 8:52-57, FIG. 4 at step 4.)

IX. Overview of the State of the Art at the Time of Filing

73. As mentioned above, I understand that there is a discrepancy in the priority date of the ’970 patent. I am informed by Google’s counsel that the Board previously agreed that the ’970 patent is not entitled to priority to any earlier-filed applications, and is only entitled to a priority date of November 26, 2008—its actual filing date. (*Google*, IPR2018-01079, FWD, DI at 6-8). Thus, the ’970 patent has a correct priority date of November 26, 2008 despite claiming an earliest possible priority date of September 21, 2004. I also understand that analyzing the state of electronic communications and/or wireless/mobile communications during the years prior to the earliest possible priority date of September 21, 2004 can provide valuable insight into what people of ordinary skill in the art were aware of at the time, and in what direction the industry was heading.

74. Before the inventions claimed in the '970 patent, all the technology at issue in the '970 patent was broadly applied and well known by developers of email and wireless/mobile communications. No individual elements of the '970 claims were novel at the time of the alleged invention, and there was nothing novel about the manner in which those elements were combined in the claims. Further, there were no technological barriers to combining these elements to form the claimed invention. Indeed, combining these elements would have yielded predictable results. Thus, the topics of requiring a response to important emails and tracking them have been well known prior to 2003, well before the actual filing date of the '970 patent, November 26, 2008.

A. Sending and Receiving Mandatory Responses in Electronic Messaging were Known

75. By 1994, electronic mail or email systems were well known. An electronic mail system is a “system whereby messages, notes, and documents in the form of electronic mail objects may be sent and/or received between two computers or work stations. Electronic mail objects also include other items that may be transmitted to a user, such as, for example, voice or verbal messages, and non textual items like graphics or drawings that may be electronically transmitted.” (Johnson, 1:19-29.)

76. At that time, it was “often desirable in an electronic mail system to distribute an electronic mail object to a number of users with the expectation of a **reply confirming the reception and reading** of the electronic mail object.” (*Id.*, 1:48-51.) Available acknowledgement systems at the time could “indicate that an electronic mail object has been **sent and received by a recipient**, but do not provide a mechanism to ensure or compel a reply by the recipient. The various forms of acknowledgement that are presently available do not ensure that the recipient of the electronic mail object has actually read it, let alone read it carefully.” (*Id.*, 1:58-65.) Thus, by 1994 when Johnson issued as a patent, email acknowledgement systems that acknowledged receipt (or delivery) of email messages were known.

77. To satisfy the “need for an electronic mail system having a mechanism for ensuring that a recipient of an electronic mail object will read it carefully” (*Id.*, 1:66-68), Johnson provided “an improved acknowledgment system for electronic mail objects distributed within an electronic mail system through ensuring that an electronic mail object has been

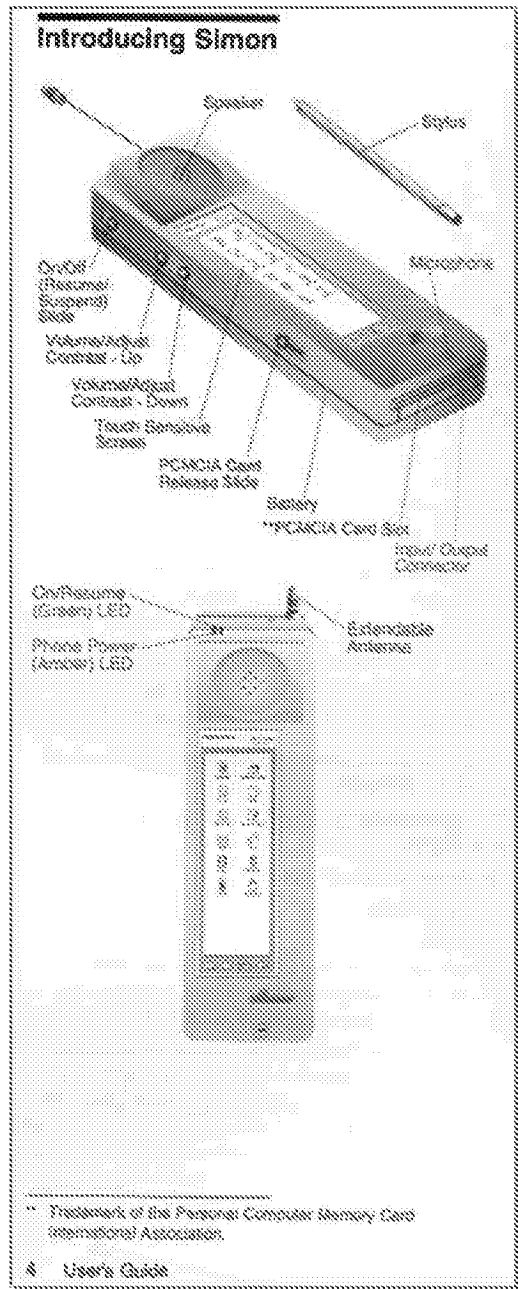
carefully examined by a recipient.” (*Id.*, 2:10-15.) Johnson’s system included “designating an electronic mail object as **requiring a specific response** and then transmitting the electronic mail object to a recipient. The **recipient of the electronic mail object is prompted for a specific response in response to the recipient opening the electronic mail object** and is *prohibited from performing a selected action until the specific response has been entered by the recipient.*” (*Id.*, 2:23-31.) Thus, by 1994, sending and receiving mandatory responses in electronic messaging were known.

78. A POSA would have recognized that systems for sending and receiving mandatory responses in electronic messaging were known prior to the ’970 patent.

B. Industry Trend: Applications on Cell Phones and/or Personal Communications Devices

79. As discussed above, by 1994 email messages with mandatory responses were transmitted and received between and/or among computers or workstations coupled to a local area network (LAN). (Johnson, 1:29-35.)

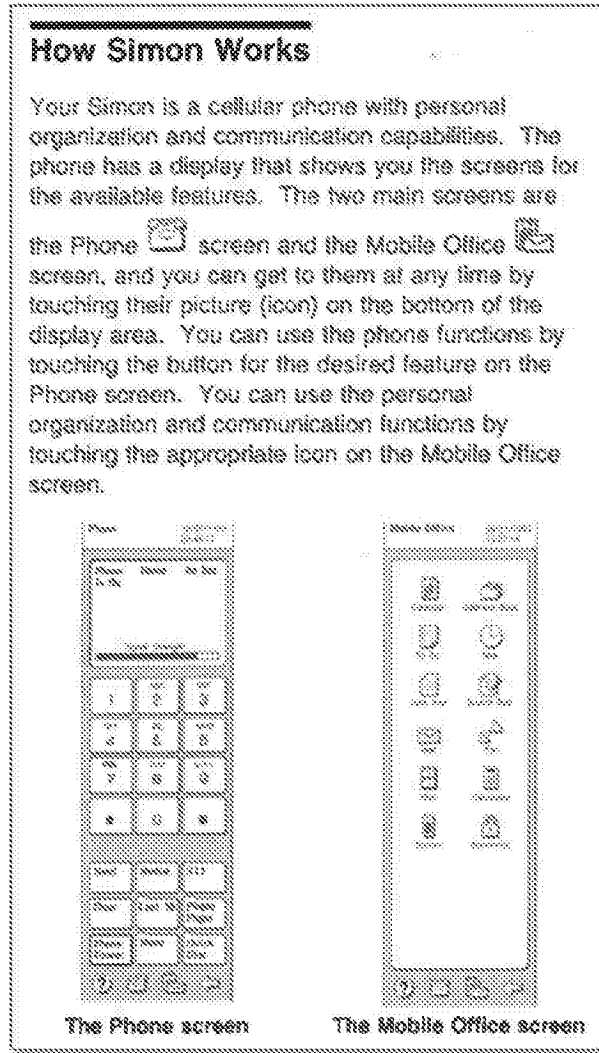
80. By 1994, wireless personal communications devices with a touchscreen and stylus that provided cell phone service as well as email and voicemail applications were available. An example of a wireless personal communications device was IBM’s Simon™: “You now have total personal communications — including your cellular phone — in one small, hand-held, mobile device. Simon** has everything you need: **cellular phone, fax, E-mail, pager**, paperless notepad, address book, calendar, and calculator. And it’s **wireless!**” (Ex. 1010, Simon, 1.)



81.

(Simon, 4.)

82. The Simon Users Manual illustrated a Phone screen and a Mobile Office screen that was accessible via a touchscreen, and included a stylus:

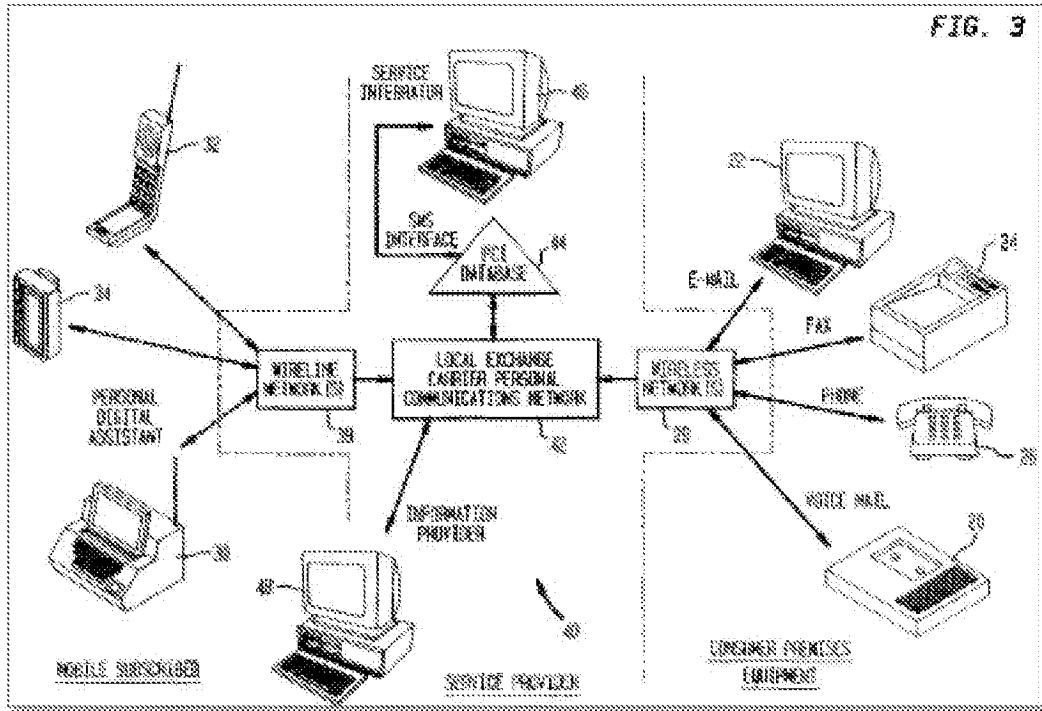


83.

(Simon, 11.)

84. Thus, a POSA would understand that the industry's introduction of wireless personal communications devices capable of running voice, email, fax, and other software applications shown as the Mobile Office screen icons (*see* Simon, 11 above) could readily be combined with Johnson's mandatory response email software application. This is because Johnson's mandatory response email software application is a type of email software application that could be substituted for the email software application in the Simon Mobile Office. And, the substitution would yield predictable results. A POSA would realize that Johnson's mandatory response email software application could be placed on cell phones and/or wireless communication devices, not just IBM's Simon product.

85. By 1998 when Pepe issued, the types of software applications available on cell phones and/or wireless personal communications devices, also called personal digital assistants (PDAs) (*see* Pepe, 1:30-35), expanded. For example, Pepe introduced software applications on a cell phone and/or PDA that managed the internetworking of services that were available on many devices as shown below in Figure 3.



(Pepe, FIG. 3.)

86. Pepe's personal communications exchange internetworking applications "provide[s] a network subscriber with the ability to remotely control the receipt and delivery of wireless and wireline voice and text messages. . . . The subscriber may be provided with CallCommand service which provides **real-time control** of voice calls **while using a wireless data terminal or PDA.**" (Pepe, Abstract, 1:30-35.) For example, Pepe includes a software application on a PDA that allows a subscriber to **select pre-determined messages from their PDA display screen to reply to an incoming caller.** (*Id.*, 34:9-14, 36:15-20, 36:36-42.)

87. A POSA would recognize that Johnson and Pepe are directed to software applications on wireless communication devices that prompt a recipient (e.g., e-mail recipient or incoming call recipient) for a specific response in response to receiving an e-mail message with a mandatory response (Johnson, 2:27-31, 4:3-6) or an incoming call (Pepe, 36:16-23, 36:40-42). A

POSA would have been motivated to combine Johnson with Pepe because the combination would have yielded predictable results. For example, a POSA would have recognized that Johnson's application for sending and receiving electronic messages with mandatory responses on a wireless communication device would be improved with Pepe's displayed list of predetermined messages because a user could quickly select from the displayed list to respond in real time to email messages with mandatory responses. Thus, a POSA would have recognized that mandatory response email systems on cell phones and/or PDAs that displayed a list of predetermined reply messages for quick responses were available and known prior to the '970 patent.

C. Tracking Delivery and Responses of Electronic Messages was Known

88. As discussed above, by 1994, email acknowledgement systems that acknowledged receipt (or delivery) of email messages, as well as applications on cell phones and/or PDAs for sending and receiving email messages with mandatory responses were known. And users had the ability to select predetermined messages from a displayed list to respond in real time to an email message with a mandatory response from a cell phone and/or PDA.

89. By 1998, when Hammond was filed, "electronic messages" such as email, paging messages, and voice mail were commonplace in business and personal settings. And it was known that sending an electronic message was quick and convenient, but ensuring that the electronic message was delivered and reviewed was not convenient nor assured. (Hammond, 1:13-26.) Hammond introduced a system that sends an electronic message to designated recipients and ensures that each electronic message is successfully delivered and reviewed. And if the delivery or review of the electronic message is not confirmed after a given time period, the system resends the electronic message or takes appropriate action. And even if delivery or review has been confirmed, the system can perform additional specified activities. (*Id.*, 2:1-10.)

90. A POSA would understand that both Hammond and Johnson improved by Pepe are directed to the same need—an electronic mail system that ensures that a recipient reads/reviews an electronic message. (Johnson, 1:66-68; Hammond, 1:57-59.) And Hammond, Johnson, and Pepe note that available acknowledgement systems may indicate that an electronic message has been received. (Johnson, 1:57-60; Hammond, 1:52-54.) A POSA trying to satisfy the same need would be aware of the available acknowledgement systems and would find both Johnson and Hammond.

91. A POSA would be motivated to combine Johnson and Hammond because the combination of their features would have yielded predictable results. For example, a POSA would have recognized that the applications of Johnson improved by Pepe on cell phones and/or PDAs for sending and receiving email messages with mandatory responses would be improved by tracking the delivery and responses of the electronic messages with mandatory responses. Thus, Hammond improved the mandatory response email system of Johnson and Pepe.

92. Accordingly, a POSA would have known that a mandatory response email application on cell phones and/or PDAs that displayed a list of predetermined reply messages can track the delivery and the response of email messages with mandatory responses, and resend email messages with mandatory responses whose delivery and review is not confirmed.

D. Personal Digital Assistant (PDA) with Touchscreen and Stylus were Known

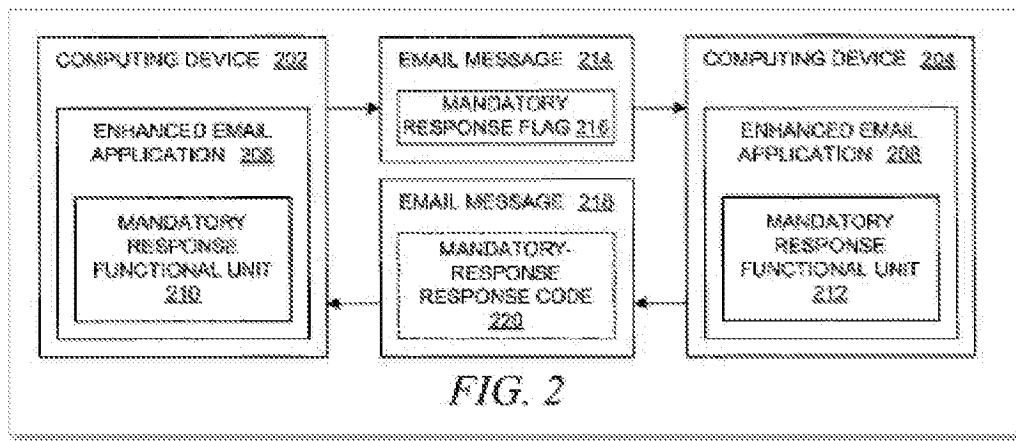
93. IBM continued to improve upon wireless communication device touchscreen interfaces and the associated stylus beyond the IBM Simon. For example, Banerjee improved PDA touchscreen user-interfaces to work with a stylus to support the equivalent of right mouse clicks on a computer. (Banerjee, ¶7.) A POSA would have understood that Banerjee's improved PDA touchscreen and associated stylus would enable more sophisticated uses and applications on PDAs and wireless communication devices. Thus, a POSA would have known that a mandatory response email application was available on cell phones and/or PDAs with improved touchscreens and associated stylus, and that a sender could track the delivery and response of email messages with mandatory responses and resend email messages with mandatory responses whose delivery and review is not confirmed, was known prior to the '970 patent.

E. Sending Alerts to a Recipient of an Email Message with a Mandatory Response was Known

94. IBM continued to improve upon Johnson's mandatory response email system. By 2006, Kubala published and disclosed methods and systems for accommodating mandatory responses in electronic messaging that included alerting a recipient that action was needed. (Kubala, Abstract.) A POSA would understand that Kubala included the mandatory response email application software (of Johnson) on PDAs (of Banerjee) that included a list of predetermined responses (of Pepe).

95. For example, Kubala's Figure 2 (reproduced below) illustrates a computing device 202, 204 that includes an enhanced email application 206, 208 with a mandatory response

functional unit 210, 212. Together, enhanced email application 206, 208 and mandatory response functional unit 210, 212 provide forced message alert software as described in the '970 patent. (*Id.*, ¶33.) Specifically, enhanced email application 206 and mandatory response functional unit 210 together allow computing device 202 to send an email message 214 with a mandatory response flag 216. (*Id.*, ¶¶35-36.) “The recipient is alerted to the detected request for the response for the received electronic message, and after alerting the recipient, actions are required by the recipient with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender.” (*Id.*, Abstract.)



(Kubala, FIG. 2)

96. Kubala explains that the computing devices 202, 204 can be PDAs and Kubala’s use of the term “email message” includes “text messages, instant messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages.” (Kubala, ¶¶32-33.)

97. A POSA would have recognized that like Johnson, Kubala also identified problems with a recipient not responding in a timely fashion and the need for improving e-mail applications so that important messages receive appropriate attention (*id.*, ¶¶7, 8), and that both Johnson and Kubala prohibit a recipient from performing a selected action until a specific response has been entered by the recipient (Johnson, Abstract; Kubala, Abstract.) A POSA would have been motivated to combine Johnson and Kubala not only because they solve the same problem in the same way, but also because they both are assigned to IBM.

98. A POSA also would have been motivated to combine Johnson and Hammond. Both references identified a need for a recipient to respond to an electronic message within a certain amount of time (Hammond, 1:41-63; Kubala, ¶7.) And like Hammond, Kubala is directed to an electronic mail system that handles e-mail messages so that messages receive appropriate attention from the recipient. (Kubala, ¶8; Hammond, 2:1-10.) Further, and Kubala also notes that available acknowledgement systems may indicate that an electronic message has been received (Kubala, ¶6.) Since both Kubala and Hammond identify the same problem/need, a POSA would be motivated to combine Kubala and Hammond because the combination would produce predictable results. For example, Kubala's mandatory response email application software with the alerting feature on PDAs which included a list of predetermined responses would be improved by Hammond's tracking of delivery and responses of the electronic messages with mandatory responses.

99. A POSA would have recognized that prior to the '970 patent, cell phones and/or PDAs with touchscreens and styluses existed, and that software applications on the cell phones and/or PDAs with touchscreens and styluses could:

- a. send and receive email messages with mandatory responses;
- b. alert a recipient of an email message with a mandatory response that action is required;
- c. display a list of predetermined responses for the recipient to choose;
- d. track the delivery and responses of the electronic messages;
and
- e. periodically resend an email message with a mandatory response.

100. Therefore, it is my opinion that the '970 patent would have been obvious. In the following sections, I set forth in detail how the prior art discloses, and renders obvious, each and every feature claimed in the '970 patent.

X. Grounds of Unpatentability

101. Below, I will first describe the relevant disclosures of Kubala, Hammond, Johnson, and Pepe. I will then describe how these references would have been combined to show each feature of the challenged claims.

102. I understand that the Patent Trial and Appeals Board already determined in a Final Written Decision that claims 1 and 3-9 of the U.S. Patent No. 8,213,970 (“’970 patent”) are unpatentable in view of Kubala and Hammond (*See Google*, IPR2018-01079, FWD.) Despite that unpatentability decision, AGIS sued Google for infringement of the ’970 patent, asserting the previously unchallenged claims 2 and 10-13. These previously unchallenged claims, however, are also unpatentable in view of Kubala and Hammond.

103. The primary difference between previously unchallenged claim 2 and previously challenged claim 1 is a so-called “take control” limitation. (*See id.* at 51-54.) This “take control” limitation also distinguishes previously unchallenged claim 10 from previously challenged claim 6. The Board noted, however, that Kubala teaches this “take control” limitation. *Id.* Thus, as explained in more detail below, it is my opinion that claims 2 and 10-13 are obvious in view of Kubala and Hammond.

104. In addition, Hammond, Johnson, and Pepe also teach or suggest all of the limitations of claims 2 and 10-13, including the “take control” limitation. Thus, it is my opinion that claims 2 and 10-13 are also obvious in view of Hammond, Johnson, and Pepe.

105. The Office never previously considered the patentability of (1) claims 2 and 10-13 in view of Kubala and Hammond; or (2) claims 2 and 10-13 in view of Hammond, Johnson, and Pepe. Thus, these two combinations of references establish two different substantial new question of patentability for these previously unchallenged claims. Accordingly, for the reasons set forth in this reexamination request, it is my opinion that claims 2 and 10-13 should be reexamined and canceled.

106. The table below summarizes the substantial new questions of patentability (SNQs) and the manner and pertinency of applying the cited prior art (as described in detail in Section X).

<i>SNQ #</i>	<i>Statute</i>	<i>References</i>	<i>Lack of Consideration in ’970 Prosecution History and Previous IPRs</i>	<i>Claims</i>
1	§103(a)	Kubala and Hammond	<p>Kubala was not applied during prosecution or not applied against the Requested Claims in IPR2018-01079.</p> <p>Hammond was not applied during prosecution or not applied against the Requested Claims in IPR2018-01079.</p>	2 and 10-13

<i>SNQ #</i>	<i>Statute</i>	<i>References</i>	<i>Lack of Consideration in '970 Prosecution History and Previous IPRs</i>	<i>Claims</i>
			The combination of Kubala and Hammond presents new and non-cumulative information about preexisting technology.	
2	§103(a)	Hammond, Johnson, and Pepe	<p>Hammond was not applied during prosecution or not applied against the Requested Claims in IPR2018-01079.</p> <p>Johnson was not applied during prosecution or not applied against the Requested Claims in IPR2018-01079.</p> <p>Pepe was not applied during prosecution or not applied against the Requested Claims in IPR2018-01079.</p> <p>The combination of Hammond, Johnson, and Pepe presents new and non-cumulative information about preexisting technology.</p>	2 and 10-13

A. Overview of the Prior Art References

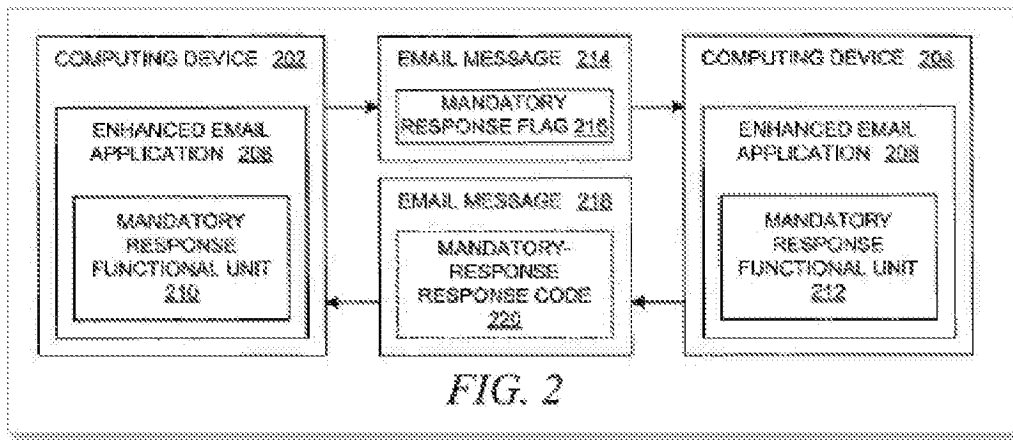
107. Reexamination of the '970 patent is requested in view of the below-listed patents and printed publications, which are also listed on the Form PTO/SB/08A.

108. The references cited in this request are prior art to the '970 patent and were neither cited nor applied during prosecution of the '970 patent. As noted above, the Examiner in the original examination of the application that led to the '970 patent drafted a statement of reasons for allowance that identified specific claim limitations that were not found. Kubala, Hammond, Johnson, and Pepe each presents new information about preexisting technology that was neither considered nor applied during initial examination of the application that led to the '970 patent. Each of these prior-art documents discloses portions of the specific claim limitations identified in the Examiner's statement of reasons for allowance in the Notice of Allowance, ('970 Prosecution History, 158), that led to the '970 patent. These prior art references are thus better than the art originally considered by the Examiner during examination of the application that issued as the '970 patent. As discussed in detail below, these prior art references in combination disclose each and every feature recited in claims 2 and 10-13 of the '970 patent, rendering these claims unpatentable under 35 U.S.C. § 103.

1. Kubala discloses PDAs that send and receive mandatory-response messages

109. Kubala presents new information about preexisting technology that was not considered during initial examination of the '970 patent by the USPTO. Because it was not considered by the Examiner, Kubala was not applied in any rejection of the application claims during prosecution of the '970 patent. Kubala published on September 28, 2006—more than one year before November 26, 2008. (*See* Kubala, (43).) Thus, Kubala is prior art under 35 U.S.C. § 102(b) with respect to all claims of the '970 patent.

110. Kubala discloses methods and systems for accommodating mandatory responses in electronic messaging. (*Id.*, (54).) For example, Kubala's Figure 2 (reproduced below) illustrates a computing device 202 that includes an enhanced email application 206 with a mandatory-response functional unit 210. (*Id.*, ¶33.) The combined enhanced email application 206 and mandatory-response functional unit 210 reads on the claimed "forced message alert software application program." Enhanced email application 206 allows computing device 202 to send an email message 214 with a mandatory-response flag 216. (*Id.*, ¶¶35-36.) "The **recipient is alerted** to the detected request for the response for the received electronic message, and **after alerting the recipient, actions** are required by the recipient with respect to usage of a data processing system until the recipient uses the data processing system to *send* a response for the received electronic message to the sender." (*Id.*, Abstract.)



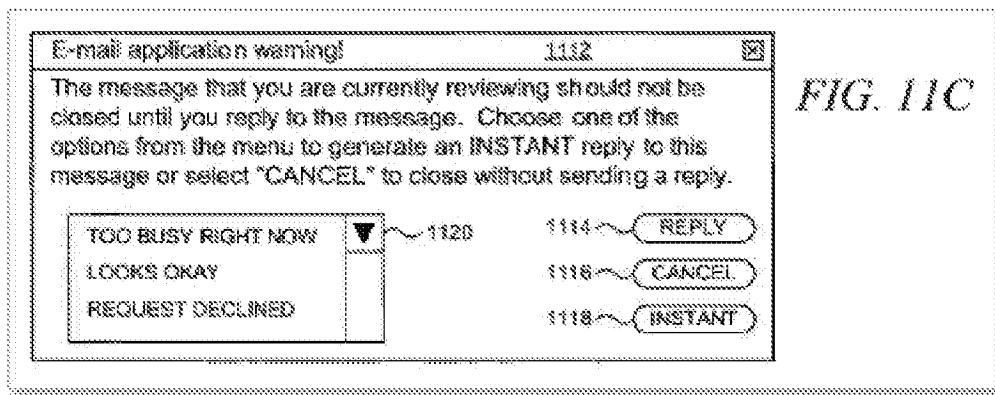
(Kubala, FIG. 2.)

111. Kubala explains that the computing devices 202, 204 can be PDAs as illustrated in Figure 1A and that Kubala's use of the term "email message" includes "text messages, instant

messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages.” (Kubala, ¶¶32-33.) Kubala’s mandatory-response flag 216 reads on the claimed “forced message alert software packet” and Kubala creates the claimed “forced message alert.” For example, Kubala’s mandatory-response flag 216 that is attached to email message 214 reads on “attaching a forced message alert software packet to a voice or text message creating a forced message alert” as claimed.

112. “FIGS. 11A-11D depicts a set of diagrams that represent a set of GUI windows through which an e-mail application alerts a user by displaying warning messages and error messages to the user as a result of a user action when the e-mail application has an e-mail message that contains a mandatory request flag.” (*Id.*, ¶22.)

113. Kubala’s Figure 11C (reproduced below) shows an example of alerting a user by displaying a menu 1120 of possible responses. (*Id.*, ¶57.) Kubala explains that “[t]he text strings that are used as menu items may be obtained in a variety of manners.” (*Id.*) For example, Kubala explains that the text strings may be “required and standardized,” “configurable,” or “extracted from the original e-mail message.” (*Id.*)



(Kubala, FIG. 11C.)

114. Kubala’s Figure 11A (reproduced below) shows an example of alerting a user by displaying a warning message 1102 when an e-mail message that contains a mandatory request flag is received, and that the recipient “*must provide* a reply message in response to the original message.” (Kubala, ¶54.)

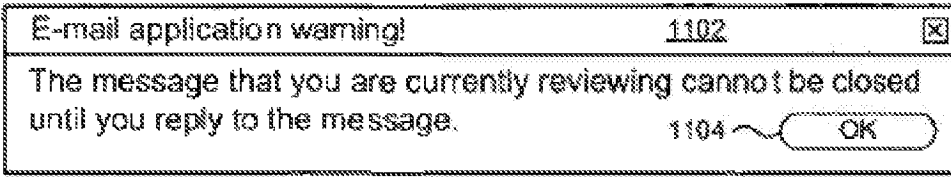


FIG. 11A

(Kubala, FIG. 11A.)

115. Kubala also discloses collecting and recording information about the manner in which recipients respond to email messages that have a mandatory-response flag. (Kubala, ¶¶50-51, 61, FIG. 9.)

116. In the Final Written Decision, the P.T.A.B. states “[a]s noted above, Petitioner asserts claims 1 and 3-9 of the ’970 patent would have been obvious over the combination of Kubala and Hammond. . . . For the reasons stated below, we determine Petitioner has demonstrated, by a preponderance of the evidence, that claims 1 and 3-9 are unpatentable under § 103 as obvious over the combination of Kubala with Hammond.” (*Google*, IPR2018-01079, FWD at 29.)

117. Because these teachings were not applied in any rejection of the application claims during prosecution of the application that led to the ’970 patent, and because these teachings are not cumulative to the applied prior art, Kubala raises a substantial new question of patentability. A detailed explanation of the pertinency and manner of applying Kubala to claims 2 and 10-13 is provided below in Section X.B.

2. Hammond tracks acknowledgements of and responses to mandatory-response messages

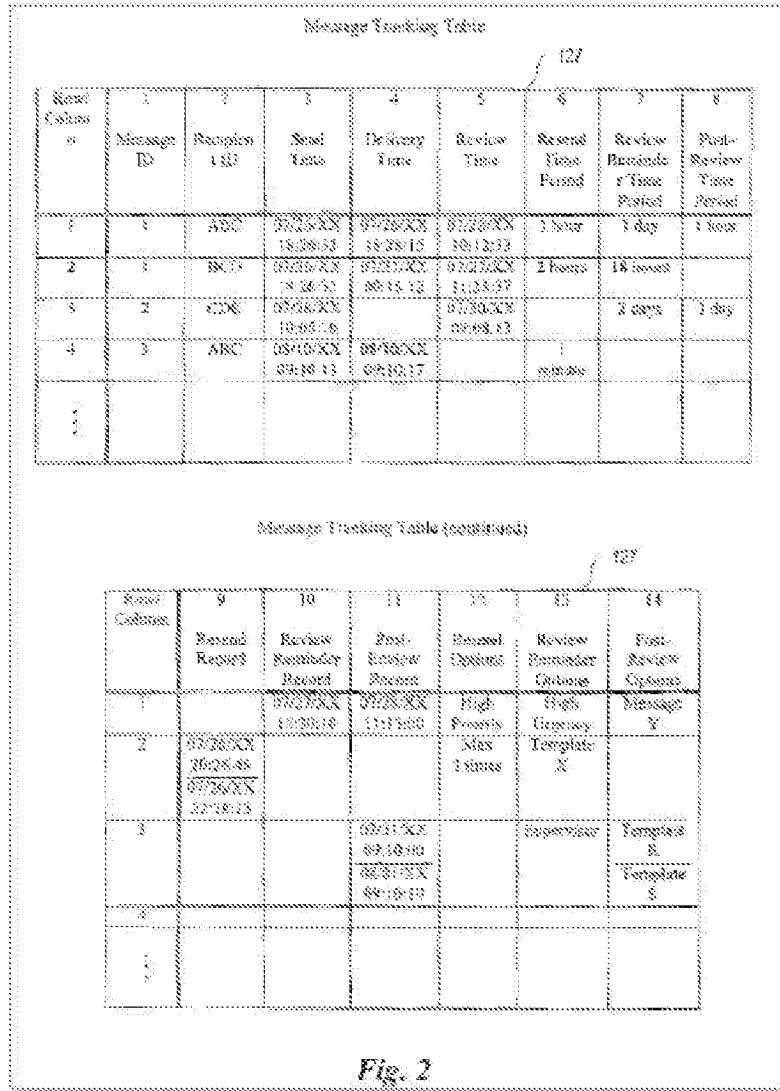
118. Hammond — when viewed in combination with Kubala — presents new information about preexisting technology that was not considered during the initial examination of the ’970 patent by the USPTO. Because it was not considered by the Examiner, Hammond was not applied in any rejection of the application claims during prosecution of the ’970 patent. Hammond issued on February 8, 2005—more than one year before November 26, 2008. (*See*

Hammond, (45).) Thus, Hammond is also prior art under 35 U.S.C. § 102(b) with respect to the '970 patent's actual filing date,² for all claims of the '970 patent.

119. Like Kubala, Hammond discloses methods and systems for enhancing reliability of electronic messaging. (*See id.*, (54).) In particular, Hammond discloses a "Message Review Server (MRS) system [that] sends an electronic message to designated recipients, and then automatically helps ensure that each message has been successfully delivered and that each message has been reviewed." (*Id.*, 3:1-5.) To track these messages, Hammond discloses a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45, FIG. 2 (reproduced below).) Hammond also discloses a Message Receipt Tracker routine (*id.*, 10:5-47, FIG. 4) and a Message Tracking Table Processor routine (*id.*, 6:3-19, 10:48-11:48, FIGS. 5A, 5B) for managing the status of electronic messages transmitted in the system.

120. Hammond explains that "electronic messages" include "email, paging [text] messages, and voice mail." (*Id.*, 1:13-16, 1:21-26.) Hammond also discloses "message delivery information" that is attached to a message (*id.*, 3:31-43) that reads on the claimed "forced message alert software packet." Hammond creates the claimed "forced message alert." For example, Hammond's message delivery information that is attached to a message, reads on "attaching a forced message alert software packet to a voice or text message creating a forced message alert" as claimed.

² As set forth above (*see* Section VIII), Hammond is also prior art under § 102(e) with respect to the '970 patent's actual filing date which is the '970 patent's effective filing date.



(Hammond, FIG. 2.)

121. In the Final Written Decision, the P.T.A.B. states “[a]s noted above, Petitioner asserts claims 1 and 3–9 of the ’970 patent would have been obvious over the combination of Kubala and Hammond. . . . For the reasons stated below, we determine *Petitioner has demonstrated, by a preponderance of the evidence, that claims 1 and 3–9 are unpatentable under § 103 as obvious over the combination of Kubala with Hammond.*” (Google, IPR2018-01079, FWD at 29.)

122. Because these teachings were not applied in any rejection of the application claims during prosecution of the application that led to the ’970 patent, and because these teachings are not cumulative to the applied prior art, Hammond raises a substantial new question

of patentability. A detailed explanation of the pertinency and manner of applying Hammond in combination with Kubala to claims 2 and 10-13 is provided below in Section X.B.

3. Johnson prevents a user from closing a mandatory-response message that has not been responded to

123. Johnson — when viewed in combination with Hammond — presents new information about preexisting technology that was not considered during the initial examination of the '970 patent by the USPTO. Because it was not considered by the Examiner, Johnson was not applied in any rejection of the application claims during prosecution of the '970 patent. Johnson issued on June 28, 1994 (*see* Johnson, (45)) and is, therefore, prior art under 35 U.S.C. § 102(b).

124. Like Hammond, Johnson also discloses methods and systems for ensuring responses to outgoing electronic messages. (*See id.*, Abstract.) Specifically, Johnson discloses that a recipient of a message may be “prohibited from performing a selected action until the specific response has been entered by the recipient.” (*Id.*)

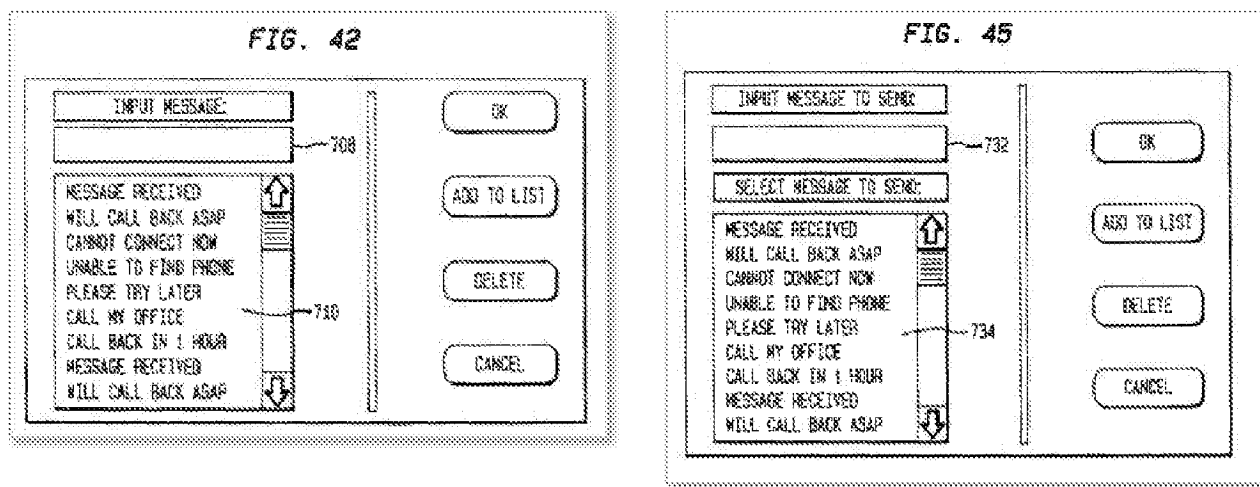
125. Johnson includes “a mechanism for **forcing** a recipient to reply to an electronic mail object with data.” (*Id.*, 4:3-6.) Johnson also states that “the sender of the electronic mail object may **mark or associate an attribute with the electronic mail object such that it cannot be exited out of** until the appropriate reply has been made. These attributes are called ‘persistent reply attributes.’” (*Id.*, 4:28-32.) And, Johnson explains that “[t]he electronic mail object may be in the form of text, an image, or a voice message.” (*Id.*, 4:1-2.) Thus, Johnson’s persistent reply attributes that mark or attach to a message reads on the claimed “forced message alert software packet.” Accordingly, Johnson creates the claimed “forced message alert” because Johnson’s persistent reply attributes attaching to a message reads on “attaching a forced message alert software packet to a voice or text message creating a forced message alert,” as claimed.

126. Because these teachings were not applied in any rejection of the application claims during prosecution of the application that led to the '970 patent, and because these teachings are not cumulative to the applied prior art, Johnson raises a substantial new question of patentability. A detailed explanation of the pertinency and manner of applying Johnson in combination with Hammond to claims 2, and 10-13 is provided below in Section X.C.

4. Pepe discloses PDAs that provide an on-screen menu of possible responses to an incoming message

127. Pepe — when viewed in combination with Hammond and Johnson — presents new information about preexisting technology that was not considered during the initial examination of the '970 patent by the USPTO. Because it was not considered by the Examiner, Pepe was not applied in any rejection of the application claims during prosecution of the '970 patent. Pepe issued on April 21, 1998 (*see* Pepe, (45)) and is, therefore, also prior art under 35 U.S.C. § 102(b).

128. Pepe discloses PDAs that can send and receive electronic messages. For example, Pepe discloses “application software residing in the PDA” that is described in Pepe by “the screens displayed on a PCI subscriber’s PDA.” (*Id.*, 34:10-15.) For example, Pepe’s Figures 42 and 45 (reproduced below) are exemplary screens that may appear on a recipient’s screen, including one with a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) to an incoming message. (*See id.*, 36:16-20, 36:38-51.)



(Pepe, FIGS. 42, 45.)

129. Because these teachings were not applied in any rejection of the application claims during prosecution of the application that led to the '970 patent, and because these teachings are not cumulative to the applied prior art, Pepe raises a substantial new question of patentability. A detailed explanation of the pertinency and manner of applying Pepe in combination with Hammond and Johnson to claims 2, and 10-13 is provided below in Section X.C.

130. The Office should grant reexamination of claims 2 and 10-13 of the '970 patent based on the two SNQs presented here: (1) Kubala in view of Hammond; and (2) Hammond and Johnson in view of Pepe.

B. SNQ1: Claims 2 and 10-13 Are Obvious over Kubala in view of Hammond.

131. Kubala in view of Hammond raises an SNQ as to whether claims 2 and 10-13 are unpatentable as being obvious under 35 U.S.C. § 103. As set forth above, the P.T.A.B. already determined in a Final Written Decision that claims 1 and 3-9 are unpatentable in view of Kubala and Hammond. (*Google*, IPR2018-01079, FWD). And the Board concluded that Kubala teaches the “take control” limitation—the primary difference between the previously unchallenged claims and previously challenged claim 1 in IPR2018-01079. (*See id.*) Thus, as set forth in more detail below, claims 2 and 10-13 are obvious in view of Kubala and Hammond.

1. A skilled artisan would have been motivated to combine Kubala and Hammond to arrive at the claimed subject matter.

132. The FWD states that “Petitioner also articulates a rationale to combine Kubala with Hammond. (*See, e.g., Google*, IPR2018-01079, FWD at 21–23; *see also id.* at 20 (“Like Kubala, Hammond discloses methods and systems for enhancing reliability of electronic messaging”), 33.) And the P.T.A.B. agreed with Petitioner that “a skilled artisan would have been motivated to combine these references [Hammond with Kubala] because both are directed to tracking responses to mandatory-response messages, and both disclose use of acknowledgement receipts.” (*Id.*, at 38; *see also id.* at 37, 39, 56.)

133. The P.T.A.B. also states in the Final Written Decision:

As noted above, Petitioner asserts claims 1 and 3–9 of the '970 patent would have been obvious over the combination of Kubala and Hammond. Pet. 12; Pet. Reply 2–15. Patent Owner contends Petitioner has not shown unpatentability of claims 1 and 3–9 on this ground. PO Resp. 14–28; Surreply 7–15. For the reasons stated below, we determine Petitioner has demonstrated, by a preponderance of the evidence, that *claims 1 and 3–9 are unpatentable under § 103 as obvious over the combination of Kubala with Hammond.*

(*Id.* at 29.)

134. A POSA would have been motivated to combine Kubala and Hammond because they are both directed to the same field of endeavor and attempt to solve the same problem—i.e., to ensure that important electronic messages receive timely responses. (See Kubala, ¶72, Abstract; Hammond, 1:54-62, Abstract.) A POSA would have been further motivated to combine Kubala with Hammond because Kubala provides additional details for features that are mentioned as part of the system in Hammond; for example, Hammond discloses that electronic messages may be transmitted via “wireless RF” (*see* Hammond, 4:33-38), and Kubala provides details about these types of wireless communications. (*See* Kubala, ¶27, FIG. 1A.)

135. Moreover, given that Kubala explicitly discloses that a receiving email application may collect and record information about the manner in which a recipient responds to an email message that has a mandatory-response flag (*see id.*, ¶¶50, 51, 61, FIG. 9), implementing Hammond’s tracking features in Kubala’s system would have been an obvious design choice. *See SDI Techs., Inc., v. Bose Corp.*, IPR2013-00350, FWD, 26 (P.T.A.B. Nov. 7, 2014) (holding that the use and arrangement of “known elements would have been an obvious matter of design choice”).) Because Hammond merely discloses details about tracking features that are already suggested by Kubala’s system that collects and records information about the recipients response to a message, this combination of Kubala and Hammond would not “result in a difference in function or give unexpected results,” so this type of combination, which is recited in the claims, is unpatentable as an obvious design choice. (*See In re Rice*, 341 F.2d 309, 314 (C.C.P.A. 1965).)

136. In fact, the combination of Kubala’s email system with Hammond’s tracking features “represents no more than ‘the predictable use of prior art elements according to their established functions,’” of sending mandatory-response emails and tracking responses to such emails, which is an obvious combination “as a matter of law.” (*Wyers v. Master Lock Co.*, 616 F.3d 1231, 1245 (Fed. Cir. 2010) (quoting *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)); *see also Ball Aerosol v. Ltd. Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009) (a “predictable variation” is obvious as a matter of law).)

2. The combination of Kubala and Hammond renders claims 2 and 10-13 obvious

(a) Dependent Claim 2

137. Kubala and Hammond teach or suggest each and every feature recited in dependent claim 2 and independent claim 1 from which claim 2 depends. A POSA would have been motivated to combine Kubala and Hammond for the reasons set forth above. Thus, dependent claim 2 is obvious over Kubala and Hammond.

138. While Patent Owner argued that Kubala and Hammond do not disclose portions of 1.5, 1.6, 1.7, and 1.9, in the Final Written Decision, the P.T.A.B. stated “[u]pon review of the record, we determine Petition has shown, by a preponderance of the evidence, that claim 1 is unpatentable as obvious over the combination of Kubala with Hammond.” (*Google*, IPR2018-01079, FWD at 32-33; *see also id.* at 34-60.)

[1.P] A communication system for transmitting, receiving, confirming receipt, and responding to an electronic message, comprising:
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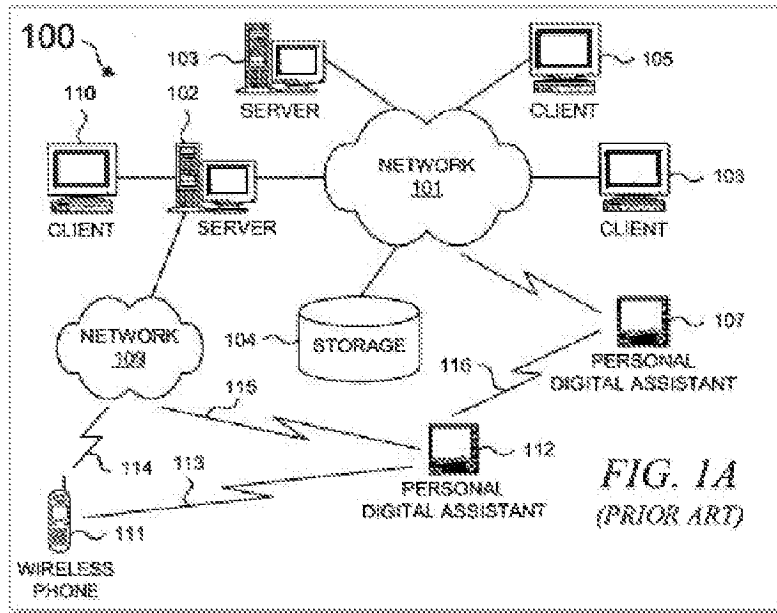
139. The Board agreed that Kubala teaches the preamble. (*See Google*, IPR2018-01079, FWD at 33-34.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the preamble. (*See id.* at 33.)

140. To the extent the preamble is limiting, Kubala discloses a communication system for transmitting, receiving, and responding to an electronic message. (*See Kubala*, (54), Abstract.) Kubala also discloses that the communication system was known to “generate return receipts to the sender when the sender’s e-mail message is received at its intended destination or when the recipient opens the e-mail message, thereby providing an acknowledgment that a particular message has been received and/or opened.” (*Id.*, ¶6.) A POSA would understand that “the sender’s email message” is an electronic message that is transmitted by a communication system, that “generate return receipts to the sender” means that a recipient received and confirms receipt of the electronic message received. Finally, a POSA would understand that “respond to . . . e-mail messages” means that the communication system supports responding to an electronic message. Kubala therefore expressly teaches or suggests this limitation.

[1.1] a predetermined network of participants, wherein each participant has a similarly equipped PDA/cell phone that includes a CPU and a touch screen display a CPU [sic] and memory;

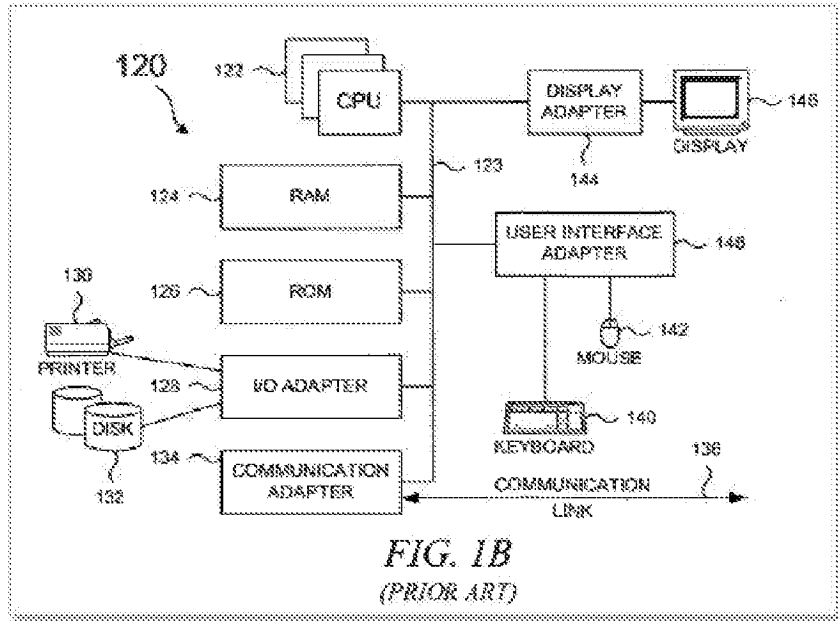
141. The Board agreed that Kubala teaches limitation 1.1. (*See Google*, IPR2018-01079, FWD at 33-34.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the limitation 1.1. (*See id.* at 33.)

142. Kubala discloses this limitation. The predetermined network of participants is shown in Kubala’s Figure 1A (reproduced below), which includes a plurality of personal digital assistants 107, 112. (*See Kubala*, ¶¶26-27.)



(Kubala, FIG. 1A.)

143. Kubala’s Figure 1B (reproduced below) illustrates that each PDA/cell phone includes at least one CPU 122, a memory 124, 126, and a user interface adapter 148, which Kubala describes as being coupled to a touch-screen display. (*See Kubala*, ¶¶29-30.)



(Kubala, FIG. 1B.)

[1.2] a data transmission means that facilitates the transmission of electronic files between said PDA/cell phones in different locations;

144. The Board agreed that Kubala teaches limitation 1.2. (*See Google*, IPR2018-01079, FWD at 33, 35-36.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the limitation 1.2. (*See id.* at 33.)

145. Kubala discloses this feature. Again, the recited “data transmission means” encompasses a PDA that communicates according to peer-to-peer communications (e.g., WiFi or WiMax) or another messaging protocol (e.g., SMS or TCP/IP). (*See Section VIII.F.1*) Kubala supports a network 109, a client 110, and PDAs/cell phones 112 that (1) “communicate with one another” using, for example, “Transport Control Protocol/Internet Protocol (TCP/IP)” or (2) “directly transfer data between themselves” using, for example, “Bluetooth™ wireless technology or WiFi technology (IEEE 802.11).” (Kubala, ¶¶26, 27, FIG. 1A.) Kubala therefore expressly discloses this limitation.

[1.3] a sender PDA/cell phone and at least one recipient PDA/cell phone for each electronic message;

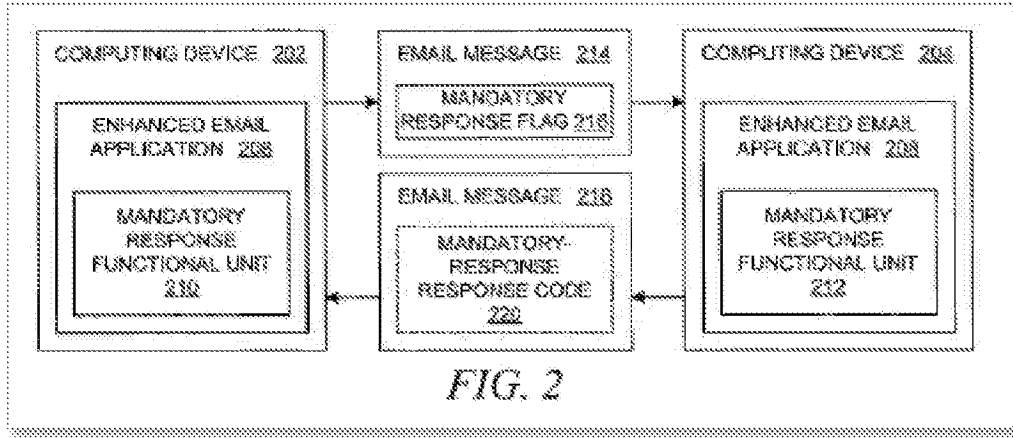
146. The Board agreed that Kubala teaches limitation 1.3. (*See Google*, IPR2018-01079, FWD at 33, 36.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the limitation 1.3. (*See id.* at 33.)

147. Kubala discloses a plurality of PDAs/cell phones that communicate with each other. (Kubala, ¶¶27, 32, 33, FIG. 1A.) In other words, one PDA/cell phone sends an electronic message (i.e., “a sender PDA/cell phone”) and another PDA/cell phone receives it (i.e., a “recipient PDA/cell phone”). A POSA would understand that one of Kubala’s Personal Digital Assistants can send an electronic message to another Personal Digital Assistant that receives the electronic message.

[1.4] a forced message alert software application program including a list of required possible responses to be selected by a participant recipient of a forced message response loaded on each participating PDA/cell phone;

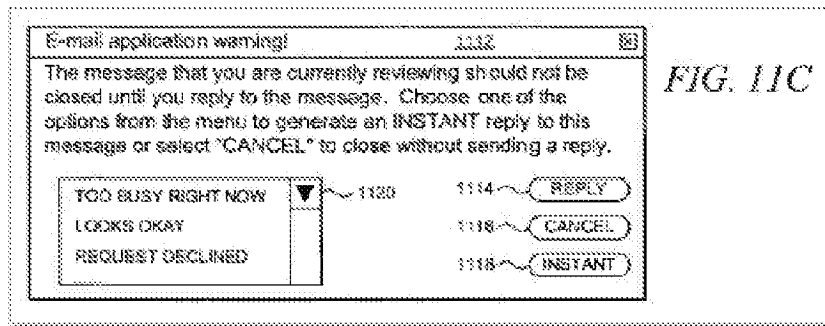
148. The Board agreed that Kubala teaches limitation 1.4. (*See Google*, IPR2018-01079, FWD at 33, 36.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the limitation 1.4. (*See id.* at 33.)

149. Kubala discloses this limitation. Kubala’s Figure 2 (reproduced below) illustrates an enhanced email application 208 that includes a mandatory-response functional unit 212. The combined enhanced email application 208 and mandatory-response functional unit 212 read on the claimed “forced message alert software application program.” Referring to Figure 2, Kubala explains that the mandatory-response functional unit 212 provides an email message 218 in response to an email message 214 with a mandatory-response flag 216. (Kubala, ¶35; *see also id.*, ¶¶13, 33, 36.)



(Kubala, FIG. 2.)

150. Kubala also discloses the claimed “list of required possible responses to be selected by a participant recipient of a forced message response loaded on each participating PDA/cell phone.” Kubala’s Figure 11C (reproduced below) shows an example of alerting a user by displaying a menu 1120 of possible responses to a sender’s message. Kubala explains that a recipient’s selection of one of the “quick response[s]” in menu 1120 fulfills “the sender’s request that the recipient is required to provide a mandatory response.” (Kubala., ¶¶22, 47, 57; *see also id.*, ¶¶54, 55, 60.)



(Kubala, FIG. 11C.)

151. Kubala’s Figure 11A (reproduced below) shows an example of alerting a user by displaying a warning message 1102 when an e-mail message that contains a mandatory request flag is received, and that the recipient “**must provide** a reply message in response to the original message.” (Kubala, ¶54.)

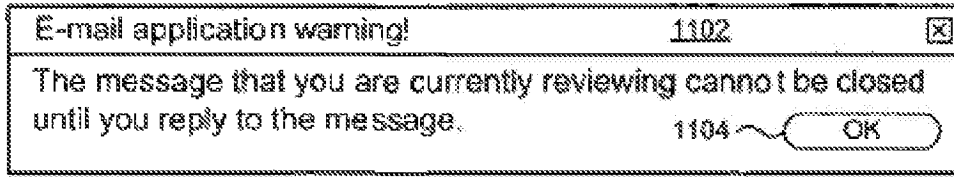


FIG. 11A

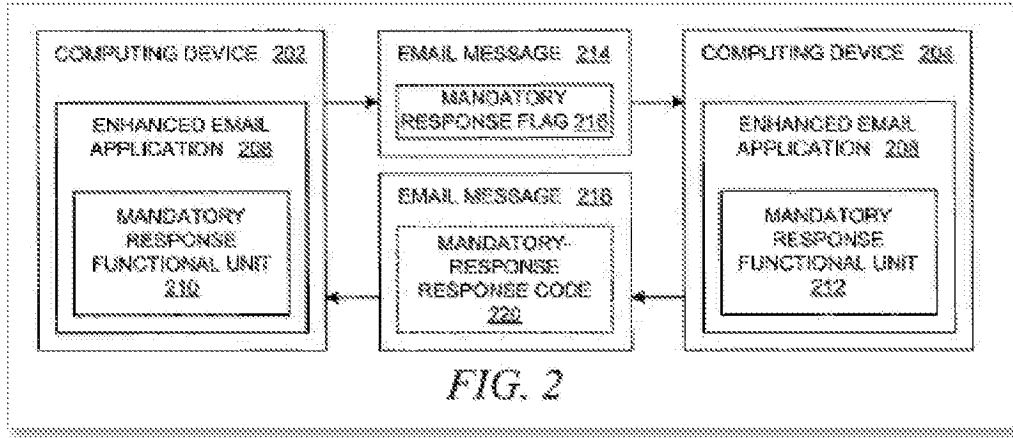
(Kubala, FIG. 11A.)

152. A POSA would understand that a PDA/cell phone that receives an e-mail message with a mandatory response flag would necessarily include a forced message alert software application program. And a POSA would understand that to display a list of required possible responses on the PDA/cell phone, the forced message alert software application program would generate and then present the list of required possible responses on the PDA/cell phone. A recipient could then select a required possible response from the displayed list.

[1.5] means for attaching a forced message alert software packet to a voice or text message creating a forced message alert that is transmitted by said sender PDA/cell phone to the recipient PDA/cell phone, said forced message alert software packet containing a list of possible required responses and requiring the forced message alert software on said recipient PDA/cell phone to transmit an automatic acknowledgment to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone;

153. The Board agreed that Kubala teaches limitation 1.5. Although Patent Owner contended that Kubala does not teach limitation 1.5 because a “forced message alert” must be “forced to the display without any action on the part of the recipient”, the P.T.A.B. rejected that contention. (*See Google*, IPR2018-01079, FWD at 42; *id.* at 39-42.)

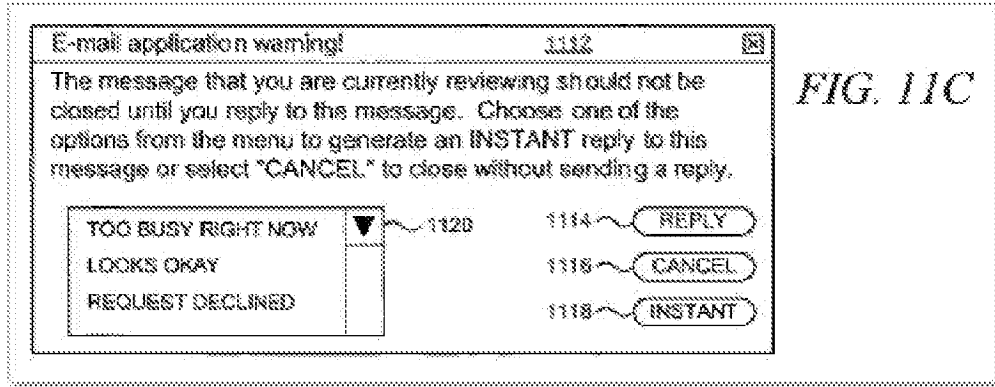
154. Kubala teaches or suggests both the structure and function required by this limitation. Again, the structure for the recited “means for attaching...” is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.2.) Like this structure, Kubala discloses an enhanced email application 206 on a computing device (e.g., PDA) 202, as illustrated in Figure 2 (reproduced below). (*See Kubala*, ¶¶33-36.)



(Kubala, FIG. 2.)

155. Kubala also discloses the claimed functions. The claimed “forced message alert software packet” is met by Kubala’s disclosure of a mandatory-response flag 216 that is attached to an email message 214, as illustrated in Figure 2 (above). Kubala explains that e-mail message 214 may be a text message, voicemail message, audio message, video message, or other type of message. (Kubala, ¶32.) Kubala also explains that “[m]andatory response flag 216 may be implemented in a variety of data formats” (*Id.*, ¶35; *see also id.*, ¶¶36-41, 54-61, FIGS. 3, 4.) Thus, Kubala creates the claimed “forced message alert.” For example, Kubala’s mandatory-response flag 216 that is attached to email message 214 reads on “attaching a forced message alert software packet to a voice or text message creating a forced message alert” as claimed.

156. Kubala also discloses the claimed “list of possible required responses.” Kubala’s Figure 11C (reproduced below) illustrates an example of alerting a user by displaying a menu 1120 of possible responses that a recipient may choose from in order to respond to a sender’s message. (*Id.*, ¶¶22, 47, 57.) And Kubala discloses that, in one embodiment, the “text strings that are used as menu items” may be “extracted from the original e-mail message that was received from the sender” (*Id.*, ¶57; *see also id.*, ¶¶40, 41.) This disclosure from Kubala teaches or suggests the claimed function that the “forced message alert software packet contain[s] a list of possible required responses.”



(Kubala, FIG. 11C.)

157. Moreover, Kubala teaches or suggests the claimed functionality of “requiring the forced message alert software on said recipient PDA/cell phone to transmit an automatic acknowledgment to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone.” In fact, Kubala discloses that it was known “to generate return receipts to the sender *when* the sender’s e-mail message is received at its intended destination or *when* the recipient opens the e-mail message, thereby providing an acknowledgment that a particular message has been received.” (Kubala, ¶6.) Based on these teachings in Kubala, a POSA would have understood that the condition that causes the acknowledgement to be sent back to the sender is a configurable parameter, which could be set to occur when the sender’s email message is received at its intended destination or, in other words, as soon as it is received at the recipient’s device.

158. At the time of the ’970 earliest possible priority date, the need for acknowledgement of email messages was well understood from multiple perspectives. First, at that time, the cost of communications (particularly wireless) was very high compared to today. At the same time, reliability of (wireless) communications was low compared to today. Since there was uncertainty about if, and when, an email would “get through” to the recipient, it would be costly to repeatedly resend emails if there was no indication that the message had been received in a timely fashion. Thus an auto-acknowledgement was the obvious, best balance between the two—confirmation that an email had been received, in the form of a (one-time)

short (low cost) message. An added benefit was the convenience to the sender of not having to worry about whether a message was received or not.³

159. The utility of acknowledging messages in voice messaging systems was also well understood and utilized before the earliest possible '970 priority date. Most commercial voice messaging systems had receipt acknowledgements which would be sent back to the sender when a recipient had listened to the voice mail.⁴

160. Reliability and cost were not the only drivers of needing a message acknowledgement; additional drivers ranged from operational efficiencies to public safety. As an example, in the McKinsey Report (Ex. 1014, McKinsey) that documented first responder issues in responding to the 9/11 attacks, it became clear that the ability to receive acknowledgements of all forms of communications was key: *“The chiefs were able to get through to some units sometimes, but not others. Some units acknowledged receiving radio communications some times, but not others. This left the chiefs not knowing whether their messages failed to get through, whether the units failed to acknowledge because they were busy with rescue operations, or whether the units did acknowledge, but the acknowledgement did not get through.”*

(McKinsey, 31) While this observation was primarily targeted at radio (voice) communications,

³ There were generally two types of auto-acknowledgements associated with emails. The first was a “delivery” acknowledgement—indicating that the email made its way through the communications network(s) to the inbox of the recipient. The second was a “return receipt,” which indicated that the email had been opened by the recipient. The delivery acknowledgement became much less common as (wireless) communications networks became more reliable. And since what the sender was most concerned with was the opening of the email, the “return receipt” was usually considered most important. The return receipt also necessarily proved that the message had also been delivered, so the need for a delivery receipt rapidly became redundant (and an unnecessary cost) and rapidly decreased in importance and usage.

⁴ Return receipt acknowledgements as described above were what were delivered in voice messaging systems; delivery acknowledgements were generally considered unnecessary, as voice messaging systems at the time were generally set up within highly reliable private/dedicated networks.

the importance of and need for such acknowledgements subsequently became central to *all* forms of emergency communications designs.

[1.6] means for requiring a required manual response from the response list by the recipient in order to clear recipient's response list from recipient's cell phone display;

161. The Board agreed that Kubala teaches limitation 1.6. Although Patent Owner argued that the Petition presents no obviousness analysis or motivation to combine distinct embodiments in Kubala, the Board disagreed, explaining that “Kubala itself teaches that the scenarios shown in Figures 11A through 11D can be combined in different ways.” (*Google*, IPR2018-01079, FWD at 46; *id.* at 39, 42-48.)

162. Kubala teaches or suggests both the structure and function required by this limitation. Again, the structure for the recited “means for requiring . . .” is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.3.) Like this structure, Kubala discloses an enhanced email application 206 on a PDA. (Kubala, ¶¶33-36, FIG. 2.)

163. Kubala also discloses the required functions. “The e-mail application may indicate the presence of a mandatory response flag: using a message within a pop-up window; other information within a status bar; through the use of colors on a display screen; or through **some other means of alerting the user.**” (*See id.*, ¶47.) Again, Kubala discloses “diagrams that represent a set of GUI windows **through which an e-mail application alerts a user** by displaying warning messages and error messages to the user as a result of a user action when the e-mail application has an e-mail message that contains a mandatory request flag.” (*See id.*, ¶22.) An example of the GUI window alert includes a menu of possible responses from which a recipient can choose (*see id.*, ¶¶47, 57, FIG. 11C (menu 1120)) which satisfy the claimed “response list.”

164. Although the specific embodiment illustrated in Figure 11C shows that a user can “select ‘CANCEL’ to close without sending a reply,” Kubala also explicitly teaches that “the recipient can be **prevented** from closing a review of the received e-mail message, from deleting the received e-mail message, and from exiting the e-mail application until the recipient has responded to the received email message.” (*Id.*, ¶9, FIG. 11C; *see also id.*, ¶55.) Moreover, Kubala also discloses that a recipient being required to respond to a mandatory-response

message is a configurable feature. (*See id.*, ¶¶9, 54, 55, 59-60.) For example, the recipient may be required to respond “when the recipient first reviews the e-mail message.” (*Id.*, ¶60.) These disclosures teach or suggest the claimed requirement that a response is required “in order to clear recipient’s response list from recipient’s cell phone display.”

165. The need to both require a response when the recipient first reviews the email message, and in turn clear the message, was necessary and obvious from a POSA perspective in that recipient wireless devices in the time prior to the '970 filing had limited screen “real estate” to display information and limited memory to use in application execution. Thus it was important to complete (e.g. clear) each piece of functionality being processed by the device in order to have as much (screen and memory) space for the next piece of application functionality, thus avoiding crowded/unintelligible screens and “memory full” issues.

166. In addition, a POSA would additionally recognize that technology to force responses by remote users of web browsers was well known in the art, such that a web browser window, once opened, would not allow any other action by the user on the computer/PDA/cell phone until the web browser window was closed. (*See Banerjee.*)

[1.7] means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged the forced message alert and which recipient PDA/cell phones have not automatically acknowledged the forced message alert;
--

167. Kubala discloses the claimed structure and the claimed function of this limitation. Hammond also discloses the claimed function of this limitation. The Board agreed, stating that “Patent Owner’s contentions and arguments do not undermine Petitioner’s showing” and concluding that “Kubala teaches limitation 1.7.” (*See Google*, IPR2018-01079, FWD at 57-58; *see also id.* at 39, 55-59.)

168. Again, the structure for the recited “means for receiving . . .” is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.4.) Like this structure, Kubala discloses an enhanced email application 206, 208 that includes mandatory-response functional unit 210, 212 on a PDA. (*See Kubala*, ¶¶33-36, FIG. 2.) Kubala further explains that it was known to automatically acknowledge receipt of an electronic message, (*see id.*, ¶6.) In addition, Kubala explicitly discloses that the receiving e-mail application may collect and record information about the manner in which the recipient responds

to an e-mail message that has a mandatory-response flag. The information may include mandatory-response return-status codes included within the reply e-mail. (*Id.*, ¶¶50, 51, 61, FIG. 9.) A POSA would have known that a listing of the recorded information regarding the responses or automatic acknowledgements, were accessible.

169. To the extent it is argued that Kubala does not teach this limitation, Hammond also states that “the recipient computer systems provide receipts when messages are received and when messages are reviewed” (Hammond, 5:20-23; *see also id.*, Abstract, 2:11-18.) These acknowledgement receipts are tracked in Hammond’s Message Tracking Tables, as depicted in Figure 2 (reproduced below), and are described throughout the specification. (*See id.*, 3:1-4:28, 5:31-37, 6:56-8:45, 10:6-22.)

Message Tracking Table

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Row Column	1 Message ID	2 Recipient ID	3 Send Time	4 Delivery Time	5 Review Time	6 Resend Time Period	7 Review Reminder Time Period	8 Post- Review Time Period
1	1	ABC	07/26/XX 18:25:53	07/26/XX 18:28:15	07/28/XX 10:12:33	1 hour	1 day	1 hour
2	1	BCD	07/26/XX 18:26:53	07/27/XX 06:15:12	07/27/XX 11:35:37	2 hours	18 hours	
3	2	CDE	07/28/XX 16:05:10		07/30/XX 09:08:13		2 days	1 day
4	3	ABC	08/10/XX 09:10:13	08/10/XX 09:10:17		1 minute		
⋮								

Message Tracking Table (continued)

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Row Column	9 Resend Record	10 Review Reminder Record	11 Post- Review Records	12 Resend Options	13 Review Reminder Options	14 Post- Review Options
1		07/27/XX 18:30:10	07/28/XX 11:13:00	High Priority	High Urgency	Message Y
2	07/26/XX 20:26:45 07/26/XX 21:28:13			Max 3 times	Templata X	
3			07/31/XX 09:10:00 08/01/XX 09:10:10		Supervisor	Templata R Templata S
4						
⋮						

(Hammond, FIG. 2.)

170. A POSA would have been motivated to combine Hammond with Kubala based on the disclosures in the references themselves, particularly as they relate to exchanging and tracking recipient-device acknowledgements. (*See supra*, Section X.B.1.) Again, Kubala generally discloses that it was known to provide acknowledgement receipts, (*see* Kubala, ¶6), and record details about the responses to the emails with mandatory-response flags. Hammond also discloses acknowledgement receipts and how to track these acknowledgement receipts.

Because these disclosures in Kubala and Hammond are all directed to tracking responses to mandatory-responses messages, these disclosures would have motivated a POSA to combine Hammond and Kubala.

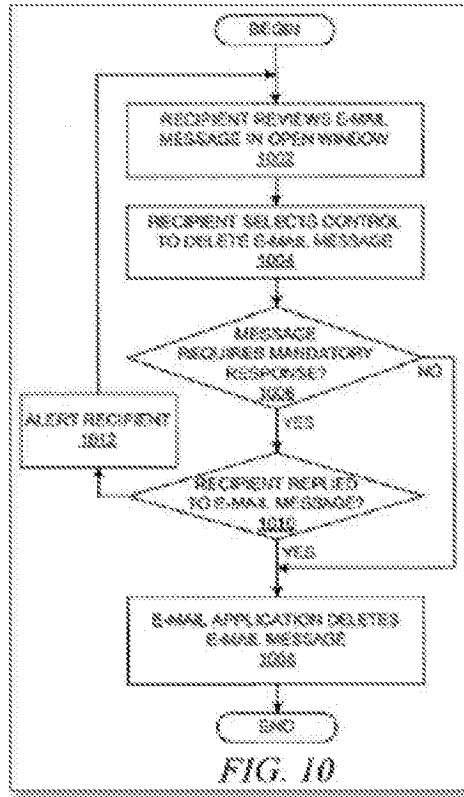
171. A POSA would recognize that a system that requires a data element (e.g. a response to an email) to be produced and/or a process element to be executed (tracking receipts) would in turn require a way of monitoring, tracking, or otherwise keeping a record of such data/process elements to ensure compliance or otherwise provide an audit-type capability common to such functions.

[1.8] means for periodically resending said forced message alert to said recipient PDA/cell phones that have not automatically acknowledged the forced message alert; and
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172. The Board agreed that Kubala teaches limitation 1.8. (*See Google*, IPR2018-01079, FWD at 33, 37-39.) The Board stated that Patent Owner did not provide arguments contesting Petitioner’s assertions regarding the limitation 1.8. (*See id.* at 33.)

173. Kubala discloses the claimed structure, and Kubala and Hammond disclose the claimed function of this limitation. The structure for the recited “means for periodically . . .” is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.5.) Like this structure, Kubala discloses an enhanced email application 208 that includes mandatory-response functional unit 212 on a PDA. (*See Kubala*, ¶¶33-36, FIG. 2.)

174. Kubala discloses that when a reply to an email message with an associated mandatory-response flag has not been made, the enhanced email application 208 loops back to alert the recipient via 1012, as illustrated in Figure 10 (reproduced below). The looping back at 1012 has the effect of resending the message to the user until the user replies to the received e-mail message as required. (*See id.*, ¶53, FIG. 10.) Thus, Kubala teaches or suggests the claimed function of “periodically resending” a forced-message alert that was not acknowledged.



(Kubala, FIG. 10.)

175. While a POSA would recognize that a key purpose of forced response functionality would be to contain costs and improve efficiencies as described earlier, a POSA would also recognize that there would be situations where a response is not forthcoming, particularly in circumstances where the recipient has never opened the email. Such occurrences would be recognized to be fairly common, particularly for recipients who receive large volumes of emails. As such a POSA would recognize the need to resend the original email. One of the most efficient ways of performing this otherwise inefficient activity would be to periodically schedule a response check and, if needed, an associated resend, with the periodic element being a certain period of time, presumably configurable to reflect what the sender considered a reasonable amount of time to wait in the circumstance before sending again.

176. To the extent that it is argued that Kubala does not teach this limitation, Hammond's "system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or

review is not confirmed.” (Hammond, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-6:20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.)

[1.9] means for receiving and displaying a listing of which recipient PDA/cell phones have transmitted a manual response to said forced message alert and details the response from each recipient PDA/cell phone that responded.

177. The Board stated that “Patent Owner does not provide argument specific to limitation 1.9. For the foregoing reasons, we find Petitioner has made a persuasive showing as to limitation 1.9 in view of Kubala.” (*See Google*, IPR2018-01079, FWD at 60; *see also id.*, 39, 59-60.)

178. Kubala and Hammond disclose this limitation. The structure for this “means for” limitation is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.6.) Like this structure, Kubala discloses an enhanced email application 206, 208 and a mandatory-response functional unit 210, 212 on a PDA, which together are designed to receive and display a listing of which recipient PDA/cell phones have transmitted a manual response to said forced-message alert and details the response from each recipient PDA/cell phone that responded. (*See Kubala*, ¶¶33-36, 50, 51, 61, FIG. 2.)

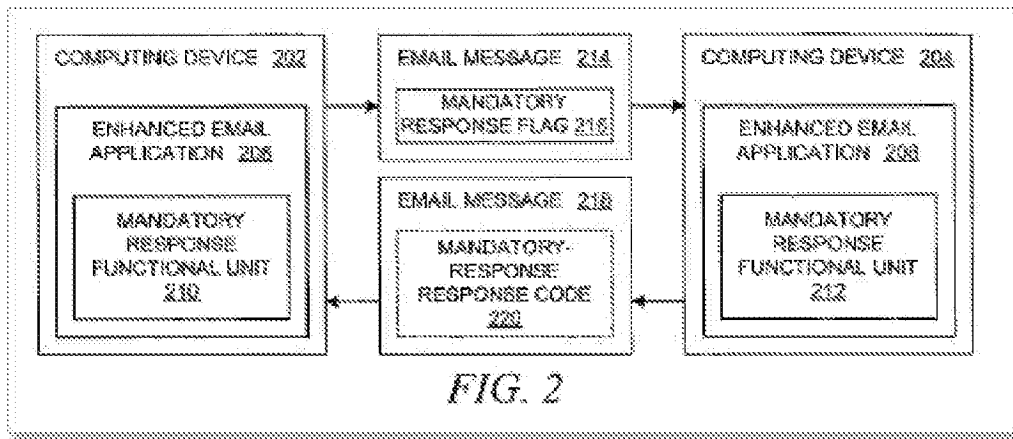
179. Kubala’s Figure 2 (reproduced below) shows that a sending PDA (e.g., computing device 202) can receive and display a response (e.g., email message 218) from a recipient PDA (e.g., computing device 204). (*See id.*, ¶¶26-41.) This disclosure from Kubala meets the claimed requirement to receive and display details of the response from each recipient PDA/cell phone that responded.

180. A POSA would recognize that the function of tracking or auditing, as discussed earlier, would not be limited to just a “Yes” or “Ack”-type acknowledgement. This functionality could also provide more detail to gain further insight into the detailed nature of the confirmation of receipt, particularly if there are numerous options possible in association with such a confirmation.

181. Kubala’s disclosure in connection with Figure 2 meets the claimed requirement to receive and display details of the response from each recipient PDA/cell phone that responded. A POSA would recognize such a tracking/auditing capability would need to be comprehensive, e.g.

each/all recipients responses would need to be tracked/audited to be consistent with the motivations behind requiring a forced response.

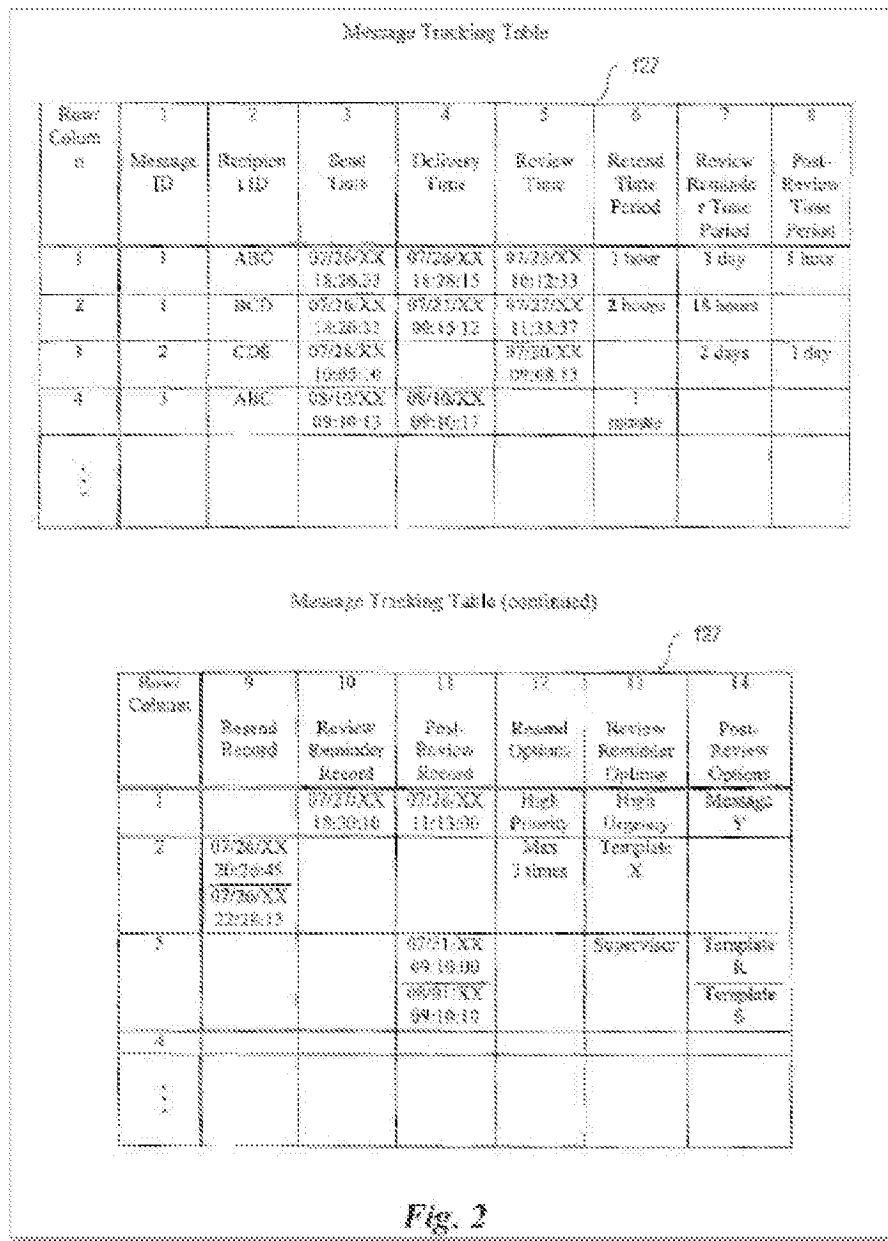
182. Kubala also discloses “receiving and displaying a listing of which recipient PDA/cell phones have transmitted a manual response to said forced message alert.” For example, Kubala states that the receiving e-mail application 208 (shown above) may collect and record information about the manner in which the recipient responds to an e-mail message that has a mandatory-response flag. The information may include mandatory-response return-status codes included within the reply e-mail. (*Id.*, ¶¶50, 51, 61, FIG. 9.) Further, a POSA would know that a listing of the recorded information regarding the responses to e-mail messages were available and accessible. For example, the recorded information could be displayed and details could be reviewed. The availability and accessibility of the recorded information would be an obvious element of any email system with multiple possible responses. More broadly, the need for maintaining a full inventory, tracking, and organization of responses had been well known in the email art from its earliest days in order to create, manage, and maintain email “chains” (an ongoing record of related email communications), such as created with an email “Reply To” or “Forward To” prompt.



(Kubala, FIG. 2.)

183. Hammond also provides this disclosure. Hammond discloses a “Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients.” (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond’s Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients.

(See *id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine (*id.*, FIGS. 5A, 5B, 10:48-11:48).



(Hammond, FIG. 2.)

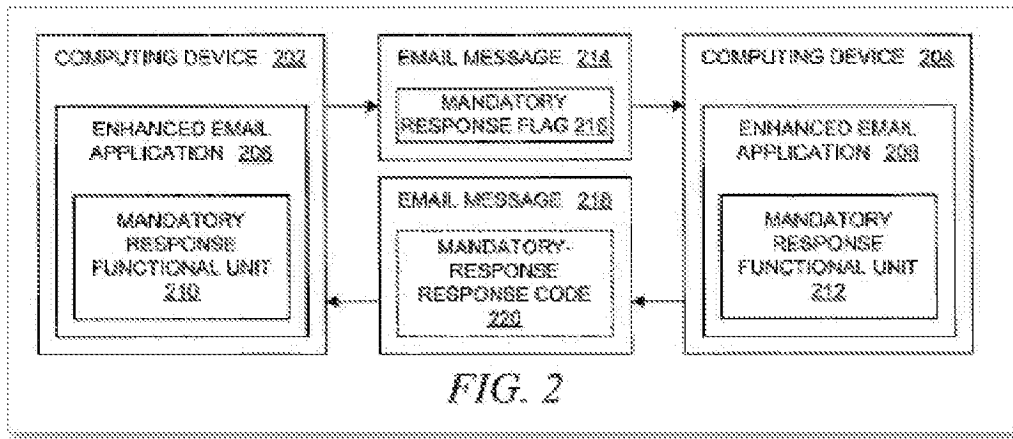
184. A POSA would have been motivated to combine Hammond with Kubala based on the disclosures in the references themselves, particularly as they relate to exchanging and tracking recipient-device acknowledgements. (*See supra*, Section X.B.) Again, Kubala generally discloses that it was known to provide acknowledgement receipts, (*see* Kubala, ¶(6), and record

details about the responses to the emails with mandatory-response flags. Hammond also discloses acknowledgement receipts and how to track these acknowledgement receipts. Because these disclosures in Kubala and Hammond are all directed to tracking responses to mandatory-responses messages, these disclosures would have motivated a POSA to combine Hammond and Kubala.

[2.P] The system as in claim 1, wherein the forced message alert software application program on the recipient PDA/cell phone includes:

185. The primary difference between previously unchallenged claim 2 and previously challenged claim 1 is a so-called “take control” limitation of 2.2. (*See Google*, IPR2018-01079, FWD at 51-54.) The Board noted, however, that Kubala teaches this “take control” limitation. (*Id.*) Thus, as set forth in more detail below, claim 2 is obvious in view of Kubala and Hammond.

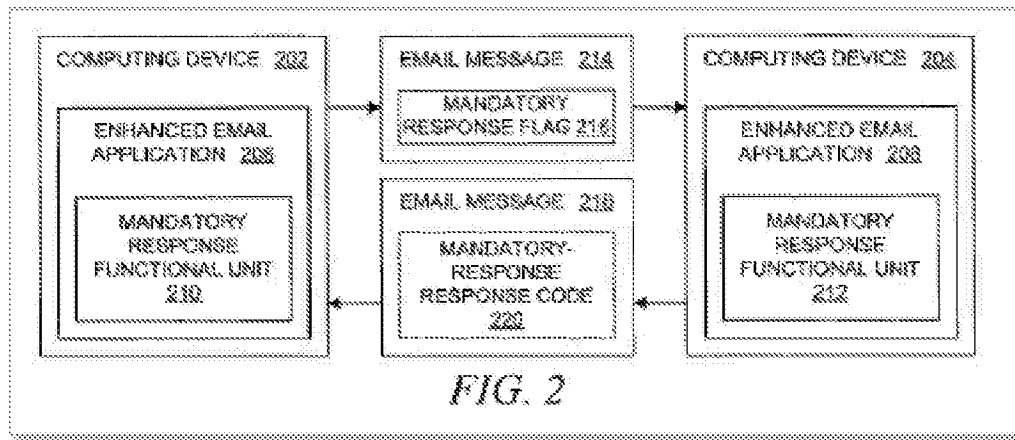
186. To the extent the preamble is limiting, Kubala discloses the claimed “forced message alert software application program” as a combination of an enhanced email application 208 and mandatory response functional unit 212, on a receiving computing device (e.g., PDA) 204, as illustrated in Figure 2 (reproduced below). Kubala therefore expressly teaches or suggests this limitation. (*See Kubala*, ¶¶33-36.)



(Kubala, FIG. 2.)

[2.1] means for transmitting the acknowledgment of receipt to said sender PDA/cell phone immediately upon receiving a forced message alert from the sender PDA/cell phone;

187. Kubala teaches or suggests both the structure and function required by this limitation. Again, the structure for the recited “means for transmitting . . .” is a software application program on the recipient PDA that performs the recited function. (*See supra.*, Section VIII.F.7) Like this structure, Kubala discloses the combination of an enhanced email application 208 and mandatory response functional unit 212 on a recipient computing device 204 (e.g., PDA), as illustrated in Figure 2 (reproduced below). (*See Kubala*, ¶¶33-36.)



(Kubala, FIG. 2.)

188. Kubala also teaches or suggests the claimed functionality of “transmitting the acknowledgment of receipt to said sender PDA/cell phone immediately upon receiving a forced message alert from the sender PDA/cell phone.” In fact, Kubala discloses that it was known “to generate return receipts to the sender *when* the sender’s e-mail message is received at its intended destination or *when* the recipient opens the e-mail message, thereby providing an acknowledgment that a particular message has been received.” (Kubala, ¶6.) Based on these teachings in Kubala, a POSA would have understood that the condition that causes the acknowledgement to be sent back to the sender is a configurable parameter, which could be set to occur when the sender’s email message is received at its intended destination or, in other words, as soon as it is received at the recipient’s device.

189. At the time of the '970 earliest possible priority date, the need for acknowledgement of email messages was well understood from multiple perspectives. First, at that time, the cost of communications (particularly wireless) was very high compared to today. At the same time, reliability of (wireless) communications was low compared to today. Since there was uncertainty about if and when an email would “get through” to the recipient, it would be costly to repeatedly resend emails if there was no indication that the message had been received in a timely fashion. Thus, an auto-acknowledgement was the obvious, best balance between the two—confirmation that an email had been received, in the form of a (one-time) short (low cost) message. An added benefit was the convenience to the sender of not having to worry about whether a message was received or not.⁵

190. The utility of acknowledging messages in voice messaging systems was also well understood and utilized before the earliest possible '970 priority date. Most commercial voice messaging systems had receipt acknowledgements which would be sent back to the sender when a recipient had listened to the voice mail.⁶

191. Reliability and cost were not the only drivers of needing a message acknowledgement; additional drivers ranged from operational efficiencies to public safety. As an example, in the McKinsey Report that documented first responder issues in responding to the

⁵ There were generally two types of auto-acknowledgements associated with emails. The first was a “delivery” acknowledgement—indicating that the email made its way through the communications network(s) to the inbox of the recipient. The second was a “return receipt,” which indicated that the email had been opened by the recipient. The delivery acknowledgement became much less common as (wireless) communications networks became more reliable. And since what the sender was most concerned with was the opening of the email, the “return receipt” was usually considered most important. The return receipt also necessarily proved that the message had also been delivered, so the need for a delivery receipt rapidly became redundant (and an unnecessary cost), and rapidly decreased in importance and usage.

⁶ Return receipt acknowledgements as described above were what were delivered in voice messaging systems; delivery acknowledgements were generally considered unnecessary, as voice messaging systems at the time were generally setup within highly reliable private/dedicated networks.

9/11 attacks, it became clear that the ability to receive acknowledgements of all forms of communications was key: “*The chiefs were able to get through to some units sometimes, but not others. Some units acknowledged receiving radio communications some times, but not others. This left the chiefs not knowing whether their messages failed to get through, whether the units failed to acknowledge because they were busy with rescue operations, or whether the units did acknowledge, but the acknowledgement did not get through.*” (McKinsey, 31) While this observation was primarily targeted at radio (voice) communications, the importance of and need for such acknowledgements subsequently became central to *all* forms of emergency communications designs.

[2.2] means for controlling of the recipient PDA/cell phone upon transmitting said automatic acknowledgment and causing, in cases where the force message alert is a text message, the text message and a response list to be shown on the display of the recipient PDA/cell phone or causes, in cases where the forced message alert is a voice message, the voice message being periodically repeated by the speakers of the recipient PDA/cell phone while said response list is shown on the display;

192. In the Final Written Decision, the Board states that “Kubala teaches e-mail application 206 *taking control* of a PDA/cell phone” (*See Google*, IPR2018-01079, FWD at 52):

In light of the claim language and Specification, we would interpret the forced message alert software application program “*effectively tak[ing] control*” of a PDA/cell phone to mean that the application program does not allow a recipient to clear a text message and response list or stop a voice message from repeating until the recipient selects a response, *because this is the only written description associated with taking control of a PDA/cell phone*. *Id.*; see also *id.* at 8:52–57 (explaining that when the recipient selects a response, the application program “releases control” of the recipient device, clearing the display and stopping repeating the voice message). The Specification offers no support for a broader interpretation of taking control of a PDA/cell phone.

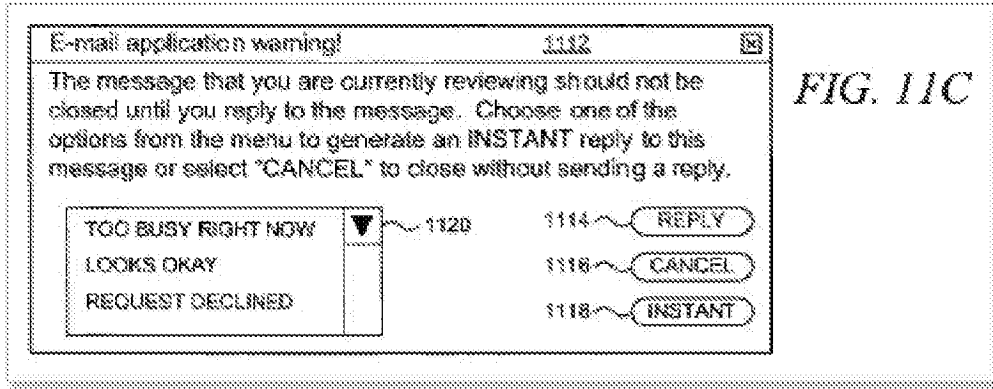
(*See id.*)

We note that a finding that Kubala teaches e-mail application 206 taking control of a PDA/cell phone would be further supported by Kubala's disclosure that "the user must reply to the received e-mail in some manner *before the e-mail application will allow the user to perform some other action.*"

(*See id.* at 52-53 (emphasis in original); *see id.* at 51.)

193. Kubala teaches or suggests the structure and Kubala and Hammond disclose the claimed function of this limitation. Again, the structure for the recited "means for controlling . . ." is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.8.) Like this structure, Kubala discloses the combination of an enhanced email application 208 and mandatory response functional unit 212 on a recipient computing device 204 (e.g., PDA) (Kubala, ¶¶33-36, FIG. 2.)

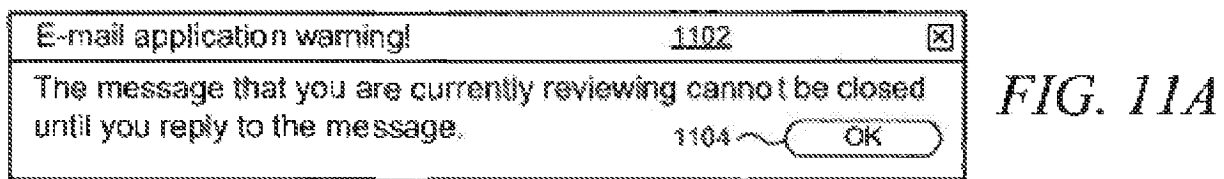
194. *First*, Kubala discloses the required function of "controlling . . . the recipient PDA/cell phone upon transmitting said automatic acknowledgment." As discussed above, Kubala discloses various embodiments for requiring a response to an "e-mail message." And Kubala explains that its disclosure is not limited to only emails; instead, according to Kubala, "an e-mail message comprise[s] various types of electronic messages, e.g., text messages, instant messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages." (*Id.*, ¶32.) Each of the embodiments that Kubala explicitly discloses and suggests "represent a different way of attempting to fulfill a request from the sender of the original message that the recipient should or *must* provide a reply message in response to the original message." (*Id.*, ¶54.) In particular, Kubala discloses that "the user *must* reply to the received e-mail message in some manner before the e-mail application will allow the user to perform some other action." (*Id.*, ¶53.) As the Board noted, these disclosures satisfy the "controlling" limitation. (*Google*, IPR2018-01079, FWD at 52-53 ("We note that a finding that Kubala teaches e-mail application 206 taking control of a PDA/cell phone would be further supported by Kubala's disclosure that 'the user must reply to the received e-mail in some manner *before the e-mail application will allow the user to perform some other action.*'") (emphasis in original) (citing Kubala, ¶53).)



(Kubala, FIG. 11C.)

195. Although the specific embodiment illustrated in Figure 11C shows that a user can “select ‘CANCEL’ to close without sending a reply,” Kubala also explicitly teaches that “the recipient can be *prevented* from closing a review of the received e-mail message, from deleting the received e-mail message, and from exiting the e-mail application until the recipient has responded to the received email message.” (Kubala, ¶9; *see also id.*, ¶55.) Moreover, Kubala also discloses that a recipient being required to respond to a mandatory-response message is a configurable feature. (*See id.*, ¶¶9, 54, 55, 59-60.) For example, the recipient may be required to respond “when the recipient first reviews the e-mail message.” (*Id.*, ¶60.)

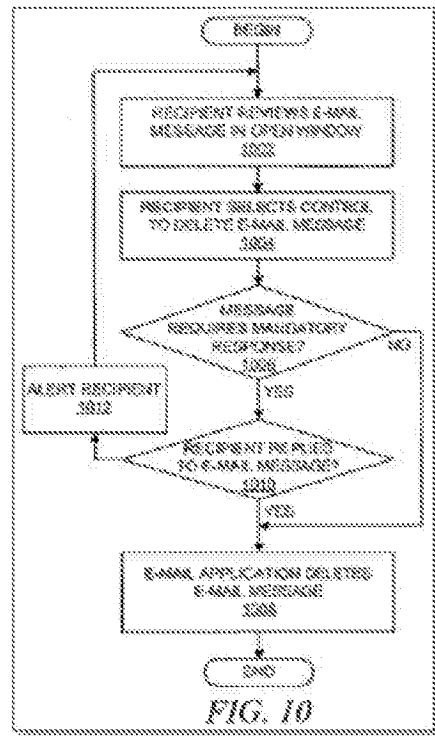
196. Kubala’s Figure 11A (reproduced below) shows an example of alerting a user by displaying a warning message 1102 when an e-mail message that contains a mandatory request flag is received, and shows that the recipient “*must provide* a reply message in response to the original message.” (*Id.*, ¶54.)



(Kubala, FIG. 11A.)

197. *Second*, Kubala teaches or suggests the claimed requirement of “causing, in cases where the force[d] message alert is a text message, the text message and a response list to be shown on the display of the recipient PDA/cell phone or causes, in cases where the forced message alert is a voice message, the voice message being periodically repeated by the speakers

of the recipient PDA/cell phone while said response list is shown on the display.” As set forth above, Kubala explains that e-mail message 214 may be a **text** message or a **voicemail or audio** message. (Kubala, ¶32.) Kubala discloses that when a reply to an email message with an associated mandatory-response flag has not been made, the enhanced email application 208 loops back to alert the recipient via 1012, as illustrated in Figure 10 (reproduced below). The looping back at 1012 has the effect of resending the message that can be a text or voice message, to the user until the user replies to the received message as required. (*See id.*, ¶53, FIG. 10.) Thus, Kubala teaches or suggests these claimed functions.

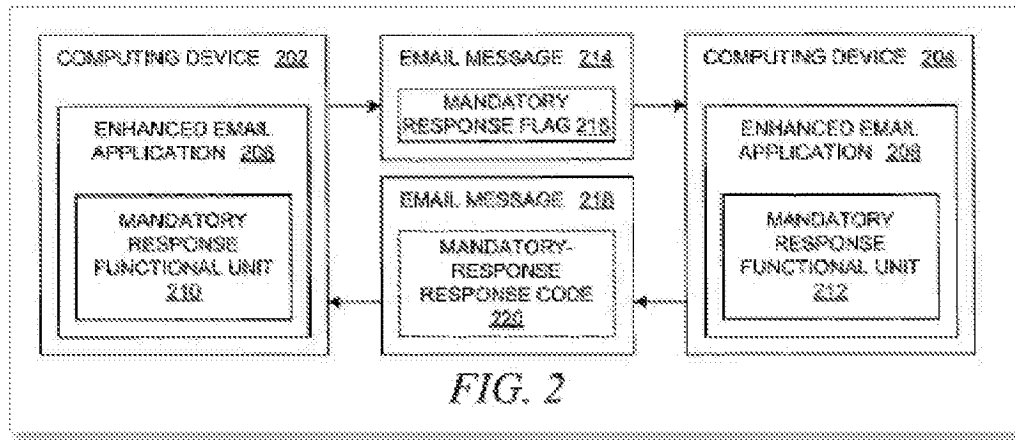


(Kubala, FIG. 10.)

198. To the extent that it is argued that Kubala does not teach this limitation, Hammond’s “system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.” (Hammond, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-6:20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.) As explained above (*see claim [1.7]* and Section X.B), a POSA would have been motivated to combine Kubala and Hammond.

[2.3] means for allowing a manual response to be manually selected from the response list or manually recorded and transmitting said manual response to the sender PDA/cell phone; and

199. Kubala discloses the structure and Kubala and Hammond disclose the claimed function of this limitation. The structure for this “means for” limitation is a software application program on a PDA that performs the recited function. (See *supra* Section VIII.F.9.) Like this structure, Kubala’s Figure 2 (reproduced below) shows that a receiving PDA (e.g., computing device 204) can receive email message 214 from a sender PDA (e.g., computing device 202). Kubala discloses an enhanced email application 208 and a mandatory-response functional unit 212 on a recipient PDA, which together are designed to receive and display a response list and also transmit a selection from the response list to computing device 202, the sender PDA, via email message 218. (See Kubala, ¶¶33-36, 50, 51, 61, FIG. 2.)



(Kubala, FIG. 2.)

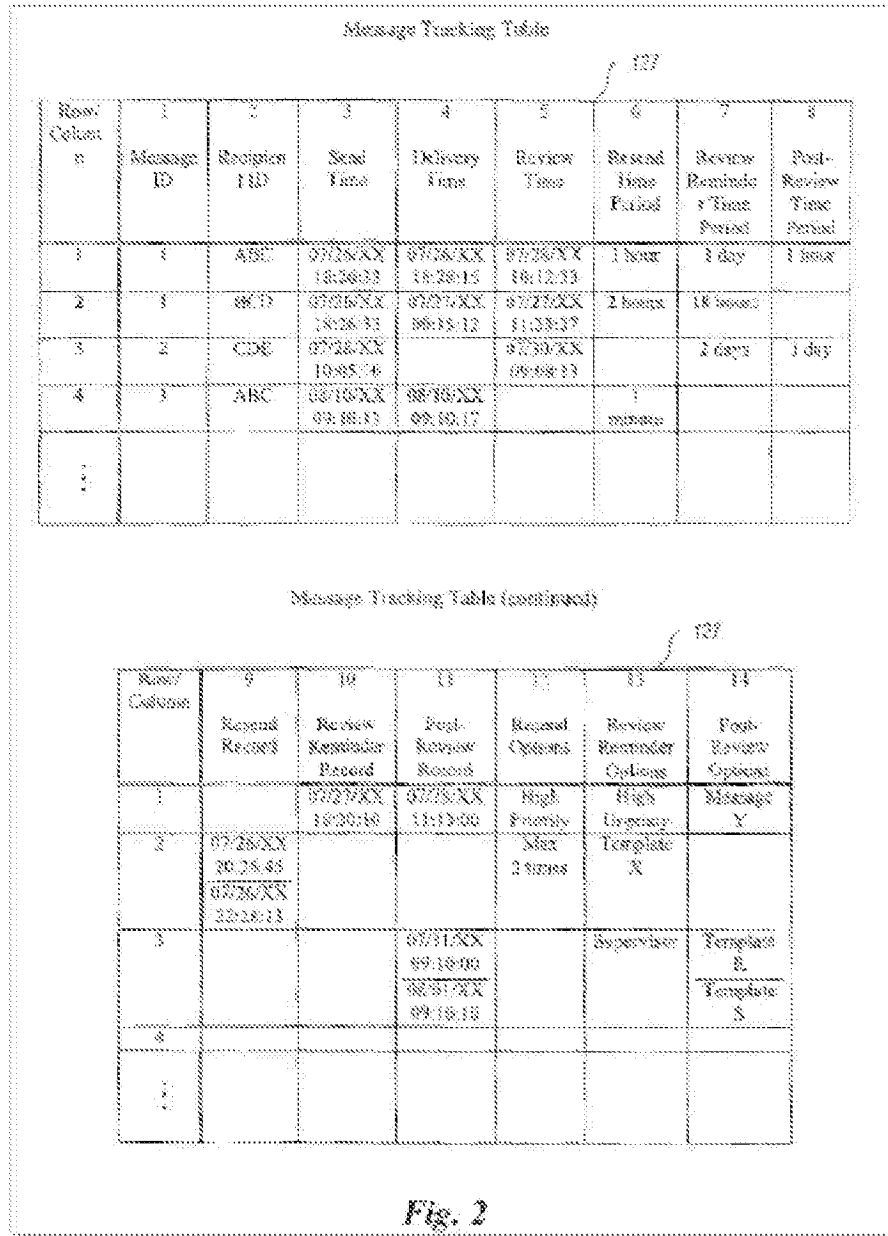
200. Kubala also discloses the required function of “allowing a manual response to be manually selected from the response list or manually recorded and transmitting said manual response to the sender PDA/cell phone.” For example, Kubala states that the receiving e-mail application 208 (shown above) may collect and record information about the manner in which the recipient responds to an e-mail message that has a mandatory-response flag. The information may include mandatory-response return-status codes included within the reply e-mail. (Kubala, ¶¶41, 50, 51, 61, FIG. 9.) Further, a POSA would know that a listing of the recorded information regarding the responses to e-mail messages were available and accessible, as that would be an

obvious element of any email system with multiple possible responses. More broadly, the need for maintaining a full inventory, tracking, and organization of responses had been well known in the email art from its earliest days, in order to create, manage, and maintain email “chains” (an ongoing record of related email communications), such as created with an email “Reply To” or “Forward To” prompt.

201. The need to both require a response when the recipient first reviews the email message, and in turn clear the message, was necessary and obvious from a POSA perspective in that recipient wireless devices in the time prior to the '970 filing had limited screen “real estate” to display information and limited memory to use in application execution. Thus, it was important to complete (e.g. clear) each piece of functionality being processed by the device in order to have as much (screen and memory) space for the next piece of application functionality, thus avoiding crowded/unintelligible screens and “memory full” issues.

202. In addition, a POSA would additionally recognize that technology to force responses by remote users of web browsers was well known in the art, such that a web browser window, once opened, would not allow any other action by the user on the computer/PDA/cell phone until the web browser window was closed. (*See Banerjee.*)

203. Hammond also provides this disclosure. Hammond discloses a “Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients.” (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond’s Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine. (*Id.*, FIGS. 5A, 5B, 10:48-11:48.)

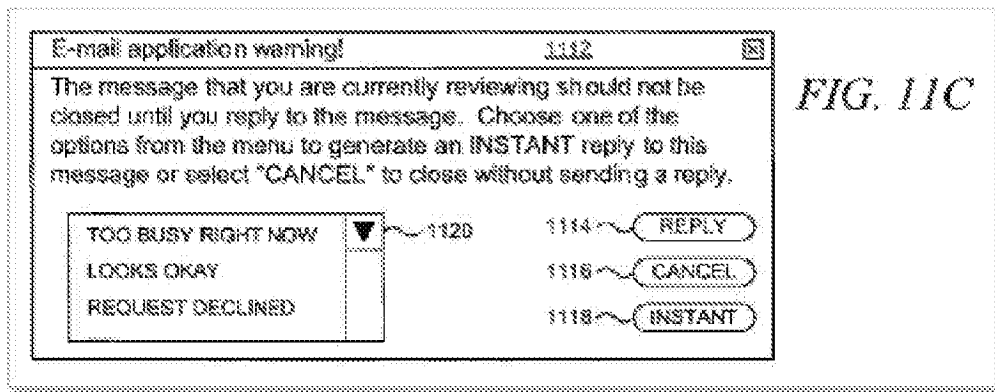


(Hammond, FIG. 2.)

204. As explained above (*see* claim [1.7] and Section X.B), a POSA would have been motivated to combine Kubala with Hammond for the obviousness of having a tracking and listing management system enabling tracking of who has or has not responded to a message requiring a response, as well as the type, nature, and or details of the response.

[2.4] means for clearing the text message and a response list from the display of the recipient PDA/cell phone or stopping the repeating voice message and clearing the response list from the display of the recipient PDA/cell phone once the manual response is transmitted.

205. Kubala teaches or suggests the features in this limitation. The structure for this “means for” limitation is a software application program on a PDA that performs the recited function. (*See supra* Section VIII.F.10.) Like this structure, Kubala discloses that a user can select a response from a menu of responses. Kubala’s use of the term “email message” includes “text messages, instant messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages.” (*Id.*; *see* Kubala, ¶¶32-33, 57, FIG. 11C (reproduced below).)



(Kubala, FIG. 11C.)

206. Kubala also teaches the required function of “clearing the text message and a response list from the display of the recipient PDA/cell phone or stopping the repeating voice message and clearing the response list from the display of the recipient PDA/cell phone once the manual response is transmitted.” For example, after selecting a response from menu 1120, a user presses the “INSTANT” button 1118, which closes window 1112, thus *clearing* or stopping the text message, the repeating voice message, and a response list from the display of the recipient PDA, and generating a reply message. (Kubala, ¶57.) Kubala explains:

“INSTANT” button 1118 *closes window 1112* and then *creates a reply e-mail message* with an automatically generated reply message in which the message body is predetermined or pre-

configured; in this example, when “INSTANT” button 1118 is selected, the e-mail application determines which *menu item within menu 1120 has been selected by the user* as a quick response to the original e-mail message, thereby fulfilling the sender's request that the *recipient is required to provide a mandatory response*.

(*Id.*; see also *id.*, ¶¶33-36, 49, 53, 54, 57, FIGS. 2, 8, 10, 11C.)

207. A POSA would have recognized that it would have been a straightforward matter of programming to cause a software process to clear a display screen and/or terminate (after beginning on a repeating schedule) a voice alert upon a certain condition (e.g. a response input from the recipient) being entered into the device (and not before). A POSA would have recognized that PDAs/cell phones would have had the ability to generate sound alerts by the time of the earliest possible priority date of the '970 patent. These sound alerts would have included voice alerts.

208. Thus, Kubala discloses this limitation.

(b) Independent Claim 10

[10.] A method of receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone, wherein the receipt, acknowledgment, and response to said forced message alert is forced by a forced message alert software application program, said method comprising the steps of:

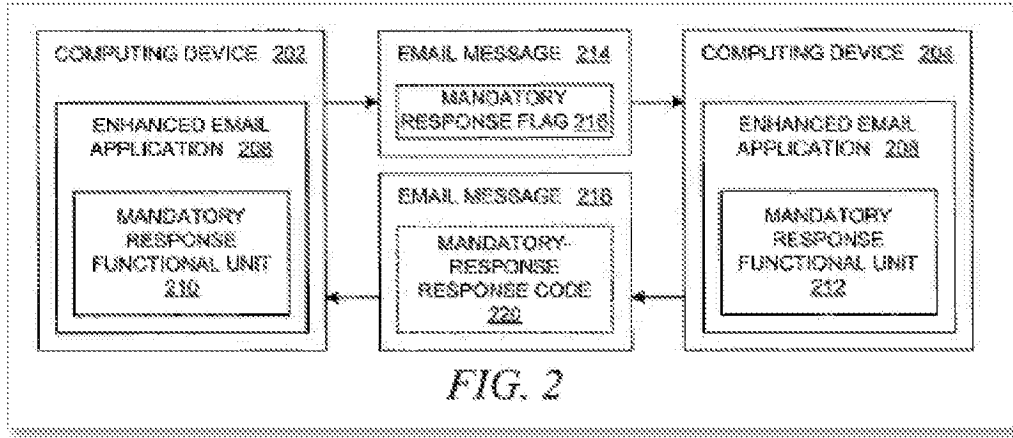
209. The primary difference between previously unchallenged claim 2 and previously challenged claim 1 is a so-called “take control” limitation of 2.2. (*See Google*, IPR2018-01079, FWD at 51-54.) The Board noted, however, that Kubala teaches this “take control” limitation. (*Id.*) The claim limitation 10.2 includes the “take control” feature and is similar to claim limitation 2.2. Thus, as set forth in more detail below for each limitation, claim 10 is obvious in view of Kubala and Hammond.

210. The claim limitations of claim 10 are similar to the claim limitations of claim 1. For example, the limitation 10.P is similar to limitations 1.P and 1.3 that were addressed above.

211. To the extent the preamble is limiting, Kubala discloses this limitation. *First*, Kubala discloses a “method of receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone” as claimed. For example, Kubala discloses a communication system for receiving, and responding to an electronic message. (*See* Kubala, (54), Abstract.) Kubala also discloses a plurality of PDAs/cell phones that communicate with each other. (*Id.*, ¶¶27, 32, 33, FIG. 1A.) In other words, one PDA/cell phone sends an electronic message (i.e., “a sender PDA/cell phone”) and another PDA/cell phone receives it (i.e., a “recipient PDA/cell phone”). A POSA would understand that one of Kubala’s Personal Digital Assistants can send an electronic message to another Personal Digital Assistant that receives the electronic message.

212. *Second*, Kubala also discloses “wherein the receipt, acknowledgment, and response to said forced message alert is forced by a forced message alert software application program” as claimed. Kubala discloses that it was known to “generate return receipts to the sender when the sender’s e-mail message is received at its intended destination or when the recipient opens the e-mail message, thereby providing an acknowledgement that a particular message has been received and/or opened.” (*Id.*, ¶6.)

213. Kubala’s Figure 2 (reproduced below) illustrates an enhanced email application 208 that includes a mandatory-response functional unit 212. The combined enhanced email application 208 and mandatory-response functional unit 212 read on the claimed “forced message alert software application program.” Referring to Figure 2, Kubala explains that the mandatory-response functional unit 212 provides an email message 218 in response to an email message 214 with a mandatory-response flag 216. As discussed above, the mandatory-response flag 216 attached to the email message 214 reads on the claimed “forced message alert.” (*Id.*, ¶35; *see also id.*, ¶¶13, 36; *see also* Section X.B, claim [1.5].)



(Kubala, FIG. 2.)

214. Kubala’s Figure 11A (reproduced below) shows an example of alerting a user by displaying a warning message 1102 when an e-mail message that contains a mandatory request flag is received, and that the recipient “**must provide** a reply message in response to the original message.” (Kubala, ¶54.) This demonstrates that the response to said forced message alert is forced by the combination of Kubala’s enhanced email application 208 and mandatory response functional unit 212.

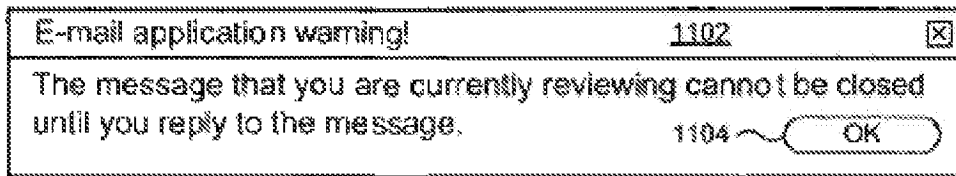


FIG. 11A

(Kubala, FIG. 11A.)

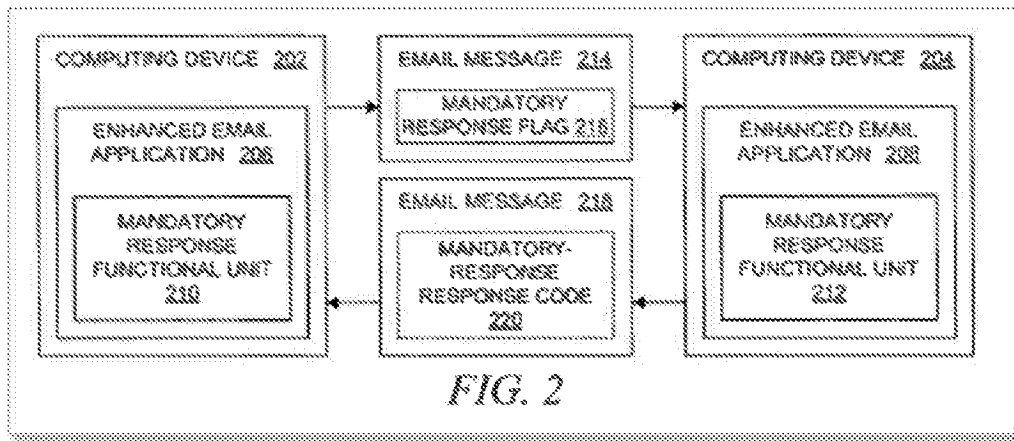
215. Kubala therefore expressly teaches or suggests this limitation.

[10.1] receiving an electronically transmitted electronic message; identifying said electronic message as a forced message alert, wherein said forced message alert comprises of a voice or text message and a forced message alert application software packet, which triggers the activation of the forced message alert software application program within the recipient PDA/cell phone;

216. The limitation 10.1 is similar to limitation 1.5 that was addressed above. Kubala discloses “receiving an electronically transmitted electronic message; identifying said electronic

message as a forced message alert, wherein said forced message alert comprises of a voice or text message and a forced message alert application software packet, which triggers the activation of the forced message alert software application program within the recipient PDA/cell phone” as claimed.

217. For example, Kubala discloses the claimed forced message alert software application program as the combination of an enhanced email application 208 and mandatory response functional unit 212, on a receiving computing device 204 (e.g., receiving PDA) that receives email message 214, as illustrated in Figure 2 (reproduced below). (See Kubala, ¶¶33-36.)



(Kubala, FIG. 2.)

218. The claimed “forced message alert [that] comprises of a voice or text message and a forced message alert application software packet” is met by Kubala’s disclosure of email message 214 and the mandatory response flag 216. Kubala explains that e-mail message 214 may be a text message, voicemail message, audio message, video message, or other type of message. (Kubala, ¶32; see also Section X.B, claim [1.5].) Kubala also explains that “[m]andatory response flag 216 **acts as an indicator** . . . to e-mail application 208 that e-mail message 214 should be handled as an important message with a **required mandatory** response. Mandatory response flag 216 may be implemented in a variety of data formats” (*Id.*, ¶35; see also *id.*, ¶¶36-41, FIGS. 3, 4.) Kubala therefore expressly teaches or suggests this limitation.

[10.2] transmitting an automatic acknowledgment of receipt to the sender PDA/cell phone, which triggers the forced message alert software application program to take control of the recipient PDA/cell phone and show the content of the text message and a required response list on the display recipient PDA/cell phone or to repeat audibly the content of the voice message on the speakers of the recipient PDA/cell phone and show the required response list on the display recipient PDA/cell phone; and

219. The limitation 10.2 is similar to limitations 1.4 and 1.8 that were addressed above. Limitation 10.2 also and includes a “take control” limitation.

220. In the Final Written Decision, the Board states that “Kubala teaches e-mail application 206 *taking control* of a PDA/cell phone.” (*See Google*, IPR2018-01079, FWD at 52.):

In light of the claim language and Specification, we would interpret the forced message alert software application program “*effectively tak[ing] control*” of a PDA/cell phone to mean that the application program does not allow a recipient to clear a text message and response list or stop a voice message from repeating until the recipient selects a response, *because this is the only written description associated with taking control of a PDA/cell phone. Id.*; see also *id.* at 8:52–57 (explaining that when the recipient selects a response, the application program “releases control” of the recipient device, clearing the display and stopping repeating the voice message). The Specification offers no support for a broader interpretation of taking control of a PDA/cell phone.

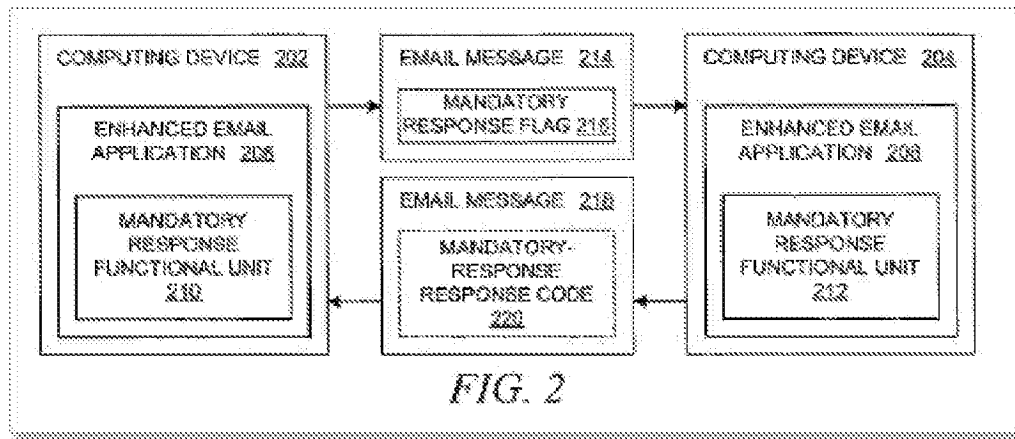
(*See id.*)

We note that a finding that Kubala teaches e-mail application 206 taking control of a PDA/cell phone would be further supported by Kubala’s disclosure that “the user must reply to the received e-mail in some manner *before the e-mail application will allow the user to perform some other action.*”

(See *id.* at 52-53 (emphasis in original); see *id.* at 51.)

221. Kubala and Hammond disclose this limitation. *First*, Kubala discloses “transmitting an automatic acknowledgment of receipt to the sender PDA/cell phone” as claimed. For example, Kubala discloses that it was known to “generate return receipts to the sender when the sender’s e-mail message is received at its intended destination or when the recipient opens the e-mail message, thereby providing an acknowledgement that a particular message has been received and/or opened.” (Kubala, ¶6.)

222. *Second*, Kubala discloses “triggers the forced message alert software application program to take control of the recipient PDA/cell phone” as claimed. For example, Kubala’s Figure 2 (reproduced below) illustrates an enhanced email application 208 that includes a mandatory-response functional unit 212 on computing device 204. The combined enhanced email application 208 and mandatory-response functional unit 212 read on the claimed “forced message alert software application program to take control of the recipient PDA/cell phone.” Referring to Figure 2, Kubala explains that the mandatory-response functional unit 212 provides an email message 218 in response to an email message 214 with a mandatory-response flag 216. (*Id.*, ¶35; see also *id.*, ¶¶13, 33, 36.)

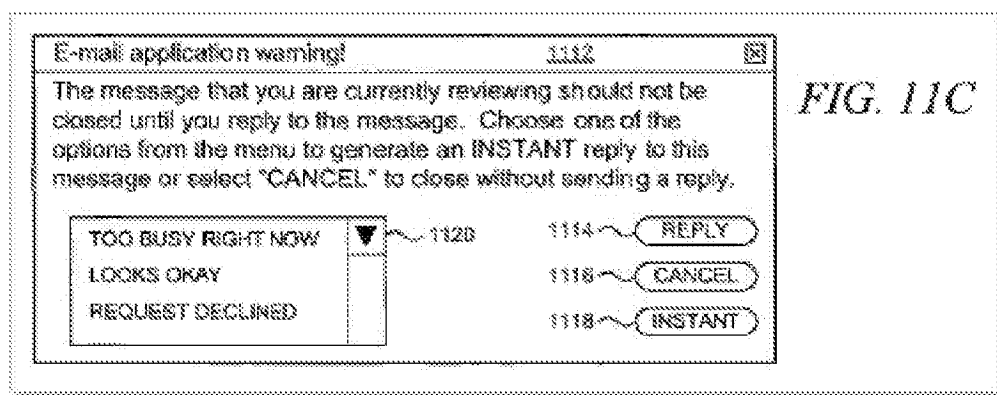


(Kubala, FIG. 2.)

223. Each of the embodiments that Kubala explicitly discloses and suggests “represent a different way of attempting to fulfill a request from the sender of the original message that the recipient should or *must* provide a reply message in response to the original message.” (Kubala, ¶54.) In particular, Kubala discloses that “the user *must* reply to the received e-mail message in some manner before the e-mail application will allow the user to perform some other action.”

(*Id.*, ¶53.) As the Board noted, these disclosures satisfy the “controlling” limitation. (*Google*, IPR2018-01079, FWD at 52-53 (“We note that a finding that Kubala teaches e-mail application 206 taking control of a PDA/cell phone would be further supported by Kubala’s disclosure that ‘the user must reply to the received e-mail in some manner *before the e-mail application will allow the user to perform some other action.*’”) (emphasis in original) (citing Kubala, ¶53).)

224. *Third*, Kubala also discloses “show[ing] the content of the text message and a required response list on the display recipient PDA/cell phone” as claimed. Kubala’s Figure 11C (reproduced below) shows an example of displaying the content of a message and a menu 1120 of possible responses to a sender’s message.

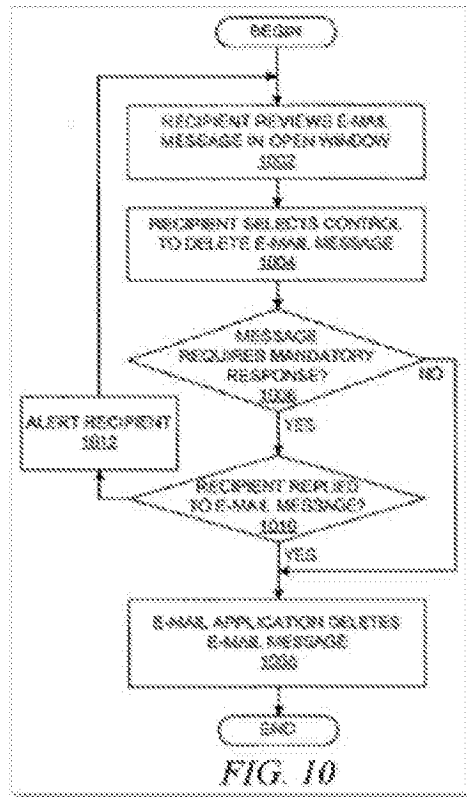


(Kubala, FIG. 11C.)

225. *Fourth*, Kubala also discloses “to repeat audibly the content of the voice message on the speakers of the recipient PDA/cell phone and show the required response list on the display recipient PDA/cell phone” as claimed. Kubala explains that e-mail message 214 may be a text message, or a voicemail or audio message. (Kubala, ¶32.) And Kubala states that a data processing system such as a PDA can include an “audio output system.” (*Id.*, ¶29.) Kubala discloses that when a reply to an email message with an associated mandatory-response flag has not been made, the enhanced email application 208 loops back to alert the recipient via 1012, as illustrated in Figure 10 (reproduced below). The looping back at 1012 has the effect of resending the message to the user until the user replies to the received e-mail message as required. (*See id.*, ¶53, FIG. 10.)

226. While a POSA would recognize that a key purpose of forced response functionality would be to contain costs and improve efficiencies as described earlier, a POSA would also recognize that there would be situations where a response is not forthcoming,

particularly in circumstances where the recipient has never opened the email. Such occurrences would be recognized to be fairly common, particularly for recipients who receive large volumes of emails. As such a POSA would recognize the need to resend the original email. One of the most efficient ways of performing this otherwise inefficient activity would be to periodically schedule a response check and, if needed, an associated resend, with the periodic element being a certain period of time, presumably configurable to reflect what the sender considered a reasonable amount of time to wait in the circumstance before sending again.



(Kubala, FIG. 10.)

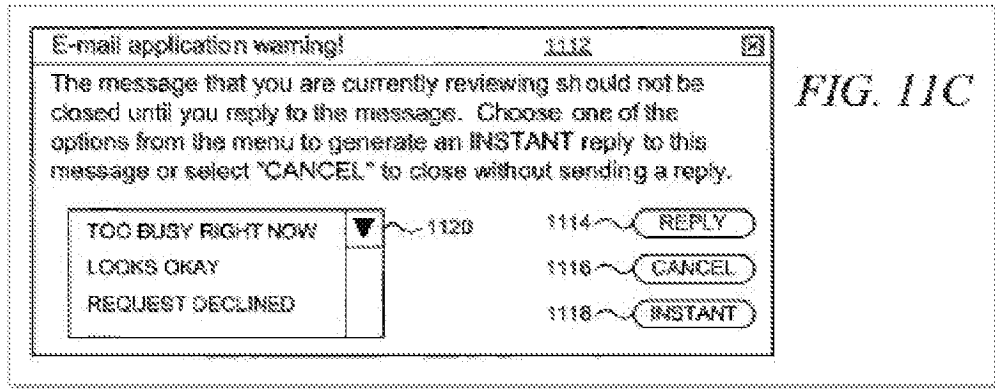
227. Kubala therefore expressly teaches or suggests this limitation. To the extent that it is argued that Kubala does not teach this limitation, Hammond’s “system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.” (Hammond, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-6:20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.) As explained above, (*see claim [1.8] and Section X.B*), a POSA would have been

motivated to combine Kubala and Hammond. Thus, Kubala and Hammond disclose this limitation.

[10.3] transmitting a selected required response from the response list in order to allow the message required response list to be cleared from the recipient's cell phone display, whether said selected response is a chosen option from the response list, causing the forced message alert software to release control of the recipient PDA/cell phone and stop showing the content of the text message and a response list on the display recipient PDA/cell phone and or stop repeating the content of the voice message on the speakers of the recipient PDA/cell phone;

228. The limitation 10.3 is similar to limitation 1.9 that was addressed above, and claim limitation 6.9 that was noted in the Final Written Decision as being taught by Kubala. (*See Google, IPR2018-01079, FWD at 67-68.*)

229. Kubala discloses this claim limitation. *First*, Kubala discloses “transmitting a selected required response from the response list in order to allow the message required response list to be cleared from the recipient's cell phone display, whether said selected response is a chosen option from the response list, causing the forced message alert software to . . . stop showing the content of the text message and a response list on the display recipient PDA/cell phone and or stop repeating the content of the voice message on the speakers of the recipient PDA/cell phone” as claimed. For example, Kubala discloses that a user can select a response from a menu of responses. Kubala's use of the term “email message” includes “text messages, instant messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages.” (*See Kubala, ¶¶32-33, 57, FIG. 11C (reproduced below).*)



(Kubala, FIG. 11C.)

230. After selecting a response from menu 1120, a user presses the “INSTANT” button 1118, which closes window 1112, thus *clearing* or stopping the text message, the repeating voice message, and a response list from the display of the recipient PDA, and generating a reply message. (Kubala, ¶57.) Kubala explains:

“INSTANT” button 1118 *closes window 1112* and then *creates a reply e-mail message* with an automatically generated reply message in which the message body is predetermined or pre-configured; in this example, when “INSTANT” button 1118 is selected, the e-mail application determines which *menu item within menu 1120 has been selected by the user* as a quick response to the original e-mail message, thereby fulfilling the sender's request that the *recipient is required to provide a mandatory response*.

(*Id.*; see also *id.*, ¶¶22, 33-36, 47, 49, 53-55, 60, FIGS. 2, 8, 10, 11C.)

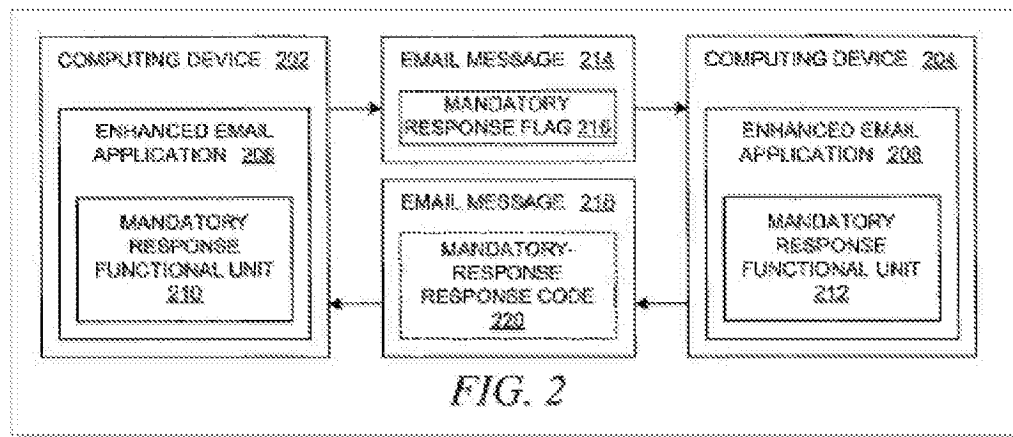
231. A POSA would have recognized that it would have been a straightforward matter of programming to cause a software process to clear a display screen and/or terminate (after beginning on a repeating schedule) a voice alert upon a certain condition (e.g. a response input from the recipient) being entered into the device (and not before). A POSA would have recognized that PDAs/cell phones would have had the ability to generate sound alerts by the time of the earliest possible priority date of the '970 patent. These sound alerts would have included voice alerts.

232. *Second*, Kubala discloses “causing the forced message alert software to release control of the recipient PDA/cell phone” as claimed. For example, each of the embodiments that Kubala explicitly discloses and suggests “represent[s] a different way of attempting to fulfill a request from the sender of the original message that the recipient should or *must* provide a reply message in response to the original message.” (*Id.*, ¶54.) In particular, Kubala discloses that “the user *must* reply to the received e-mail message in some manner before the e-mail application will allow the user to perform some other action.” (*Id.*, ¶53.) As the Board noted, these disclosures satisfy the “controlling” limitation. (*Google*, IPR2018-01079, FWD at 52-53 (“We note that a finding that Kubala teaches e-mail application 206 taking control of a PDA/cell phone would be further supported by Kubala’s disclosure that ‘the user must reply to the received e-mail in some manner *before the e-mail application will allow the user to perform some other action.*’”) (emphasis in original) (citing Kubala, ¶53).) Accordingly, after the user has replied to the received email, it follows that Kubala’s e-mail application releases control of the PDA/cell phone to allow the user to perform some other action.

[10.4] displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone; and

233. The limitation 10.4 is similar to limitation 1.9 that was addressed above. Kubala and Hammond disclose this limitation. Kubala discloses “displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone” as claimed. Kubala discloses an enhanced email application 206, 208 and a mandatory-response functional unit 210, 212 on a PDA, which together are designed to receive and display a listing of which recipient PDA/cell phone (e.g., computing device 204) has transmitted a manual response to the forced message alert, and details the response from each recipient PDA/cell phone that responded. (*See* Kubala, ¶¶33-36, 50, 51, 61, FIG. 2.)

234. Kubala’s Figure 2 (reproduced below) shows that a sending PDA (e.g., computing device 202) can receive and display a response (e.g., email message 218) from a recipient PDA (e.g., computing device 204). (*See id.*, ¶¶26-41.) This disclosure from Kubala meets the claimed requirement “displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone.”

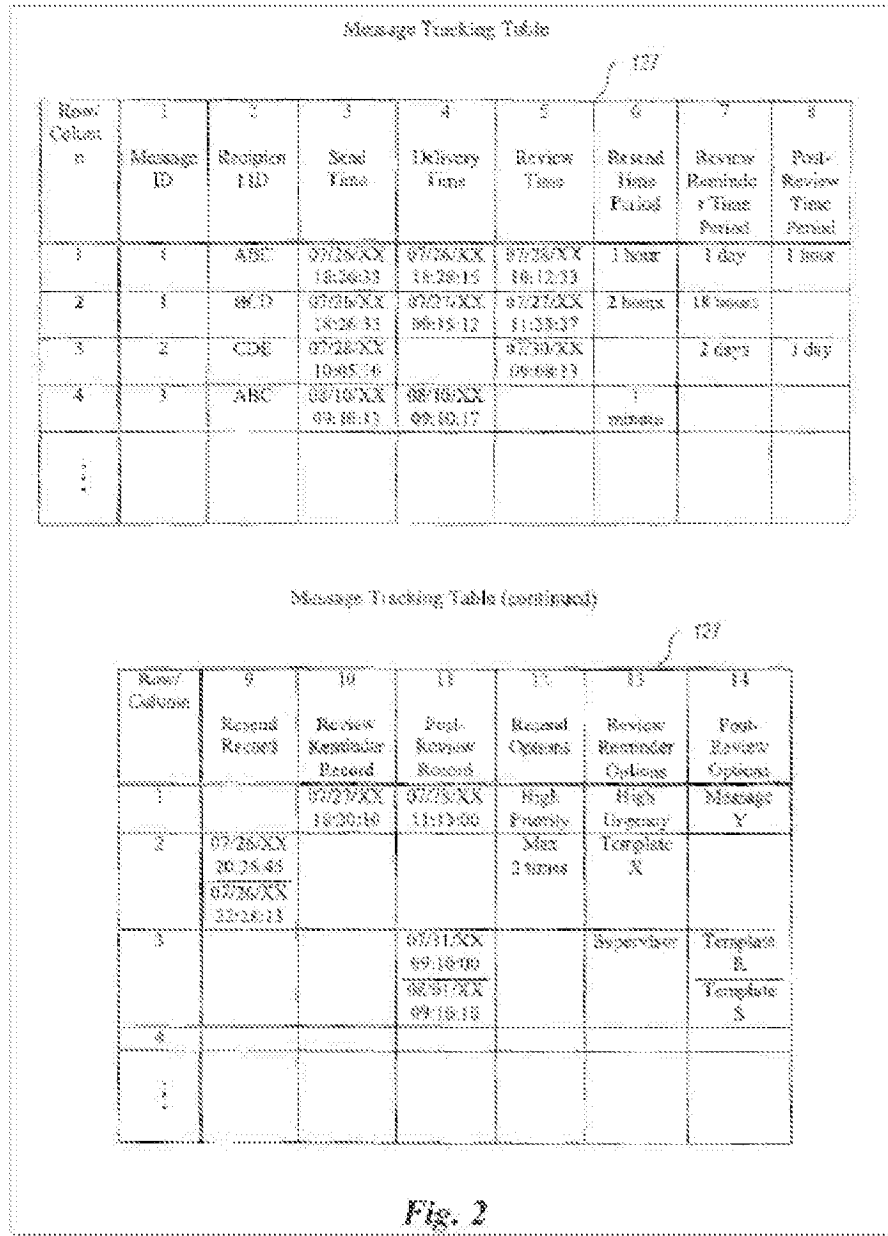


(Kubala, FIG. 2.)

235. Kubala's disclosure in connection with Figure 2 meets the claimed requirement to receive and display details of the response from each recipient PDA/cell phone that responded. A POSA would recognize such a tracking/auditing capability would need to be comprehensive, e.g. each/all recipients responses would need to be tracked/audited to be consistent with the motivations behind requiring a forced response.

236. A POSA would recognize that the function of tracking or auditing, as discussed earlier, would not be limited to just a "Yes" or "Ack"-type acknowledgement. This functionality could also provide more detail to gain further insight into the detailed nature of the confirmation of receipt, particularly if there are numerous options possible in association with such a confirmation.

237. Hammond also provides this disclosure. Hammond discloses "displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone" as claimed. For example, Hammond discloses a "Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients." (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond's Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine. (*Id.*, FIGS. 5A, 5B, 10:48-11:48.)



(Hammond, FIG. 2.)

238. A POSA would know that a listing of the recorded information regarding the responses to e-mail messages were available and accessible, as that would be an obvious element of any email system with multiple possible responses. More broadly, the need for maintaining a full inventory, tracking, and organization of responses had been well known in the email art from its earliest days, in order to create, manage, and maintain email “chains” (an ongoing record of

related email communications), such as created with an email “Reply To” or “Forward To” prompt.

239. A POSA would have been motivated to combine Hammond with Kubala based on the disclosures in the references themselves, particularly as they relate to exchanging and tracking recipient-device acknowledgements. (*See supra* Section X.B.) Again, Kubala generally discloses that it was known to provide acknowledgement receipts, (*see* Kubala, ¶6), and record details about the responses to the emails with mandatory-response flags. Hammond also discloses acknowledgement receipts and how to track these acknowledgement receipts. Because these disclosures in Kubala and Hammond are all directed to tracking responses to mandatory-responses messages, these disclosures would have motivated a POSA to combine Hammond and Kubala.

240. A POSA would recognize that a system that requires a data element (e.g. a response to an email) to be produced and/or a process element to be executed (tracking receipts) would in turn require a way of monitoring, tracking, or otherwise keeping a record of such data/process elements to ensure compliance or otherwise provide an audit-type capability common to such functions.

[10.5] providing a list of the recipient PDA/cell phones have automatically acknowledged receipt of a forced alert message and their response to the forced alert message.

241. The limitation 10.5 is similar to limitation 1.7 that was addressed above. Kubala and Hammond disclose this limitation. Kubala discloses “providing a list of the recipient PDA/cell phones have automatically acknowledged receipt of a forced alert message and their response to the forced alert message” as claimed. For example, Kubala discloses an enhanced email application 206, 208 that includes mandatory-response functional unit 210, 212 on a PDA. (*See* Kubala, ¶¶33-36, FIG. 2.) Kubala further explains that it was known to automatically acknowledge receipt of an electronic message. (*See id.*, ¶6.) In addition, Kubala explicitly discloses that the receiving e-mail application may collect and record information about the manner in which the recipient responds to an e-mail message that has a mandatory-response flag. The information may include mandatory-response return-status codes included within the reply e-mail. (*Id.*, ¶¶50, 51, 61, FIG. 9.) A POSA would have known that a listing of the recorded

information regarding the responses or automatic acknowledgements, were accessible (e.g., viewable on their PDA/cell phone.) Having the recorded information displayed would be an obvious element of any email system with multiple possible responses. More broadly, the need for maintaining a full inventory, tracking, and organization of responses had been well known in the email art from its earliest days, in order to create, manage, and maintain email “chains” (an ongoing record of related email communications), such as created with an email “Reply To” or “Forward To” prompt.

242. To the extent it is argued that Kubala does not teach this limitation, Hammond also discloses “providing a list of the recipient PDA/cell phones have automatically acknowledged receipt of a forced alert message and their response to the forced alert message” as claimed. For example, Hammond states that “the recipient computer systems provide receipts when messages are received and when messages are reviewed” (Hammond, 5:20-23; *see also id.*, Abstract, 2:11-18.) These acknowledgement receipts are tracked in Hammond’s Message Tracking Tables, as depicted in Figure 2 (reproduced below), and are described throughout the specification. (*See id.*, 3:1-4:28, 5:31-37, 10:6-22, 6:56-8:45.)

Message Tracking Table

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Row Column	1 Message ID	2 Recipient ID	3 Send Time	4 Delivery Time	5 Review Time	6 Resend Time Period	7 Review Reminder Time Period	8 Post- Review Time Period
1	1	ABC	07/26/XX 18:26:53	07/26/XX 18:28:15	07/28/XX 10:12:33	1 hour	1 day	1 hour
2	1	BCD	07/26/XX 18:26:53	07/27/XX 00:15:12	07/27/XX 11:35:37	2 hours	18 hours	
3	2	CDE	07/28/XX 16:05:10		07/30/XX 09:08:13		2 days	1 day
4	3	ABC	08/10/XX 09:10:13	08/10/XX 09:10:17		1 minute		
⋮								

Message Tracking Table (continued)

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Row Column	9 Resend Record	10 Review Reminder Record	11 Post- Review Records	12 Resend Options	13 Review Reminder Options	14 Post- Review Options
1		07/27/XX 18:30:10	07/28/XX 11:13:00	High Priority	High Urgency	Message Y
2	07/26/XX 20:26:45 07/26/XX 21:28:13			Max 3 times	Template X	
3			07/31/XX 09:10:00 08/01/XX 09:10:10		Supervisor	Template R Template S
4						
⋮						

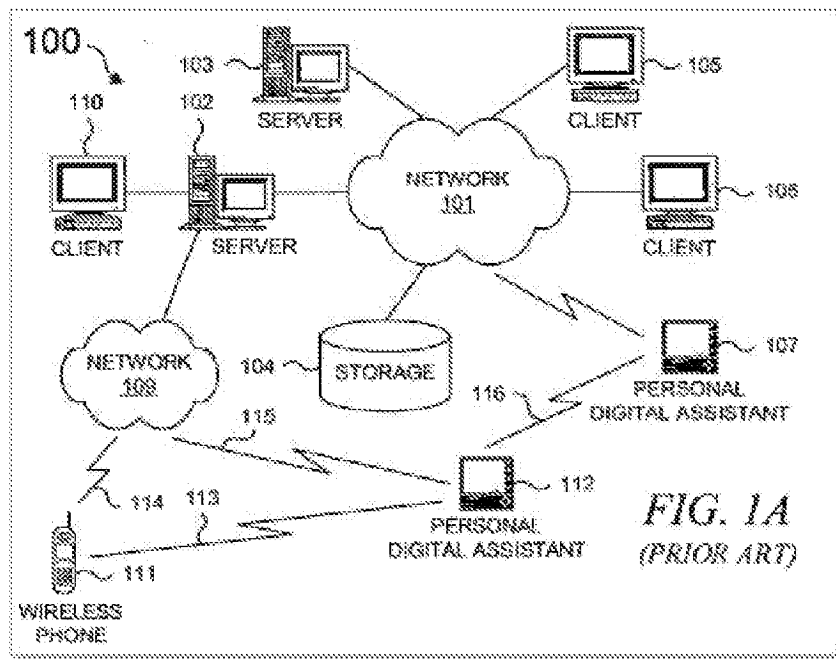
(Hammond, FIG. 2.)

243. As explained above, (*see* claim [10.4] and Section X.B), a POSA would have been motivated to combine Kubala with Hammond because of the desire for a tracking and listing management system enabling tracking of who has or has not responded to a message requiring a response as well as the type, nature, and or details of the response.

(c) Dependent Claim 11

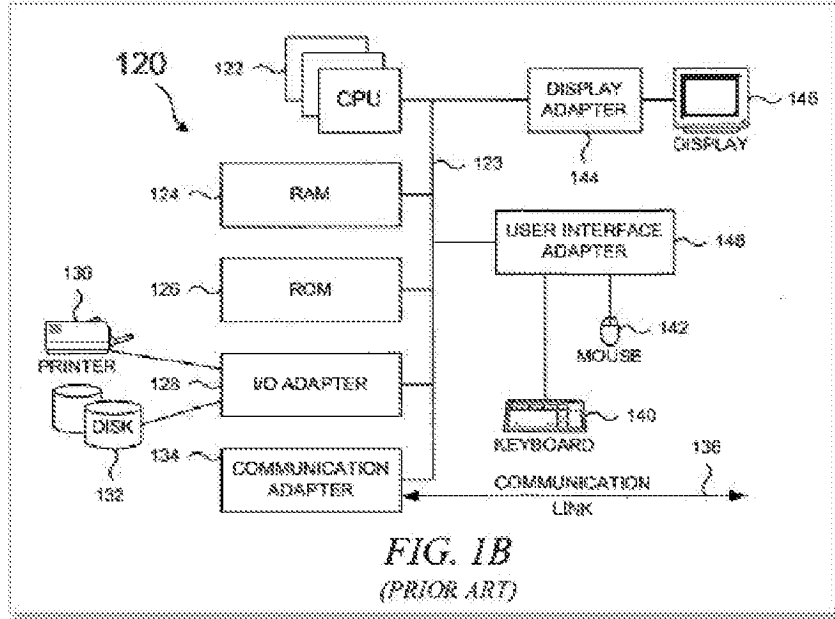
[11.] The method as in claim 10, wherein each PDA/cell phone within a predetermined communication network is similarly equipped and has the forced message alert software application program loaded on it.

244. Kubala discloses this limitation. Kubala discloses “wherein each PDA/cell phone within a predetermined communication network is similarly equipped and has the forced message alert software application program loaded on it” as claimed. For example, the predetermined network of participants is shown in Kubala’s Figure 1A (reproduced below), which includes a plurality of personal digital assistants 107, 112. (See Kubala, ¶¶26-27.)



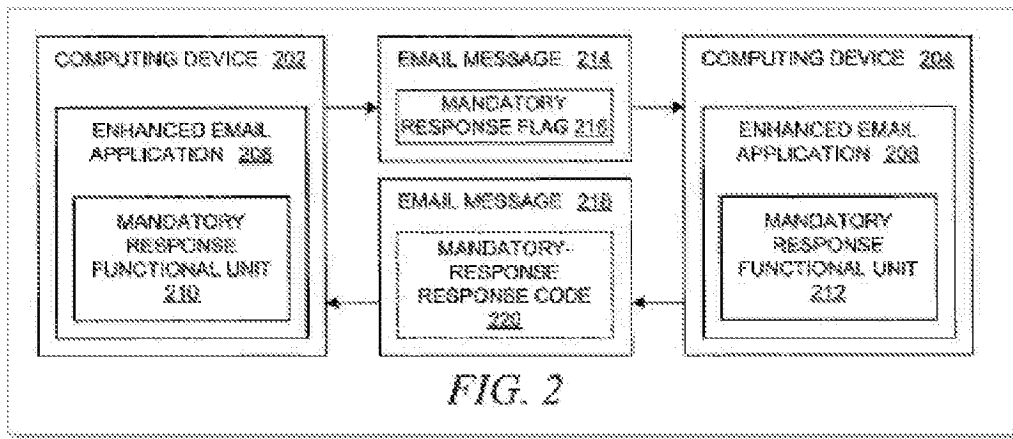
(Kubala, FIG. 1A.)

245. Kubala’s Figure 1B (reproduced below) illustrates that each PDA/cell phone includes at least one CPU 122, a memory 124, 126, and a user interface adapter 148, which Kubala describes as being coupled to a touch-screen display. (See Kubala, ¶¶29-30.)



(Kubala, FIG. 1B.)

246. Kubala's Figure 2 (reproduced below) illustrates an enhanced email application 206, 208 that includes a mandatory-response functional unit 210, 212. The combined enhanced email application 206, 208 and mandatory-response functional unit 210, 212 read on the claimed "forced message alert software application program loaded on" computing device 202, 204 that can be a PDA/cell phone. (Kubala, ¶35; *see also id.*, ¶¶13, 33, 36.)



(Kubala, FIG. 2.)

(d) Dependent Claim 12

[12.] The method as in claim 10, wherein said forced message alert application software packet contains a response list, wherein said response list is a default list embedded in the forced message alert software application program.

247. This claim adds the limitation that the response list is “a default response list.” Kubala discloses this limitation. Kubala teaches or suggests at least a “forced message alert application software packet contains a response list, wherein said response list is a default list embedded in the forced message alert software application program” as claimed. For example, Kubala says that “[t]he text strings that are used as menu items may be obtained in a variety of manners.” (Kubala, ¶57.) Furthermore, Kubala’s Figure 11C includes a list of possible default responses, including “too busy right now,” “looks okay,” and “requested declined.” (*Id.*, ¶57, FIG. 11C.) These are default responses. Kubala also explains that the text strings may be “required and standardized within a data format specification, e.g., in a standard similar to RFC 2822.” (*Id.*, ¶57; *see also id.*, ¶60.) Kubala’s disclosure of these types of menu items teaches or suggests the claimed “default response list.”

248. A POSA would have recognized the utility of and need for a logical (e.g. default) menu of responses as an efficient way of managing such responses as well as designing additional application functionality around a limited set of possible responses. Such a response list, particularly with easily used selection mechanisms like radio buttons, would also encourage and facilitate faster responses by making it easy for the recipient to respond with a single click, versus typing out a custom message.

(e) Dependent Claim 13

[13.] The method as in claim 10, wherein said forced message alert application software packet contains a response list, wherein said response list is a custom response list that is created at the time the specific forced message alert is created on the sender PDA/cell phone.

249. This claim adds the limitation that the response list is “a custom response list that is created at the time the specific forced message alert is created on the sender PDA/cell phone.” Kubala discloses this limitation. Kubala discloses “wherein said forced message alert application

software packet contains a response list, wherein said response list is a custom response list that is created at the time the specific forced message alert is created on the sender PDA/cell phone” as claimed. Again, Kubala says that “[t]he text strings that are used as menu items may be obtained in a variety of manners.” (Kubala, ¶57.) In one example, the text strings are “configurable”:

[T]he text strings may be *configurable* through the enhanced e-mail application by allowing user-specifiable or system-administrator-specifiable parameters. As another alternative, the text strings may be extracted from the original e-mail message that was received from the sender, in which case the text strings may have been *configured* as user-specifiable or system-administrator-specifiable parameters in the sender's instance of the enhanced e-mail application.

(Kubala, ¶57; *see also id.*, ¶¶57, 60.) Kubala’s disclosure of “configurable” menu items teaches or suggests the claimed “custom response list.”

250. The ability to provide custom, configurable lists would have been obvious to a POSA, since while the ability to have generic lists of possible responses may be useful in some use cases, having the specifics of the list would also provide value-adding information for others. In addition, recipients could easily answer a forced message if the list of possible responses were tailored to the specific situation or use cases of the sender and recipient(s) involved. It would also reduce the ambiguity possible of using one “standardized” response list for any or all types of messages.

* * *

251. In summary, Kubala and Hammond teach each and every feature of claims 2 and 10-13. Accordingly, claims 2 and 10-13 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Kubala in view of Hammond.

C. SNQ2: Claims 2 and 1-13 are Obvious over Hammond in view of Johnson further in view of Pepe

252. Hammond in view of Johnson and further in view of Pepe raises an SNQ as to whether claims 2 and 10-13 are unpatentable as being obvious under 35 U.S.C. § 103.

- 1. Hammond and Johnson each disclose a “forced message alert software packet as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 10.**

253. The P.T.A.B. held in the FWD of IPR2018-01079 that the combination of Hammond, Johnson, and Pepe failed to render obvious claims 1 and 3-9, but only because the Petition, (*Google*, IPR2018-01079, Pet.) did not distinctly identify where Hammond or Johnson discloses a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 6.

254. In the reexamination Request, however, the explanations of the portions of Hammond and Johnson that disclose a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 10 are included. Hammond, Johnson, and Pepe also teach or suggest all of the limitations of claims 2 and 10-13, including the “take control” limitation. Thus, as shown below in more detail, claims 2 and 10-13 are also obvious in view of the combination of Hammond, Johnson, and Pepe.

- 2. A skilled artisan would have been motivated to combine Hammond, Johnson, and Pepe to arrive at the claimed subject matter.**

255. A POSA would have been motivated to combine Hammond and Johnson because they are both directed to the same field of endeavor and attempt to solve the same problem—i.e., to help ensure that important electronic messages receive timely responses.

256. For example, Hammond explains that even if an electronic message is successfully delivered to a recipient, it is often important that the recipient review the electronic message within a certain amount of time, and transmission systems typically do not ensure that a recipient has reviewed a successfully delivered message. Some systems provide a delivery receipt or a review receipt to provide notification when delivery or review of an electronic message has occurred. “However, **the sender has no automatic means of prompting or convincing the recipient to review the electronic message.** Finally, **if it desirable that some action be automatically performed after a recipient has reviewed an electronic message (e.g., sending a follow-up message), there is no automatic means of providing this functionality.**” (Hammond, 1:41-63.)

257. Like Hammond, Johnson also identified the timely response to important emails as a problem: “Presently available acknowledgement systems may indicate that an electronic mail object has been sent and received by a recipient, but do not provide a mechanism to ensure or compel a reply by the recipient.” (Johnson, 1:58-61.) Thus, a POSA would have been motivated to combine the teachings of Hammond and Johnson because they identified a similar problem.

258. As described in Sections IX.A-IX.E above, by 1994 the trend for wireless personal communications made wireless communications devices with touchscreens and styluses available. (See Simon, 4.) Accordingly, software applications on cell phones and/or PDAs became widely available by 1998. A POSA would have been motivated to combine Pepe with Hammond’s system improved by Johnson at least based on the teachings in these references, to enable users to use the system of Hammond improved by Johnson on their cell phones and/or PDAs. And the combination of these references yielded predictable results.

259. Accordingly, a POSA would have been motivated to combine Pepe with Hammond and Johnson at least based on the teachings in these references. In addition, because Hammond, Johnson, and Pepe are all directed to mobile devices that can send, receive, and track mandatory-response messages, the combination of Hammond, Johnson, and Pepe would have been an obvious design choice. (See *SDI Techs., Inc.*, IPR2013-00350, Paper 36 at 26 (holding that the use and arrangement of “known elements would have been an obvious matter of design choice”).) Because Pepe merely discloses details of a PDA that are suggested by Hammond and Johnson, this combination would not “result in a difference in function or give unexpected results,” so this combination, which is recited in the claims, is unpatentable as an obvious design choice. (See *In re Rice*, 341 F.2d at 314.) The combination of Hammond, Johnson, and Pepe further “represents no more than ‘the predictable use of prior art elements according to their established functions,’” of sending mandatory-response emails and tracking responses to such emails, which is an obvious combination “as a matter of law.” (*Wyers*, 616 F.3d at 1245 (quoting *KSR*, 550 U.S. at 417); see also *Ball Aerosol*, 555 F.3d at 993 (“predictable variation” was obvious as a matter of law).)

3. The combination of Hammond, Johnson, and Pepe renders claims 2 and 10-13 obvious.

(a) Dependent Claim 2

260. Hammond, Johnson, and Pepe teach or suggest each and every feature recited in dependent claim 2 and independent claim 1 from which claim 2 depends. A POSA would have been motivated to combine Hammond, Johnson, and Pepe for the reasons set forth above. Thus, dependent claim 2 is obvious over Hammond, Johnson, and Pepe.

[1.P] A communication system for transmitting, receiving, confirming receipt, and responding to an electronic message, comprising:
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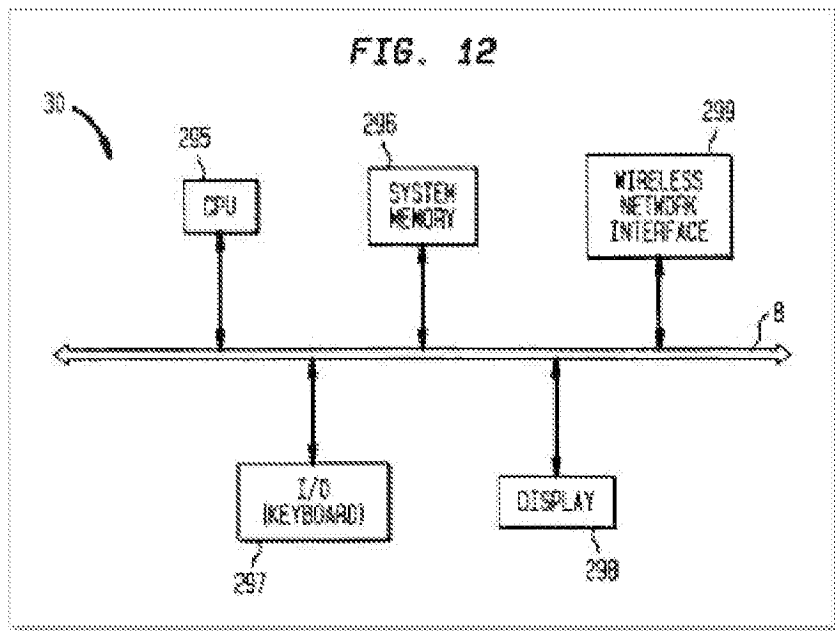
261. To the extent the preamble is limiting, Hammond, Johnson, and Pepe each disclose communication systems for transmitting, receiving, and responding to electronic messages. (*See* Hammond, Abstract, 2:11-18; Johnson, Abstract, 3:4-15, FIG. 1; Pepe, Abstract, 3:45-58, 5:28-14:21, FIGS. 1-6.) And Hammond's and Johnson's systems "confirm[] receipt" of electronic messages, as claimed. (*See* Hammond, 3:1-30; 5:17-61; Johnson, 1:58-61, 3:64-4:2.) Thus, the combination of references expressly discloses this limitation.

[1.1] a predetermined network of participants, wherein each participant has a similarly equipped PDA/cell phone that includes a CPU and a touch screen display a CPU [sic] and memory;
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262. Hammond, Johnson, and Pepe each disclose "a predetermined network of participants," as claimed. (*See* Hammond, Abstract, 2:11-17; Johnson, Abstract, 2:16-31, 3:4-15, FIG. 1; Pepe, Abstract, 3:45-58, 5:28-14:21, FIGS. 1-6.) But Hammond's and Johnson's networks include "computers." (*See, e.g.*, Hammond, 4:29-47, FIG. 1 (describing computer systems 100, 150, 160, 170, and 180); Johnson, 3:4-4:2, FIG. 1 (describing computers 12 and 30 in LAN 10 and 32).)

263. To the extent that Hammond and Johnson's disclosure of "computers" is found to not encompass a PDA/cell phone, Pepe supplies this missing disclosure. For example, Pepe's Figures 1-6 show a plurality of PDA/cell phones interacting in a network. (*See also* Pepe, 5:28-14:21.) Each PDA includes a CPU, an input-output device, a display, and a memory. (*See id.*, 16:50-61, FIG. 12 (reproduced below).) Although the phrase "touchscreen display" does not

appear in Pepe, a POSA would have understood Pepe's disclosure of an input-output device and display to teach or suggest the claimed touchscreen display, because PDAs with touchscreen displays were known well before the '970 patent, going back to the Apple Newton (Ex. 1015, Apple, 1) and IBM Simon in 1993 and before. (Ex. 1016, Arstechnica, 10; *see supra* Sections IX.A-IX.E; *see also* Banerjee, ¶¶19-48; *see also* Simon, 1.) In other words, a POSA would have interpreted Pepe's input-output device and display to include a touchscreen display, as claimed. Such touchscreen displays had been known in the art since at least 1993 with the IBM Simon and Apple Newton. (*See also* Banerjee, ¶¶19-48.) In other words, a POSA would have interpreted Pepe's input-output device and display to teach or suggest a touchscreen display, as claimed.



(Pepe, FIG. 12.)

264. A POSA would have been motivated to combine Pepe with Hammond and Johnson at least based on the teachings in these references. For example, all these references are directed to sending and receiving electronic messages. (*See* Hammond, Abstract, 2:11-17; Johnson, Abstract, 3:4-15, FIG. 1; Pepe, Abstract, 3:45-58, 5:28-14:21, FIGS. 1-6.) And Hammond says that “any transmission medium”—including “wireless RF”—“can be used for the transmission of the electronic messages.” (Hammond, 4:33-38.) Similarly, Johnson says that “[t]he electronic mail object may be in the form of text, an image, or a voice message.” (Johnson, 4:1-2; *see also id.*, 4:3-18.) Hammond's disclosure of “wireless RF” [Radio Frequency] and

Johnson’s disclosure of “text,” “image,” or “voice” messages suggests—if not explicitly teaches—the use of a PDA/cell phone. So, based on these disclosures, a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson.

265. A POSA would have recognized that the use of “Wireless RF” at the time of the patent filing would most obviously mean cellular communications as the predominant wireless communications medium (particularly for consumer-oriented devices). To achieve the exchange of messages wirelessly would mean that at least one part of a sender/recipient pair would be mobile (not connected to a wire-line network). Thus, a POSA would have recognized that “Wireless RF” includes a mobile device to use in the communications. A POSA would have further recognized that the mobile device most capable of sending and receiving messages via cellular would have been a PDA/cell phone. So, based on these disclosures, a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson. (*See supra* Sections IX.A-IX.E.)

[1.2] a data transmission means that facilitates the transmission of electronic files between said PDA/cell phones in different locations;

266. Pepe discloses this feature. The recited “data transmission means” encompasses a server that communicates according to peer-to-peer communications (e.g., WiFi or WiMax) or another messaging protocol (e.g., SMS or TCP/IP). (*See* Section VIII.F.1) Pepe discloses a PCI server 48 that enables the PDA/cell phone to communicate according to TCP/IP. (*See* Pepe, 24:31-38, 24:54-61.) And those communications can be with other PDAs/cell phones. (*See id.*, 33:4-34:10.) Pepe thus expressly discloses the recited “data transmission means that facilitates the transmission of electronic files between said PDA/cell phones in different locations.”

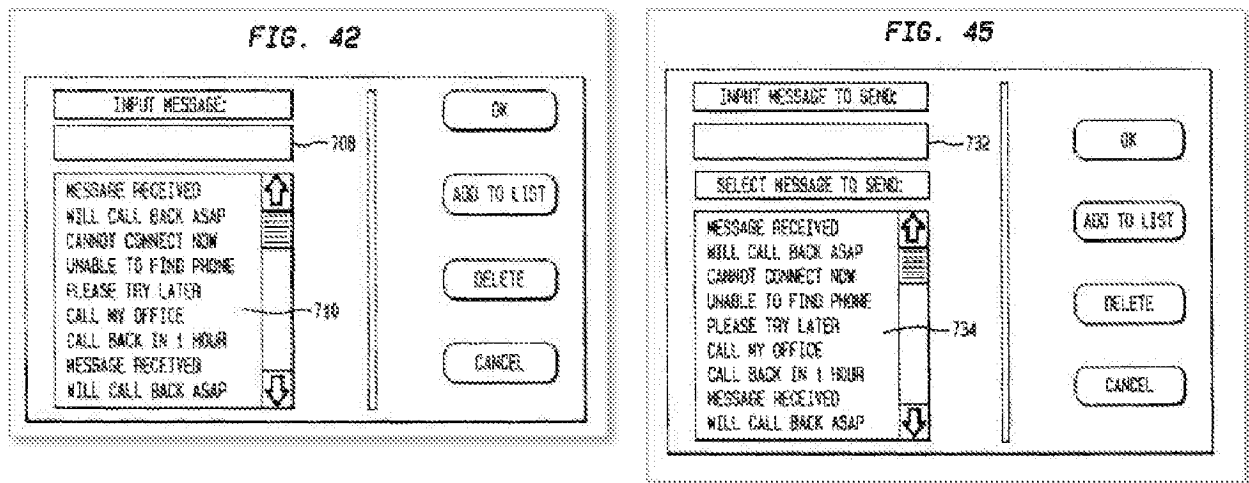
[1.3] a sender PDA/cell phone and at least one recipient PDA/cell phone for each electronic message;

267. Pepe expressly discloses a sender PDA/cell phone and at least one recipient PDA/cell phone for each electronic message. Pepe explains that a first PDA/cell phone can send a message to a second PDA/cell phone. (*See* Pepe, 33:5-52, FIGS. 25, 26; *see also id.*, FIGS. 1-6 (showing PDAs in a network), 9:1-6 (explaining that a plurality of PDAs may be connected to a wireless network and messages may be sent to and from those PDAs).)

[1.4] a forced message alert software application program including a list of required possible responses to be selected by a participant recipient of a forced message response loaded on each participating PDA/cell phone;

268. The combination of Hammond, Johnson, and Pepe discloses this limitation. In particular, Hammond and Johnson each disclose systems for requiring a response to an electronic message. (*See* Hammond, Abstract, 1:66-2:50, 3:31-4:28, 6:3-19, 9:12-15; Johnson, Abstract, 1:58-61, 3:64-4:2, 4:28-39, 5:1-6:65, 7:46-62, FIG. 6.) Yet neither Hammond nor Johnson discloses a software-application program that is loaded on each PDA/cell phone and that includes a list of possible responses.

269. Pepe supplies this missing disclosure. It discloses “application software residing in the PDA” that is described in Pepe by “the screens displayed on a PCI subscriber’s PDA.” (Pepe, 34:10-15; *see also id.*, 5:17-20 (“The application residing in the PDA is described in FIGS. 28-45, which illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.”), 34:9-36:51, FIGS. 28-45.) Specifically, Pepe’s Figures 42 and 45 (reproduced below) are exemplary screens that may appear when a user wants to edit a message to be sent to another PDA/cell phone. Each of these screens includes a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) that can be selected by the user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51.)



(Pepe, FIGS. 42, 45.)

270. As explained above at Section X.C and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[1.5] means for attaching a forced message alert software packet to a voice or text message creating a forced message alert that is transmitted by said sender PDA/cell phone to the recipient PDA/cell phone, said forced message alert software packet containing a list of possible required responses and requiring the forced message alert software on said recipient PDA/cell phone to transmit an automatic acknowledgment to the sender PDA/cell phone as soon as said forced message alert is received by the recipient PDA/cell phone;

271. The P.T.A.B. held in the FWD of IPR2018-01079 that the combination of Hammond, Johnson, and Pepe failed for claims 1 and 3-9, but only because the Petition (*Google*, IPR2018-01079, Pet.)—allegedly—did not distinctly identify where Hammond or Johnson discloses a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 6. (*Id.* at 71-75.) In this reexamination Request, however, the explanations of how Hammond and Johnson disclose a “forced message alert software packet” as recited in limitation 1.5 are fully addressed.

272. The combination of Hammond, Johnson, and Pepe disclose this limitation. In particular, Hammond and Johnson each alone discloses the transmission of forced message alerts to recipient computers. For example, Hammond explains that “electronic messages” include “email, paging [text] messages, and voice mail.” (Hammond, 1:13-16, 1:21-26.) Hammond also discloses “message delivery information” that is attached to a message. (*Id.*, 3:31-43.) Thus, Hammond creates the claimed “forced message alert.” For example, Hammond’s “message delivery information” that is attached to a message reads on “attaching a forced message alert software packet to a voice or text message creating a forced message alert” as claimed. (*See id.*, Abstract, 1:66-2:50, 3:1-4:28, 5:17-61, 6:3-19.)

273. Johnson discloses “a mechanism for **forcing** a recipient to reply to an electronic mail object with data.” (Johnson, 4:3-6.) Johnson also states that “the sender of the electronic mail object may **mark or associate an attribute with the electronic mail object such that it**

cannot be exited out of until the appropriate reply has been made. These attributes are called ‘persistent reply attributes’.” (*Id.*, 4:28-32.) And, Johnson says that “[t]he electronic mail object may be in the form of text, an image, or a voice message.” (*Id.*, 4:1-2.) Thus, Johnson’s persistent reply attribute reads on the claimed “forced message alert software packet” as the persistent reply attribute marks or attaches to a “voice or text message creating a forced message alert” as claimed. (*See id.*, 1:58-61, 2:1-35, 3:64-4:42, 6:60-65.) Thus, Johnson creates the claimed “forced message alert.”

274. And Hammond and Johnson also each disclose that the transmitted message requires the recipient device to transmit an automatic acknowledgement as soon as the message is received by the recipient device. (*See* Hammond, 1:46-54, 5:17-44, 11:55-12:6; Johnson, 1:58-61, 2:6-15, 3:64-4:1.) Yet Hammond and Johnson do not explicitly disclose application software on a PDA/cell phone as required by the recited “means for attaching . . .” (*see supra* Section VIII.F.2), nor do these references explicitly disclose a list of possible required responses—as recited in this claim.

275. Pepe, however, describes both. *First*, as set forth above with respect to claim [1.4], Pepe discloses “application software residing in the PDA.” (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) *Second*, as also set forth above with respect to claim [1.4], Pepe discloses a list of possible responses that can be selected by a user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51, FIGS. 42, 45.)

276. As explained above in Section X.C and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson. (*See supra* Sections IX.A-IX.E.) Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[1.6] means for requiring a required manual response from the response list by the recipient in order to clear recipient’s response list from recipient’s cell phone display;

277. Johnson discloses the function, and Pepe discloses the structure, recited in this limitation. In particular, Johnson discloses that a response must be provided by a “recipient in order to clear [a received message] from recipient’s cell phone display.” (*See* Johnson, 4:27-31 (“[T]he sender of the electronic mail object may mark or associate an attribute with the electronic mail object such that it **cannot be exited out of until the appropriate reply has been**

made.”); *see also id.*, 4:18-42.) Pepe discloses the structure required by this means-plus-function, the application software that is resident on the PDA/cell phone (*see supra* Section VIII.F.3; Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45) and a list of possible responses that can be selected by a user to send in response to a received message (*see* Pepe, 36:16-20, 36:38-51, FIGS. 42, 45). As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Johnson’s force-response message system. Therefore, the combination of Johnson and Pepe discloses this limitation.

[1.7] means for receiving and displaying a listing of which recipient PDA/cell phones have automatically acknowledged the forced message alert and which recipient PDA/cell phones have not automatically acknowledged the forced message alert;

278. Hammond discloses the function, and Pepe discloses the structure, recited in this limitation. In particular, Hammond tracks which recipients have automatically acknowledged a forced-message alert. (*See* Hammond, 2:11-15 (disclosing that Hammond’s system tracks “message delivery information and message review information”); *see also id.*, 5:17-8:45, (disclosing additional details about the Message Receipt Tracker component and Message Tracking Table Processor component), FIG. 2 (illustrating an example Message Tracking Table).) Hammond also tracks which recipients have not automatically acknowledged the forced message alert. (*See id.*, 2:11-15 (disclosing that Hammond’s system “specifies actions to take when a message is not delivered or not reviewed within a specified period of time”); *see also id.*, 5:17-8:45, (disclosing additional details about the Message Receipt Tracker component), FIG. 2 (illustrating an example Message Tracking Table).) Despite disclosing these claimed functions, Hammond does not disclose the claimed structure—i.e., application software on a PDA—required by this means-plus-function limitation. (*See supra* Section VIII.F.4.)

279. But Pepe discloses this structure. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Hammond’s force-response message system. Therefore, the combination of Hammond and Pepe discloses this limitation.

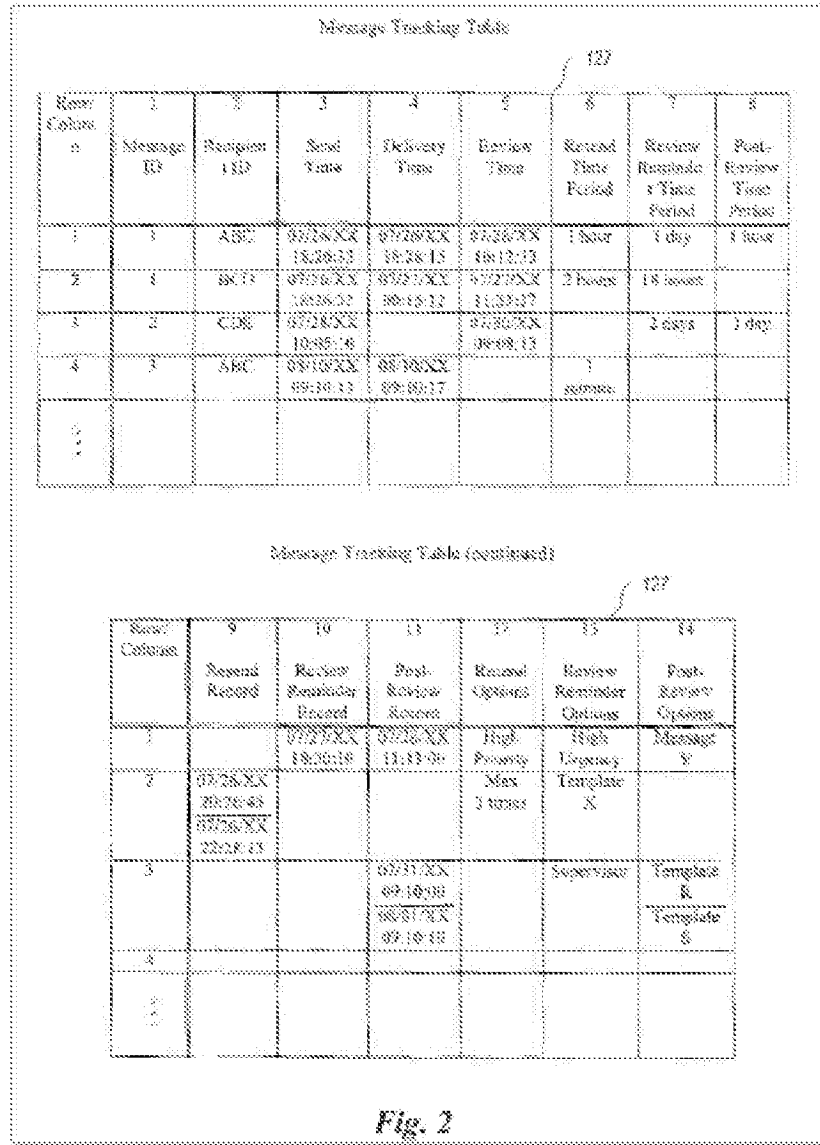
[1.8] means for periodically resending said forced message alert to said recipient PDA/cell phones that have not automatically acknowledged the forced message alert; and

280. Hammond discloses the claimed function, and Pepe discloses the claimed structure. In particular, Hammond’s “system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.” (Hammond, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.) Despite disclosing this function, Hammond does not disclose the claimed structure—i.e., application software on a PDA—required by this means-plus-function limitation. (*See supra* Section VIII.F.5.)

281. But Pepe discloses this structure. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Hammond’s force-response message system. (*See supra* Sections IX.A-IX.E.) Therefore, the combination of Hammond and Pepe discloses this limitation.

[1.9] means for receiving and displaying a listing of which recipient PDA/cell phones have transmitted a manual response to said forced message alert and details the response from each recipient PDA/cell phone that responded.

282. Hammond discloses the claimed function, and Pepe discloses the claimed structure. In particular, Hammond discloses a “Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients.” (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond’s Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine (*id.*, FIGS. 5A, 5B, 10:48-11:48). Despite disclosing these functions, Hammond does not expressly disclose the claimed structure—i.e., application software on a PDA—required by this means-plus-function limitation. (*See supra* Section VIII.F.6.)



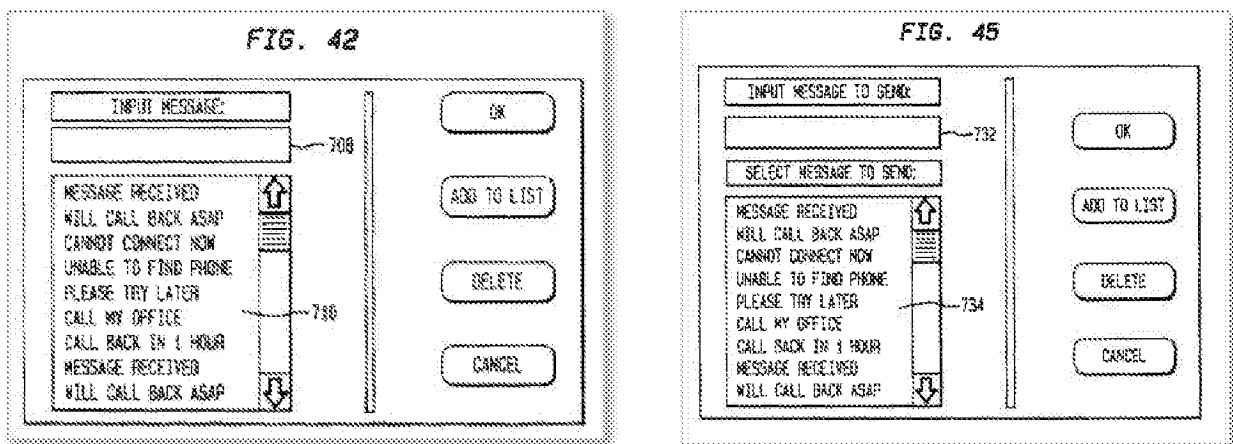
(Hammond, FIG. 2.)

283. But Pepe discloses this structure. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (See Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with Hammond's force-response message system. Therefore, the combination of Hammond and Pepe discloses this limitation.

[2.P] The system as in claim 1, wherein the forced message alert software application program on the recipient PDA/cell phone includes:

284. To the extent the preamble is limiting, the combination of Hammond, Johnson, and Pepe discloses this limitation. Hammond and Johnson each disclose a “recipient PDA/cell phone” as claimed. In particular, Hammond and Johnson each disclose systems for requiring a response to an electronic message. (*See* Hammond, Abstract, 1:66-2:50, 3:31-4:28, 6:3-19, 9:12-15; Johnson, Abstract, 1:58-61, 3:64-4:2, 4:28-39, 5:1-6:65, 7:46-62, FIG. 6.) Yet neither Hammond nor Johnson discloses a software-application program that is loaded on each PDA/cell phone and that includes a list of possible responses.

285. Pepe supplies this missing disclosure. Pepe discloses “forced message alert software application program on the recipient PDA/cell phone” as claimed. For example, Pepe discloses “application software residing in the PDA” that is described in Pepe by “the screens displayed on a PCI subscriber’s PDA.” (Pepe, 34:10-15; *see also id.*, 5:17-20 (“The application residing in the PDA is described in FIGS. 28-45, which illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.”), 34:9-36:51, FIGS. 28-45.) Specifically, Pepe’s Figures 42 and 45 (reproduced below) are exemplary screens that may appear when a user wants to edit a message to be sent to another PDA/cell phone. Each of these screens includes a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) that can be selected by the user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51.)



(Pepe, FIGS. 42, 45.)

286. As explained above at Section X.C and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with the forced response message systems of Hammond and Johnson. (*See supra* Sections IX.A-IX.E.) Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[2.1] means for transmitting the acknowledgment of receipt to said sender PDA/cell phone immediately upon receiving a forced message alert from the sender PDA/cell phone;

287. Hammond and Johnson disclose the claimed function, and Pepe discloses the claimed structure. Hammond and Johnson each disclose "transmitting the acknowledgment of receipt to said sender PDA/cell phone immediately upon receiving a forced message alert from the sender PDA/cell phone" as claimed. For example, Hammond and Johnson disclose that a transmitted message requires the recipient device to transmit an automatic acknowledgement as soon as the message is received by the recipient device. (*See* Hammond, 1:46-54, 5:17-41, 11:55-12:6; Johnson, 1:58-61, 2:6-15, 3:64-4:1.) Pepe discloses the claimed structure required by this means-plus-function limitation. (*See supra* Section VIII.F.7.) For example, Pepe discloses application software that is resident on the PDA/cell phone. (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.)

288. As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with the force-response message systems of Hammond and Johnson. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

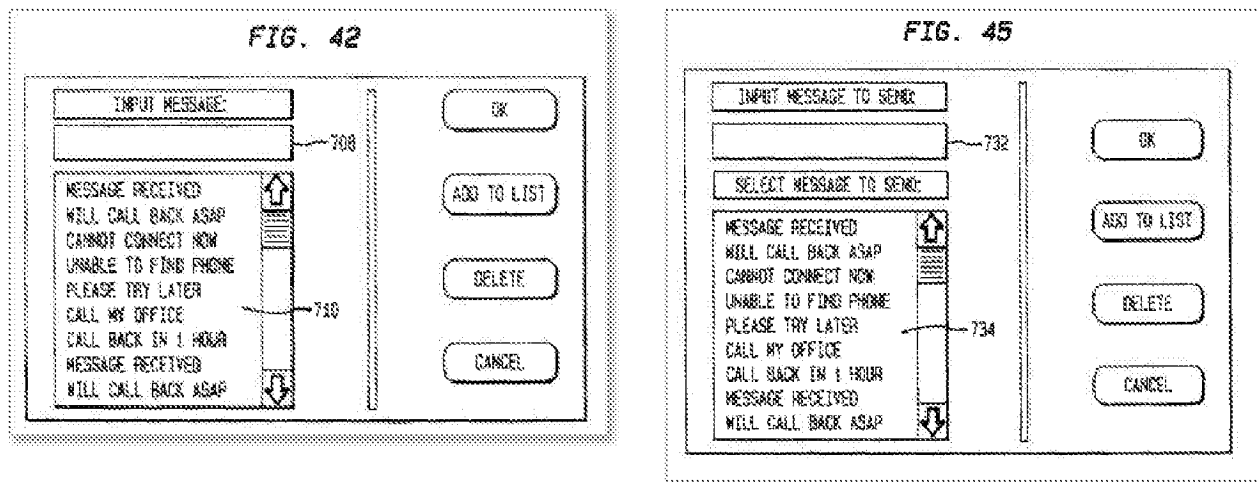
[2.2] means for controlling of the recipient PDA/cell phone upon transmitting said automatic acknowledgment and causing, in cases where the force message alert is a text message, the text message and a response list to be shown on the display of the recipient PDA/cell phone or causes, in cases where the forced message alert is a voice message, the voice message being periodically repeated by the speakers of the recipient PDA/cell phone while said response list is shown on the display;

289. Pepe discloses the structure and Hammond and Johnson disclose the claimed function of this limitation. *First*, Johnson discloses "controlling of the recipient PDA/cell phone upon transmitting said automatic acknowledgment" as claimed. For example, Johnson's

electronic mail object takes control of a device and response must be provided by a recipient in order to clear a received message from recipient's display. (*See* Johnson, 4:27-31 (“[T]he sender of the electronic mail object may mark or associate an attribute with the electronic mail object such that it *cannot be exited out of until the appropriate reply has been made.*”); *see also id.*, 4:18-42.)

290. *Second*, Hammond discloses “causing, in cases where the force message alert is a text message, the text message and a response list to be shown on the display of the recipient PDA/cell phone or causes, in cases where the forced message alert is a voice message, the voice message being periodically repeated by the speakers of the recipient PDA/cell phone while said response list is shown on the display” as claimed. For example, Hammond explains that “electronic messages” can include email, text, and voice messages. (Hammond, 1:13-16, 1:21-26.) Hammond’s “system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.” (*Id.*, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.)

291. *Third*, Pepe discloses the claimed structure required by this means-plus-function limitation. (*See supra* Section VIII.F.8.) For example, Pepe discloses the “application software residing in the PDA” that is described in Pepe by “the screens displayed on a PCI subscriber’s PDA.” (Pepe, 34:10-15; *see also id.*, 5:17-20 (“The application residing in the PDA is described in FIGS. 28-45, which illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.”), 34:9-36:51, FIGS. 28-45.) Specifically, Pepe’s Figures 42 and 45 (reproduced below) are exemplary screens that may appear when a user wants to edit a message to be sent to another PDA/cell phone. Each of these screens includes a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) that can be selected by the user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51.)



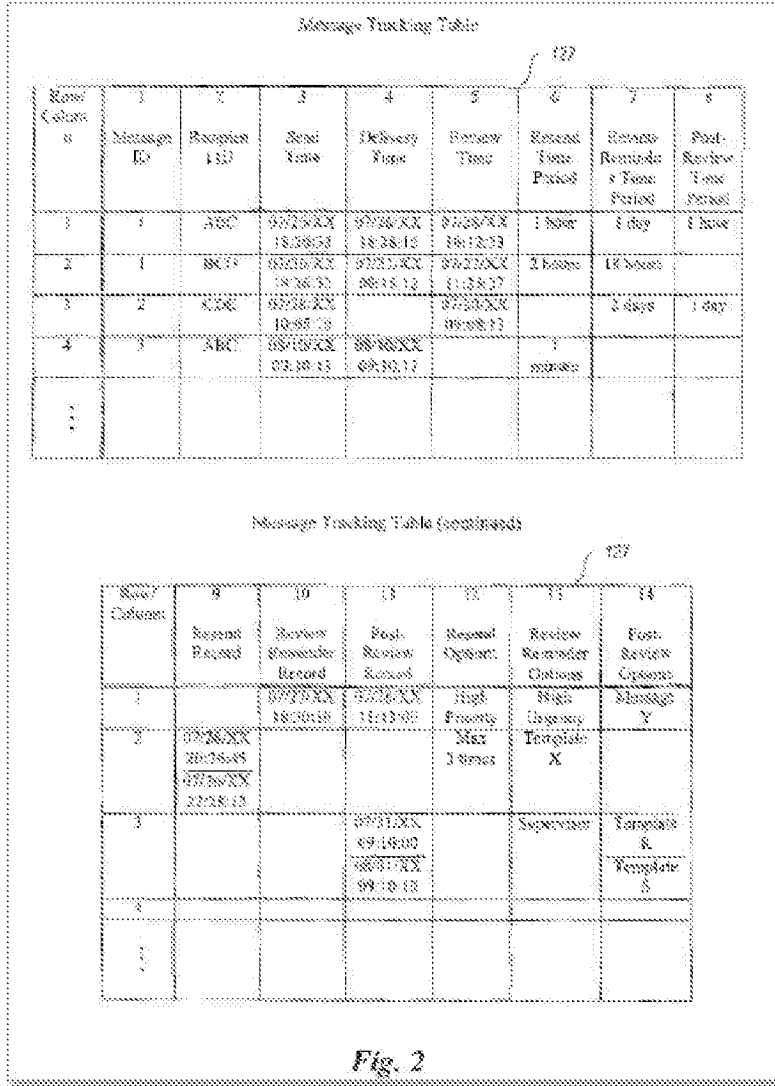
(Pepe, FIGS. 42, 45.)

292. As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with Hammond and Johnson's force-response message system. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[2.3] means for allowing a manual response to be manually selected from the response list or manually recorded and transmitting said manual response to the sender PDA/cell phone; and

293. Hammond discloses the claimed function, and Pepe discloses the claimed structure. Hammond discloses "allowing a manual response to be manually selected from the response list or manually recorded and transmitting said manual response to the sender PDA/cell phone" as claimed. In particular, Hammond discloses a "Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients." (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond's Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine (*id.*, FIGS. 5A, 5B, 10:48-11:48). Thus, Hammond teaches or suggests "allowing a manual response to be manually selected from the response list or manually recorded and transmitting said manual response" as claimed. Despite disclosing

these functions, Hammond does not expressly disclose the claimed structure—i.e., application software on a PDA—required by this means-plus-function limitation. (*See supra* Section VIII.F.9.)



(Hammond, FIG. 2.)

294. But Pepe discloses the required structure of this means-plus-function limitation. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Hammond’s force-response message system. Therefore, the combination of Hammond and Pepe discloses this limitation.

[2.4] means for clearing the text message and a response list from the display of the recipient PDA/cell phone or stopping the repeating voice message and clearing the response list from the display of the recipient PDA/cell phone once the manual response is transmitted.

295. As set forth above, Pepe provides the structure and Johnson discloses the function of this limitation. (Johnson, 4:18-42; Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) Johnson discloses “clearing the text message and a response list from the display of the recipient PDA/cell phone or stopping the repeating voice message and clearing the response list from the display of the recipient PDA/cell phone once the manual response is transmitted” as claimed. In particular, Johnson discloses that “the sender of the electronic mail object may mark or associate an attribute with the electronic mail object such that it *cannot be exited out of until the appropriate reply has been made.*” (Johnson, 4:27-31; *see also id.*, 4:18-24, 4:33-42.)

296. And Pepe discloses the structure required by this means-plus-function limitation (*See* Section VIII.F.10.) For example, Pepe discloses application software that is resident on the PDA/cell phone (Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45) and a list of possible responses that can be selected by a user to send in response to a received message (*id.*, 36:16-20, 36:38-51, FIGS. 42, 45). As explained above at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Johnson’s forced-response system.

(b) Independent Claim 10

[10.P] A method of receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone, wherein the receipt, acknowledgment, and response to said forced message alert is forced by a forced message alert software application program, said method comprising the steps of:

297. The primary difference between previously unchallenged claim 10 and previously challenged claim 1 is a so-called “take control” limitation of 10.2. As set forth in more detail below for each limitation, claim 10 is obvious in view of Hammond, Johnson, and Pepe.

298. The claim limitations of claim 10 are similar to the claim limitations of claim 1. For example, the limitation 10.P is similar to limitations 1.P and 1.3 that were addressed above.

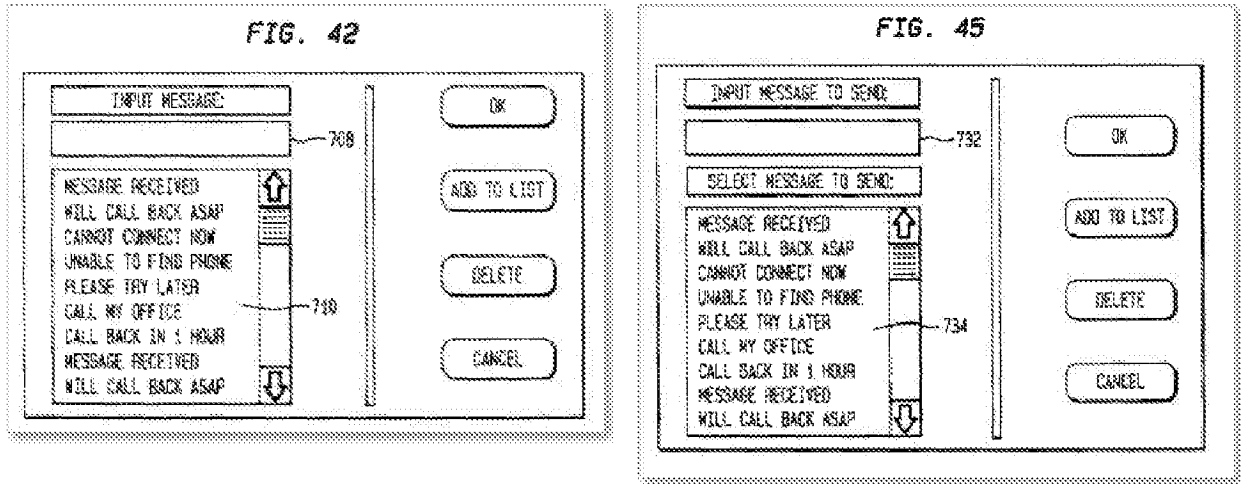
299. To the extent the preamble is limiting, Hammond, Johnson, and Pepe disclose this claim limitation. For example, Hammond and Johnson disclose “receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone, wherein the receipt, acknowledgment, and response to said forced message alert is forced” as claimed. For example, Hammond and Johnson each disclose communication systems for transmitting, receiving, and responding to electronic messages. (*See* Hammond, Abstract, 2:11-17; Johnson, Abstract, 3:4-15, FIG. 1.) And Hammond’s and Johnson’s systems include “receipt, acknowledgement” of electronic messages, as claimed. (*See* Hammond, 3:1-30; 1:46-54; 5:17-61; Johnson, 1:58-61, 3:64-4:2.)

300. Hammond and Johnson each disclose systems for requiring a response to an electronic message. (*See* Hammond, Abstract, 1:66-2:50, 3:31-4:28, 6:3-19, 9:12-15; Johnson, Abstract, 1:58-61, 3:64-4:2, 4:28-39, 5:1-6:65, 7:46-62, FIG. 6.) Yet neither Hammond nor Johnson discloses a software-application program that is loaded on each PDA/cell phone and that includes a list of possible responses.

301. Pepe supplies this missing disclosure. *First*, Pepe discloses “receiving, acknowledging and responding to a forced message alert from a sender PDA/cell phone to a recipient PDA/cell phone,” as claimed. For example, Pepe discloses communication systems for transmitting, receiving, and responding to electronic messages. (*See* Pepe, Abstract, 3:45-58, 5:28-14:21, FIGS. 1-6.) And Pepe expressly discloses a sender PDA/cell phone and at least one recipient PDA/cell phone for each electronic message. Pepe explains that a first PDA/cell phone can send a message to a second PDA/cell phone. (*See id.*, 33:4-52, FIGS. 25, 26; *see also id.*, FIGS. 1-6 (showing PDAs in a network), 9:1-6 (explaining that a plurality of PDAs may be connected to a wireless network and messages may be sent to and from those PDAs).)

302. *Second*, Pepe discloses “wherein the receipt, acknowledgment, and response to said forced message alert is . . . by a forced message alert software application program” as claimed. For example, Pepe discloses “application software residing in the PDA” that is described in Pepe by “the screens displayed on a PCI subscriber’s PDA.” (*Id.*, 34:10-15; *see also id.*, 5:17-20 (“The application residing in the PDA is described in FIGS. 28-45, which illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.”), 34:9-36:51, FIGS. 28-45.) Specifically, Pepe’s Figures 42 and 45 (reproduced below) are exemplary screens that may appear when a user wants to edit a message to be sent to another PDA/cell phone. Each of these

screens includes a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) that can be selected by the user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51.)



(Pepe, FIGS. 42, 45.)

303. As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[10.1] receiving an electronically transmitted electronic message; identifying said electronic message as a forced message alert, wherein said forced message alert comprises of a voice or text message and a forced message alert application software packet, which triggers the activation of the forced message alert software application program within the recipient PDA/cell phone;

304. The limitation 10.1 is similar to limitation 1.5 that was addressed above.

305. The P.T.A.B. held in the FWD of IPR2018-01079 that the combination of Hammond, Johnson, and Pepe failed for claims 1 and 3-9, but only because the Petition (*Google*, IPR2018-01079, Pet.) —allegedly—did not distinctly identify where Hammond or Johnson discloses a “forced message alert software packet” as recited in independent claim 1 and a “forced message alert application software packet” as recited in independent claim 6. (*Id.*, FWD at 71-75.) In this reexamination Request, however, the explanations of how Hammond and

Johnson disclose a “forced message alert application software packet” as recited in limitation 10.1 are fully addressed.

306. The combination of Hammond, Johnson, and Pepe disclose this limitation. Hammond and Johnson disclose “receiving an electronically transmitted electronic message; identifying said electronic message as a forced message alert, wherein said forced message alert comprises of a voice or text message and a forced message alert application software packet, which triggers the activation of the . . . application program within the recipient PDA/cell phone” as claimed. In particular, Hammond and Johnson each alone discloses the transmission of forced message alerts to recipient computers. (*See* Hammond, Abstract, 1:66-2:50, 3:1-4:28, 5:17-61, 6:3-19; Johnson, 1:58-61, 2:1-35, 3:64-4:42, 6:60-65; *see supra* at claim [1.5].) But Hammond and Johnson do not explicitly disclose application software on a PDA/cell phone as required.

307. Pepe, however, discloses “forced message alert software application program within the recipient PDA/cell phone” as claimed. For example, Pepe discloses “application software residing in the PDA.” (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with the force-response message systems of Hammond and Johnson. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

[10.2] transmitting an automatic acknowledgment of receipt to the sender PDA/cell phone, which triggers the forced message alert software application program to take control of the recipient PDA/cell phone and show the content of the text message and a required response list on the display recipient PDA/cell phone or to repeat audibly the content of the voice message on the speakers of the recipient PDA/cell phone and show the required response list on the display recipient PDA/cell phone; and

308. The limitation 10.2 is similar to limitations 1.4 and 1.8 that were addressed above. Hammond, Johnson, and Pepe disclose this claim limitation. *First*, Hammond and Johnson disclose “transmitting an automatic acknowledgment of receipt to the sender PDA/cell phone” as claimed. Hammond and Johnson each discloses that the transmitted message requires the recipient device to transmit an automatic acknowledgement as soon as the message is received

by the recipient device. (*See* Hammond, 1:46-54, 5:17-44, 11:55-12:6; Johnson, 1:58-61, 2:6-15, 3:64-4:1.)

309. *Second*, Johnson discloses “which triggers the . . . application program to take control of the recipient PDA/cell phone” as claimed. For example, Johnson states that “[t]he recipient of the electronic mail object is prompted for a specific response in response to the recipient opening an electronic mail object and is **prohibited from performing a selected action until the specific response has been entered by the recipient.**” (Johnson, Abstract.) Thus, Johnson demonstrates that the email application takes control of a recipient device until the recipient provides a specific response.

310. *Third*, Hammond and Johnson also disclose “show the content of the text message and a required response . . . on the display recipient PDA/cell phone or to repeat audibly the content of the voice message on the speakers of the recipient PDA/cell phone and show the required response . . . on the display recipient PDA/cell phone” as claimed. For example, Hammond and Johnson’s electronic messages include text and voice messages. (Hammond, 1:13-16; Johnson, 4:1-2; *see also* Johnson, 4:1-18.) Johnson discloses a “mechanism for forcing a recipient to reply to an electronic mail object . . . the mechanism may prevent the deletion and archival of the note or image until an appropriate reply is made.” (Johnson, 4:3-28.) Thus, the content of the text or voice message remains on the display or is repeated until the recipient provides the required response. And Hammond’s “system tracks whether each message has been delivered and reviewed by to [sic] each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.” (Hammond, 2:47-50; *see also id.*, Abstract, 2:1-8, 4:21-28, 5:5-20, 6:66-7:63, 10:48-63, FIGS. 2, 3A, 3B, 4, 5A, 5B.)

311. But Hammond and Johnson do not explicitly disclose application software on a PDA/cell phone, nor do these references explicitly disclose a list of possible required responses. Pepe, however, supplies both limitations. Pepe discloses “the forced message alert software application program . . . of the recipient PDA/cell phone” and the “required response list” as claimed. As set forth above with respect to claim [1.4], Pepe discloses “application software residing in the PDA.” (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And as set forth above with respect to claim [1.4], Pepe discloses a list of possible responses that can be selected by a user to send in response to a received message. (*See id.*, 36:16-20, 36:38-51, FIGS. 42, 45.)

312. As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with the force-response message systems of Hammond and Johnson. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

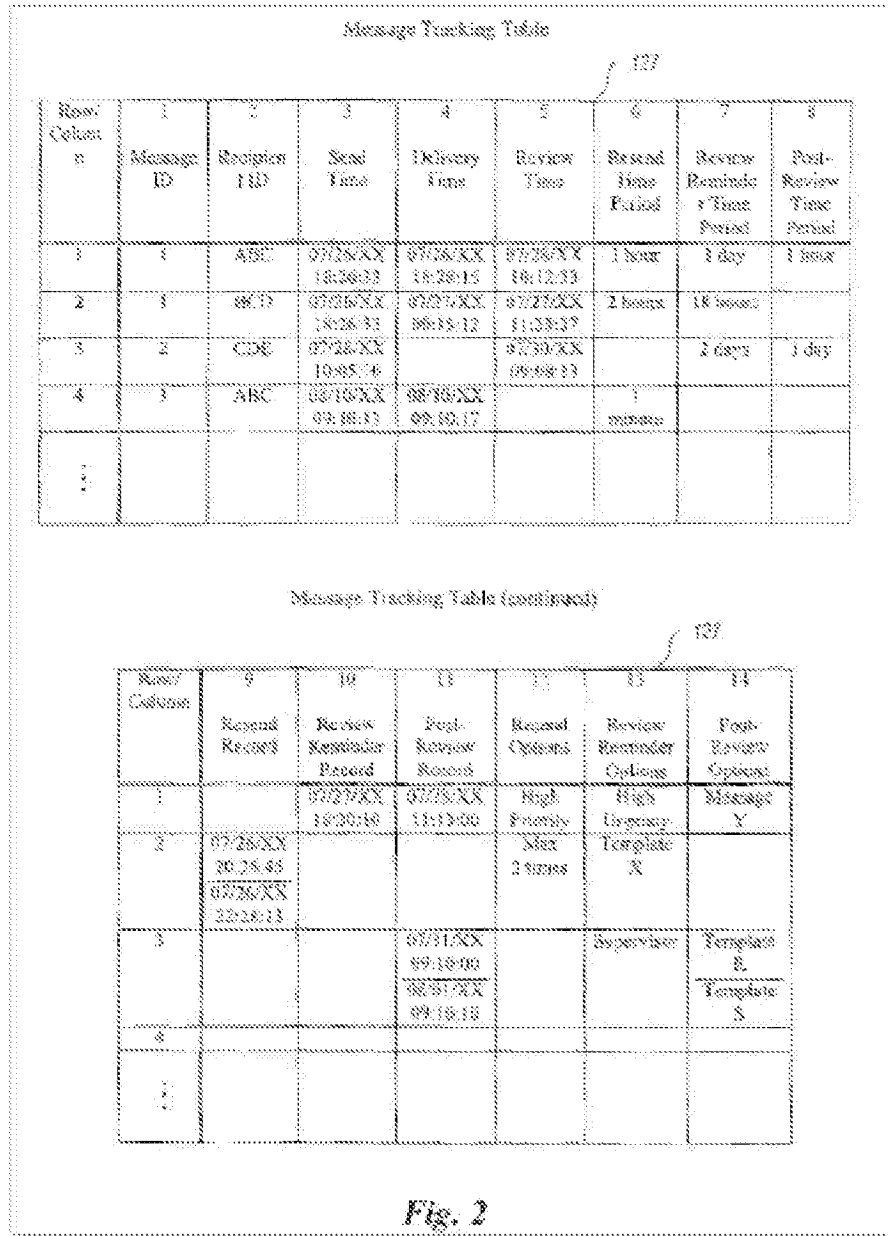
[10.3] transmitting a selected required response from the response list in order to allow the message required response list to be cleared from the recipient's cell phone display, whether said selected response is a chosen option from the response list, causing the forced message alert software to release control of the recipient PDA/cell phone and stop showing the content of the text message and a response list on the display recipient PDA/cell phone and or stop repeating the content of the voice message on the speakers of the recipient PDA/cell phone;

313. The limitation 10.3 is similar to limitation 1.9 that was addressed above. As set forth above, the combination of Pepe and Johnson discloses the features of this limitation. Johnson discloses "transmitting a selected required response . . . in order to allow the message . . . to be cleared from the recipient's cell phone display, whether said selected response is a chosen option . . . causing the . . . software to release control of the recipient PDA/cell phone and stop showing the content of the text message and a response . . . on the display recipient PDA/cell phone and or stop repeating the content of the voice message on the speakers of the recipient PDA/cell phone" as claimed. As Johnson takes control until an appropriate reply is made as described above with regard to claim [10.2], Johnson also releases control once the reply is made. (Johnson, 4:11-42.)

314. Pepe discloses the "response list" as claimed as well as the "forced message alert software . . . of the recipient PDA/cell phone" as claimed. For example, Pepe discloses application software that is resident on the PDA/cell phone (Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45) and as described with regard to claim [1.4], a list of possible responses that can be selected by a user to send in response to a received message (*id.*, 36:16-20, 36:38-51, FIGS. 42, 45). As explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with Johnson's forced-response system.

[10.4] displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone; and

315. The limitation 10.4 is similar to limitation 1.9 that was addressed above. Hammond and Pepe disclose the claimed limitation. Hammond discloses “displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone” as claimed. In particular, Hammond discloses a “Message Receipt Tracker component [that] attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients.” (Hammond, 5:17-20; *see also id.*, 5:20-6:55.) Hammond’s Figure 2 (reproduced below) shows a Message Tracking Table that includes detailed information about electronic messages that have been read by recipients. (*See id.*, 6:56-8:45.) And Hammond discloses a Message Receipt Tracker routine (*id.*, FIG. 4, 10:5-47) and a Message Tracking Table Processor routine (*id.*, FIGS. 5A, 5B, 10:48-11:48). This disclosure from Hammond meets the claimed requirement “displaying the response received from the PDA[/]cell phone that transmitted the response on the sender of the forced alert PDA/cell phone.”



(Hammond, FIG. 2.)

316. Hammond does not expressly disclose the application software on a PDA. But Pepe discloses this structure. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (See Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with Hammond's force-response message system. Therefore, the combination of Hammond and Pepe discloses this limitation.

[10.5] providing a list of the recipient PDA/cell phones [that] have automatically acknowledged receipt of a forced alert message and their response to the forced alert message.

317. The limitation 10.5 is similar to limitation 1.7 that was addressed above. Hammond and Pepe disclose the claim feature recited in this limitation. Hammond discloses “providing a list of the recipient PDA/cell phones [that] have automatically acknowledged receipt of a forced alert message and their response to the forced alert message” as claimed. In particular, Hammond tracks which recipients have automatically acknowledged a forced-message alert. (*See* Hammond, 2:11-15 (disclosing that Hammond’s system tracks “message delivery information and message review information”); *see also id.*, 5:17-8:45, (disclosing additional details about the Message Receipt Tracker component and Message Tracking Table Processor component), FIG. 2 (illustrating an example Message Tracking Table).) Hammond also tracks which recipients have not automatically acknowledged the forced message alert. (*See id.*, 2:11-15 (disclosing that Hammond’s system “specifies actions to take when a message is not delivered or not reviewed within a specified period of time”); *see also id.*, 5:17-8:45, (disclosing additional details about the Message Receipt Tracker component), FIG. 2 (illustrating an example Message Tracking Table).) Despite disclosing these claimed functions, Hammond does not disclose the application software on a PDA.

318. But Pepe discloses this structure. Specifically, Pepe discloses application software that is resident on the PDA/cell phone. (*See* Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Hammond’s force-response message system. Therefore, the combination of Hammond and Pepe discloses this limitation.

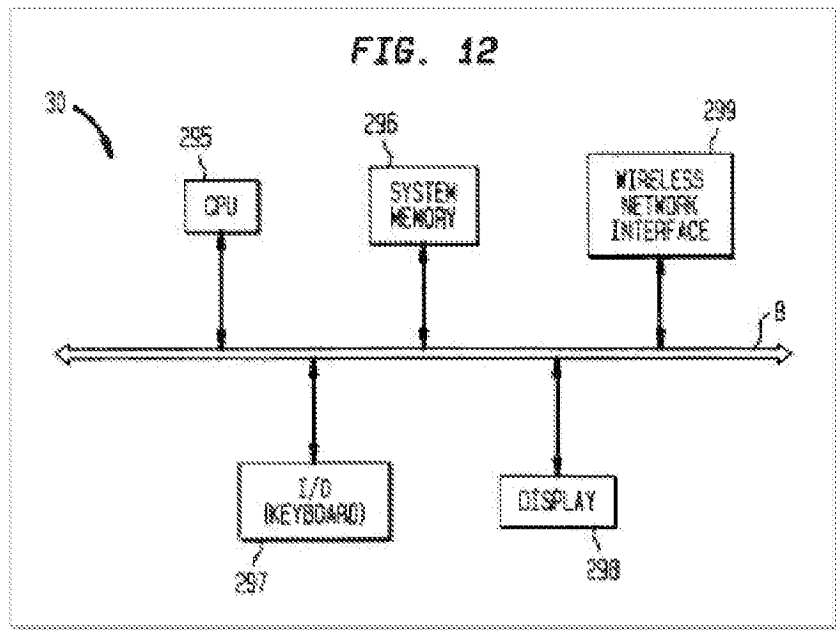
(c) Dependent Claim 11

[11.] The method as in claim 10, wherein each PDA/cell phone within a predetermined communication network is similarly equipped and has the forced message alert software application program loaded on it.

319. Hammond, Johnson, and Pepe disclose this limitation. Hammond, Johnson, and Pepe each disclose “a predetermined network of participants,” as claimed. (*See* Hammond,

Abstract, 2:11-17; Johnson, Abstract, 2:16-31, 3:4-15, FIG. 1; Pepe, Abstract, 3:45-58, 5:28-14:21, FIGS. 1-6.) But Hammond's and Johnson's networks include "computers." (See, e.g., Hammond, 4:29-47, FIG. 1 (describing computer systems 100, 150, 160, 170, and 180); Johnson, 3:4-4:2, FIG. 1 (describing computers 12 and 30 in LAN 10 and 32).)

320. To the extent that Hammond and Johnson's disclosure of "computers" is found to not encompass a PDA/cell phone, Pepe supplies this missing disclosure. Pepe discloses "each PDA/cell phone within a predetermined communication network is similarly equipped and has the forced message alert software application program loaded on it" as claimed. For example, Pepe's Figures 1-6 show a plurality of PDA/cell phones interacting in a network. (See also Pepe, 5:28-14:21.) Each PDA includes a CPU, an input-output device, a display, and a memory. (See *id.*, 16:50-61, FIG. 12 (reproduced below).)



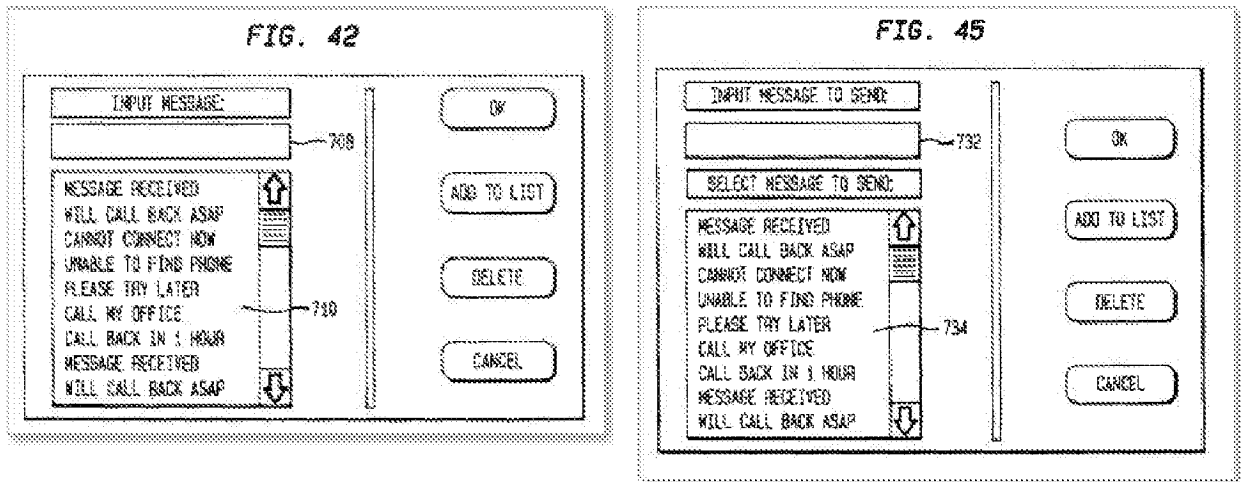
(Pepe, FIG. 12.)

321. Pepe discloses application software that is resident on the PDA/cell phone. (See Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe's PDA/cell phone with Hammond and Johnson's force-response message system. Therefore, the combination of Hammond, Johnson, and Pepe discloses this limitation.

(d) Dependent Claim 12

[12.] The method as in claim 10, wherein said forced message alert application software packet contains a response list, wherein said response list is a default list embedded in the forced message alert software application program.

322. Pepe discloses this limitation. Pepe discloses “said forced message alert application software packet contains a response list, wherein said response list is a default list embedded in the forced message alert software application program” as claimed. For example, Pepe discloses application software residing in the PDA. (Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) In Figures 42 and 45 (reproduced below), Pepe shows a list of possible responses (i.e., box 710 in Figure 42 and box 734 in Figure 45) that can be selected by the user to send in response to a received message. (See *id.*, 36:16-20, 36:38-51.) A POSA would have understood Pepe’s list of possible responses to teach or suggest the claimed default response list.



(Pepe, FIGS. 42, 45.)

(e) Dependent Claim 13

[13.] The method as in claim 10, wherein said forced message alert application software packet contains a response list, wherein said response list is a custom response list that is created at the time the specific forced message alert is created on the sender PDA/cell phone.

323. The combination of Pepe and Johnson discloses this limitation. Pepe discloses “said forced message alert application software packet contains a response list, wherein said response list is a custom response list” as claimed. Specifically, Pepe discloses application software residing in the PDA. (Pepe, 5:17-20, 34:9-36:51, FIGS. 28-45.) Pepe’s Figures 42 and 45 show lists of possible responses. And Pepe says that “[t]he user may compose a unique message in box 708 or edit one already on a list shown in box 710.” (*Id.*, 36:16-20.)

324. Johnson discloses “said response . . . is a custom response list that is created at the time the specific forced message alert is created on the sender PDA/cell phone” as claimed. For example, Johnson discloses that the sender of a forced-response message may set certain “persistent reply attributes” that “govern user interaction for forcing a reply containing data from the recipient of the electronic mail object.” (Johnson, 4:33-39; *see also id.*, 5:43-6:65.) A POSA would have understood that Johnson’s persistent reply attributes are compatible with Pepe’s teachings, and could have been used to specify a custom response list to be displayed on a recipient’s PDA/cell phone, as taught by Pepe.

325. The ability to provide custom, configurable lists would have been obvious to a POSA, since while the ability to have generic lists of possible responses may be useful in some use cases, having the specifics of the list would also provide value-adding information for others. In addition, recipients could easily answer a forced message if the list of possible responses were tailored to the specific situation or use cases of the sender and recipient(s) involved. It would also reduce the ambiguity possible of using one “standardized” response list for any or all types of messages.

326. And, as explained above at Section X.C, and at least with respect to claim [1.1], a POSA would have been motivated to combine Pepe’s PDA/cell phone with Johnson’s force-response message system. Therefore, the combination of Johnson and Pepe discloses this limitation.

* * *

327. In summary, the combination of Hammond, Johnson, and Pepe teach each and every feature of claims 2 and 10-13. Accordingly, claims 2, and 10-13 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Hammond in view of Johnson and further in view of Pepe.

XI. CONCLUSION


328. As set forth above, claims 2 and 10-13 of the '970 patent are unpatentable based on the prior art U.S. patents and printed publications that form the SNQs herein:

- Claims 2 and 10-13 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kubala in view of Hammond; and
- Claims 2 and 10-13 are unpatentable under 35 U.S.C. § 103(a) as obvious over Hammond in view of Johnson, and further in view of Pepe.

329. In signing this declaration, I recognize that the declaration will be filed as evidence in a case before the United States Patent and Trademark Office. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this 11th day of May 2020, in St. Louis, Missouri.

Respectfully submitted,



David H. Williams

Exhibit 1004

David Hilliard Williams

203-423-9015; dwilliams@LBSGlobe.com; www.E911-LBS.com

Expertise

- Location-Based Services (LBS)
- Wireless 911 (E911); NG911
- Internet of Things (IoT); Real-Time Location Systems (RTLS)
- Non-Cellular/Indoor/Sensor-based Location Systems, including: RFID, Wi-Fi/WPS, BLE, LIDAR, Beacon-based RTLS; NFC/ DSRC; Wearable systems; Hybrids/Combinations
- GPS Systems; Network-Based Location Determination Systems
- Expert Witness Litigation Support, Patent/Intellectual Property Development and Protection Services
- GPS/Cellphone Criminal and Civil Case Forensics, using CDR, NELOS, PCMD, RTT, EVDO, and Cellebrite
- Internet of Things (IoT) Ecosystem (Sensors, Identity, Interfaces, Edge, Network, Cloud, Data Management, Analytics, Privacy and Security)
- LBS and IoT Enterprise and Consumer Use Case and Product and Technical Strategy, Visioning, Design, Build, and Implementation
- Location/Context-Centric Enterprise Process Reengineering, Integration, & Interoperability
- IoT Enterprise Scalability and Management
- SMART location, SMART Home, SMART Wearables, SMART Buildings, SMART Cities
- Sensor Design, Architecture and Interfaces
- Location & IoT Data Privacy and Security
- Mobile Network Design and Implementation
- Context/Presence-Based LBS and IoT
- Map Data, Digital Mapping, GIS, & IoT IT
- Fleet Management; Telematics
- Navigation Systems; PNDs; Local Search
- Mobile Social/Business Networking
- Consumer, Worker Tracking/Monitoring
- Asset Tracking/Location Management
- Connected Car/Auto. Vehicle (AV) Ecosystem
- M2M, Smart Grid/Energy Systems
- LBS Big Data and Cloud Computing

Professional Summary

David Hilliard Williams is an internationally-known expert in the wireless/mobile location field and President and Founder of E911-LBS Consulting. He specializes in wireless location product and technology strategy development and implementation, as well as Intellectual Property (IP)/patent and location forensics litigation services involving location technologies such as Global Positioning Satellite (GPS) systems; Network-based location determination technologies such as TDOA, ECID, and AFLT; Wireless 911 (E911) and Next Generation 911; Real-Time Location Systems (RTLS) including Radio Frequency Identification (RFID) systems, Wi-Fi-based positioning systems (WPS), BLE/Beacon-based location systems, and alternative RTLS (Ultrasound, Infrared); Near Field Communications (NFC); Wearable Tags/Sensor tracking systems; Zigbee/Mesh networks; and various hybrids and combinations.

Mr. Williams is expert in smart location technology issues in the Internet of Things (IoT) and connected/driverless car fields, particularly in their utilization of location and context information through the practical envisioning and design of: consumer/enterprise use cases and associated application design, sensor design and deployment strategies; process (re)engineering; IT integration; data aggregation, segmentation, analysis, and management; scalability; and security and privacy issues, requirements, collaboration structures, and ongoing management.

Mr. Williams is expert in the full range of business and consumer location-based services (LBS) and IoT applications enabled by these location technologies, including fleet management, telematics, navigation systems, mobile local search, mobile hospitality/POS systems, presence/context-aware applications, mobile resource management, asset management, wearable tags/sensors, financial/mobile wallet, supply chain management, family tracking, mobile social and business networking, proximity-based entertainment & leisure, gaming, intelligent transportation systems, and safety and security systems.

Mr. Williams has extensive expertise in all aspects of LBS and IoT delivery across the mobile location ecosystem including enabling network communications, location technologies/sensors, geofencing design, map data, location data/database management, geospatial platform/Geographical Information Systems, GPS and other location chipsets, location data management, and device, infrastructure and integration providers. His client list includes Apple, AT&T, GE, General Motors, Geotab, Google, the Houston Police Department, Kaspersky Security, the L.A. County District Attorney's Office, LOCAID, Nextel, NAVTEQ, Qualcomm, Peschke, Royal Canadian Mounted Police, Samsung, Sprint, Toyota, Twilio, Verizon Wireless, and VIVINT. He has successfully represented both plaintiffs/prosecutors and defendants in criminal and civil litigation.

Mr. Williams has developed and implemented industry-leading product and technology solutions for numerous LBS applications and markets and provides consulting and research services to some of the leading carriers and enterprises in the U.S., Asia, and Europe. He has provided testimony, consulting research, technical expertise and advisory services in over 50 Intellectual Property/Patent, Location Forensic, ITC, and Anti-Trust litigations/cases.

With over thirty years in location, communications and information technology solutions design, selection, implementation and ongoing management, Mr. Williams has extensive experience in the activities and issues needed to get applications to market, including planning and design at the application, system, interface/integration, network, IT, operational and customer facing levels. He has been published and quoted by leading magazines and newspapers about location-related services, including The New York Times, CBS News.com, The Columbus (Ohio) Dispatch, The Boston Globe, Computerworld, Directions Magazine, Mission Critical Communications, Popular Mechanics, and RFID Journal.

Mr. Williams has authored five books on wireless location, including *The Definitive Guide To RFID, Wi-Fi, Bluetooth Low Energy (BLE), UWB, Ultrasound, Infrared, and Other RTLS and Beacon Technologies* (available May 2018), *The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services* (two versions), *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*. Mr. Williams has authored dozens of research reports, and tracks and analyzes leading companies in the LBS, IoT, and public safety industries particularly with respect to their product and technology strategies, competitive capabilities and implementation issues. He is expert on all public policy and technology issues related to emergency services/public safety, location data privacy and security, and LBS and IoT privacy protection policies, systems, and support infrastructure.

Employment History

From: 2002 **E911-LBS Consulting**

To: Present

Position: *President and Founder*

Provides services across the entire wireless value chain, particularly with respect to technology and business strategic planning and product design and development, plus specialized services such IP/Patent litigation associated with Location Based Services and applications, GPS, E911, IoT, RTLS, RFID, Wi-Fi, NFC, BLE, beacons, & other location technologies and associated ecosystems. Projects include:

- Provided expert witness, technical consulting, and research analysis services with respect to location-based services-related intellectual property/patent protection, licensing, and litigation (details in separate litigation support section).
- Provide forensics expertise in examination of mobile location-related events and associated data for civil and criminal cases (both prosecutor/plaintiff and defense entities).
- Developed, implemented, managed, and marketed a portfolio of LBS applications and broader offers for leading North American wireless carrier. Responsible for all dimensions of product lifecycle and associated budgets. Work included the development and launch of several LBS applications including mobile social networking, family tracking, local search, 411 w/ location, and mobile worker, fleet, and asset management. Worked extensively with network engineering to troubleshoot/refine new location-determination infrastructure to address/improve location accuracy, privacy and security issues.
- Conducted comprehensive technical and intellectual property analysis of Real-Time Location Systems (RTLS) market for European client looking to assert location-related patents.
- Conducted technical and intellectual property analysis for Fleet Management/Telematics operator and service provider assessing potential infringement candidates.
- Conducted analysis of location aggregation market for client interested in acquisition in that industry space. Client acquired recommended aggregator.
- Provided E911 consulting expertise in support of new spectrum regulatory approval and technical implementation issues for nationwide carrier.

- Managed the design, collection, and analysis of E911 infrastructure deployment of western region of major wireless carrier. Data collected focused on technical issues associated with TDOA (Time Difference of Arrival) technology implementation, and collection and reporting of location accuracy data for FCC reporting purposes.
- Developed the site map and primary content for the NAVTEQ (now HERE) Network for Developers (N4D) LBS web ecosystem - <http://developer.navteq.com>. Responsible for designing and managing the site map and overall content, identifying key contributors and materials, and utilizing a variety of fragmented information to develop broad and deep technical and business content to assist various expertise levels of application developers and business management to become intimately familiar with map data, GIS platforms, and LBS applications and to provide the information and guidance to successfully develop and launch their LBS applications.
- Provided strategic and technical guidance for mobile payments/wallet startup using location as a differentiator. Identified key issues and redeveloped successful patent application after initial USPTO rejection.
- Managed the development of the Nextel (now Sprint) Location-Based Services strategy. Efforts included market and technical analysis of likely LBS offerings and integrating those findings with Nextel's broader wireless voice and data strategies. Work included prioritizing applications based on focus group findings, business case attractiveness, ease of implementation, impact on network infrastructure, and synchronization and integration with GPS terminal and E911 mandate rollout plans. Managed network engineering and consulting team to design network modifications to best support the additional demands of LBS applications. Product strategy including researching and incorporating context-aware/presence concepts into product/device and network engineering plans.
- Developed navigation platform strategy for major international auto manufacturer. Assessed direction and technology requirements of in-car and portable navigation device (PND) technologies and developed technology strategy for future in-car navigation platforms.
- Developed numerous LBS company research reports using proprietary multi-point "report card" addressing numerous business and technology strategy dimensions and issues.

- Authored five books on wireless location, including *The Definitive Guide To RFID, Wi-Fi, BLE, UWB, Ultrasound, Infrared, and Other RTLS and Beacon Technologies (available May 2018)*, *The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2005 and 2009 versions; 2018-2019 version in development)*, *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*.
- Advised numerous small companies and startups such as i360Hygiene, LOCAID, Finder Technologies, Orion GPS, and XYVerify on LBS-related issues to enhance value propositions on business, product and technology dimensions to enhance attractiveness to potential investors/acquisition candidates.

From: 2009 **AT&T Mobility**

To: 2010

Position: *Senior Product Manager – Enterprise LBS*

Led the development, implementation, and marketing of numerous enterprise location-based services across all sales, marketing and operational channels. Work included responsibility for all dimensions of product lifecycle and associated budgets. Products managed included telematics, fleet management, asset management, and mobile resource management LBS on a variety of platforms including Telenav. Played key role in development of company-wide location services product and implementation roadmap.

From: 2007 **AT&T Mobility**

To: 2009

Position: *Consumer LBS Product Realization Manager (Consultant)*

Responsible for the design, development, implementation, and ongoing lifecycle management of several high-profile Consumer LBS applications and associated operational support. Overall application design and implementation responsibilities included AT&T FamilyMap, Loopt Mobile Social Networking, 411 with location, Slifter Local Search, and CaddyHawk Game systems. Work included design, troubleshooting, and implementation of AT&T location-related network, application, and privacy infrastructure and associated issues such as accuracy and privacy (efforts resulted in patent co-invention).

From: 1993 **Accenture**

To: 2002

Position: *Associate Partner - Communications & High-Technology Strategy*

Responsible for development of wireless location practice. Led development of business, technology, and product strategies for numerous communications and technology-centric companies looking to enter new markets. Specialized in new product design, development,

and implementation, as well as network infrastructure design. Efforts included assisting AT&T (re)enter local service, (then) Bell Atlantic launch long distance services, (then) GTE implement Intelligent Network services, as well as leading the design and implementation of communications networks in a variety of industries including hospitality/retail, energy, agriculture, and banking/financial services.

From: 1991 **Booz Allen & Hamilton**
To: 1993
Position: *Senior Associate – Information Technology Practice*
Provided and led consulting services for communications industry and other Information Technology-intensive companies in developing technology strategies for addressing new marketing opportunities and internal operational issues.

From: 1987 **Deloitte Consulting (Originally Touche Ross)**
To: 1991
Position: *Senior Manager*
Provided consulting services for technology-intensive companies in developing business and product strategies for addressing new marketing opportunities and internal operational issues.

From: 1983 **Hughes Aircraft Company**
To: 1985
Position: *Electrical Engineer – Radar Development*
Microcomputer and digital system design engineer on the F-15 fighter radar system as part of analog to digital platform conversion.

Litigation Support Experience

Date: 2017-2018 **Finnegan & Henderson**
Case: Fed Ex
Project: Providing expert support, consulting, reports, and deposition for infringement and district court invalidity proceedings on behalf of leading transportation/shipping company.

Date: 2017-2018 **Sterne Kessler Goldstein Fox**
Case: Google
Project: Providing expert support, reports, and deposition for Inter Partes Review (IPR) of several location/context-related patents on behalf of leading Internet services company.

Date: 2017-2018 **Polsinelli**
Case: Uber
Project: Providing expert support and reports for Trade Secrets case involving major shared transportation provider.

- Date: 2016-2018 **Civil and Criminal Forensics**
Case: Various
Project: Provided cellphone location forensics expertise in criminal and civil cases. Expert/knowledgeable in numerous forensic technologies include CDR, NELOS, PCMD, RTT, EVDO, and Cellebrite.
- Date: 2017-2018 **Renner Otto**
Case: Timekeeping Systems Inc.
Project: Provided consulting and expert report services in patent invalidity case in district court.
- Date: 2016-2017 **Baker Botts**
Case: Twilio
Project: Provided location/E911-related expert services, report, and deposition for Inter Partes Review (IPR) of mobile registration patent on behalf of Voice & Video, Messaging, and Authentication APIs provider.
- Date: 2016 **Los Angeles District Attorney's Office**
Case: People v. Dawud Abdulwali
Project: Provided expert services on location technologies used to identify and trace accused arsonist. Defendant pled guilty.
- Date: 2016 **Paul Hastings**
Case: Samsung
Project: Provided expert services for Inter Partes Review (IPR) of multiple location, safety, and security patents on behalf of major telecommunications equipment and services provider.
- Date: 2016 **Sterne Kessler Goldstein Fox**
Case: Google (2 distinct case sets)
Project: Provided expert support, reports, and deposition for Inter Partes Review (IPR) of several location/context-related patents on behalf of leading Internet services company subsidiary.
- Date: 2016 **Fitzpatrick, Cella, Harper & Scinto**
Case: Geotab
Project: Providing expert support, reports, and deposition for infringement defense of multiple asserted patents on behalf of fleet management/telematics provider.
- Date: 2015-2016 **The Ogg Law Firm PLLC**
Case: City of Houston Police Department
Project: Provided expert services/testimony regarding veracity of Automatic Vehicle Locator (AVL) systems in officer suspension case.

- Date: 2015-2016 **Sterne Kessler Goldstein Fox**
Case: VIVINT
Project: Providing expert support, reports, and deposition for IPR involving several location-related patents on behalf of home security and energy management company.
- Date: 2015 **Hogan Lovells**
Case: Apple
Project: Provided expert support for multiple location-related patent Inter Partes Review (IPR) and infringement proceedings for leading mobile platform, application and services provider.
- Date: 2015 **Thompson Hine LLP**
Case: Macropoint
Project: Provided expert support for patent litigation effort involving fleet management devices, software, and services.
- Date: 2013-2014 **Williams & Connolly**
Case: State of Maryland
Project: Provided expert services in assessing validity of GPS tracking bracelet/system in parole violation case. Case won.
- Date: 2013-2014 **Cravath, Swaine & Moore**
Case: Qualcomm
Project: Provided expert litigation support, technical consulting, and advisory services in Anti-Trust case regarding location services technologies, platforms, and standards.
- Date: 2014 **Patterson Thuente Pedersen, P.A.**
Case: Kaspersky Internet Security
Project: Provided expert litigation support and technical consulting in patent countersuit involving internet security services.
- Date: 2014 **Sullivan & Cromwell LLP, others**
Case: Peschke
Project: Provided expert support and technical consulting in location services infringement patent dispute involving interactive mapping applications. Effort included providing deposition testimony.
- Date: 2013 **XYVerify**
Case: Patent Re-Submission and Approval
Project: Rewrote patent application for LBS/financial verification system using multiple location determination methods. Effort enabled patent to be approved after initial rejection by USPTO.
- Date: 2012-2013 **Covington & Burling**
Case: Samsung

Project: Provided expert litigation support and technical consulting and advisory services in International Trade Commission case.

Date: 2011-2013 **Connolly Bove Lodge & Hutz**
Case: Enovsys
Project: Provided expert litigation support and technical consulting and advisory services for pursuit of LBS patent royalties and infringement settlements.

Date: 2011-2013 **Voxson**
Case: Various
Project: Provided expert litigation support and technical consulting and advisory services for pursuit of E911 and LBS patent infringement royalties and settlements.

2010-2012 **Morrison & Foerster LLP**
Date: Case: Cellco Partnership (dba Verizon Wireless)
Project: Provided expert advisory and report services in support of IPR re-examination process of E911 and LBS patents.

2011-2012 **Dovel & Luner**
Date: Case: TrackBeam
Project: Provided market/technical consulting, expertise and research analysis of LBS patents to identify potential licensing candidates.

2011 **SNR Denton**
Date: Case: Wavemarket
Project: Provided market and technical consulting and advisory services for defense of LBS patent lawsuits.

2010 **State of New Jersey**
Date: Project: Provided wireless location consulting expertise in development of economic growth strategy for State of New Jersey.

2007-2008 **General Electric**
Project: Provided consulting research and guidance on LBS and E911 technology, GE-owned patents, prior artwork, and future technology direction.

Patents

"Method and apparatus for providing mobile social networking privacy." (U.S. Patent Number 8,613,109, issued on December 17, 2013)

Education

<u>Year</u>	<u>College/University</u>	<u>Degree</u>
1987	University of Texas at Austin (1 st in graduating class)	MBA, Information Systems Management
1983	Purdue University, West Lafayette, Indiana (Graduated with top honors)	BSEE, Digital System Design emphasis

Publications

Books:

1. The Definitive Guide To RFID, Wi-Fi, BLE, UWB, Ultrasound, Infrared, and Other RTLS and Beacon Technologies (available May 2018)
2. The Practical Guide to The Internet of Things: Use Cases and Enabling Technologies (available June 2018)
3. The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2 versions)
4. The Definitive Guide to Wireless E911
5. The Definitive Guide to Mobile Positioning and Location Management (Co-authored)

Articles/Quotations:

1. Location Data Privacy posts/blog. Ongoing at www.E911-LBS.com.
2. The Columbus Dispatch. February 17, 2017. "Experts: GPS monitors couldn't save OSU student's life"
3. E911-LBS.com. May 2012. "The Pacifier Generation – How Wireless is Impacting Our Society"
4. Nbizmag.com. Summer 2008. "How Will the Convergence of LBS Technologies Affect Business?"
5. Directions Magazine. November 30, 2005. "The Deadline for the E911 Mandate Approaches...Where Do Things Stand?"
6. Computerworld. May 23, 2005. "Beyond The Supply Chain: The Impact of RFID on Business Operations and IT Infrastructure"
7. RFID Journal. June 12, 2005. "IT's Impact on RFID"
8. Directions Magazine. July 29, 2004. "The Strategic Implications of the Wal-Mart RFID Mandate"
9. Directions Magazine. February 25, 2004. "RFID-Hot Technology with Wide-Ranging Applications"
10. WirelessDevNet.com. January 30, 2003. "It's The (Location-Based) Applications – Stupid!"

Professional Associations and Achievements

- NENA, APCO
- Certified in Emergency Management Response (CERT)

Exhibit 1005



(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2006/0218232 A1**

Kubala et al.

(43) **Pub. Date: Sep. 28, 2006**

(54) **METHOD AND SYSTEM FOR ACCOMMODATING MANDATORY RESPONSES IN ELECTRONIC MESSAGING**

(52) **U.S. Cl. 709/206; 709/224**

(75) Inventors: **Michael Kubala**, Austin, TX (US);
David Kulczar, Austin, TX (US);
Leonel Saenz III, Austin, TX (US);
Thanh K. Tran, Pflugerville, TX (US)

(57) **ABSTRACT**

Correspondence Address:
IBM CORP (JRB)
C/O LAW OFFICE OF JOSEPH R BURWELL
P O BOX 28022
AUSTIN, TX 78755-8022 (US)

A method, system, apparatus, or computer program product is presented for processing electronic messages. An electronic message is received for a recipient from a sender, and a data field is detected in the received electronic message that indicates a request by the sender for a response from the recipient for the received electronic message. The recipient is alerted to the detected request for the response for the received electronic message, and after alerting the recipient, actions are required by the recipient with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender. For example, the recipient can be prevented from closing a review of the received e-mail message, from deleting the received e-mail message, and from exiting the e-mail application until the recipient has responded to the received email message.

(73) Assignee: **International Business Machines Corp.**

(21) Appl. No.: **11/089,388**

(22) Filed: **Mar. 24, 2005**

Publication Classification

(51) **Int. Cl.**
G06F 15/16 (2006.01)
G06F 15/173 (2006.01)

E-mail application warning!	1102	<input type="checkbox"/>
The message that you are currently reviewing cannot be closed until you reply to the message.		
	1104	<input type="button" value="OK"/>

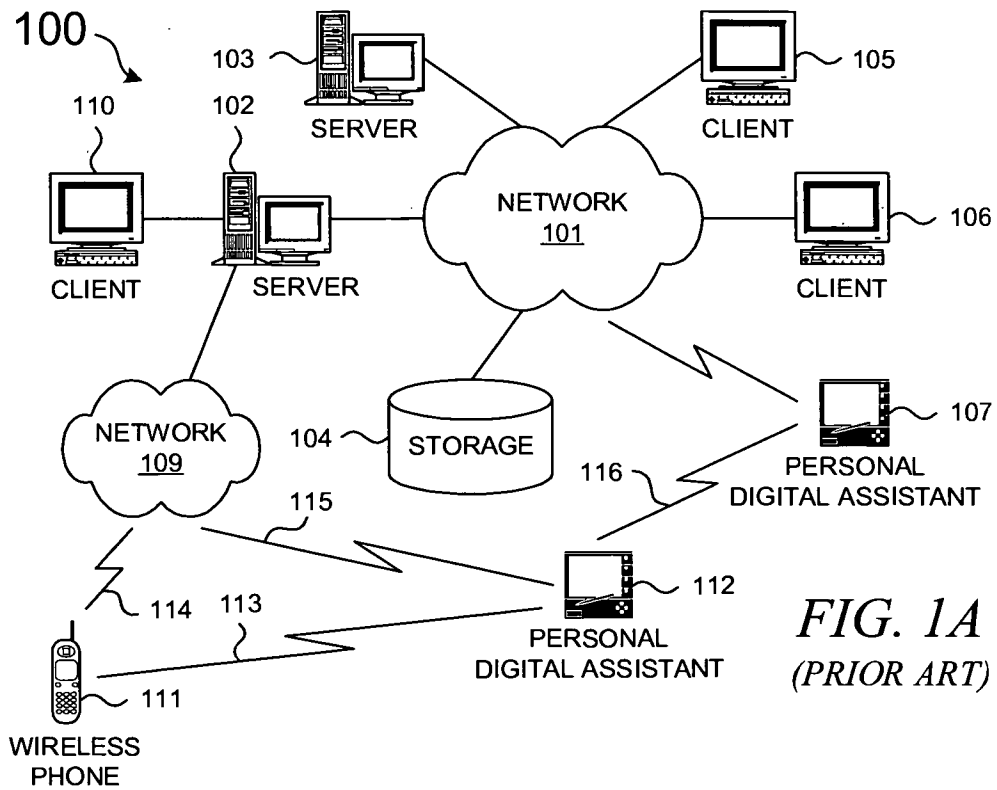


FIG. 1A
(PRIOR ART)

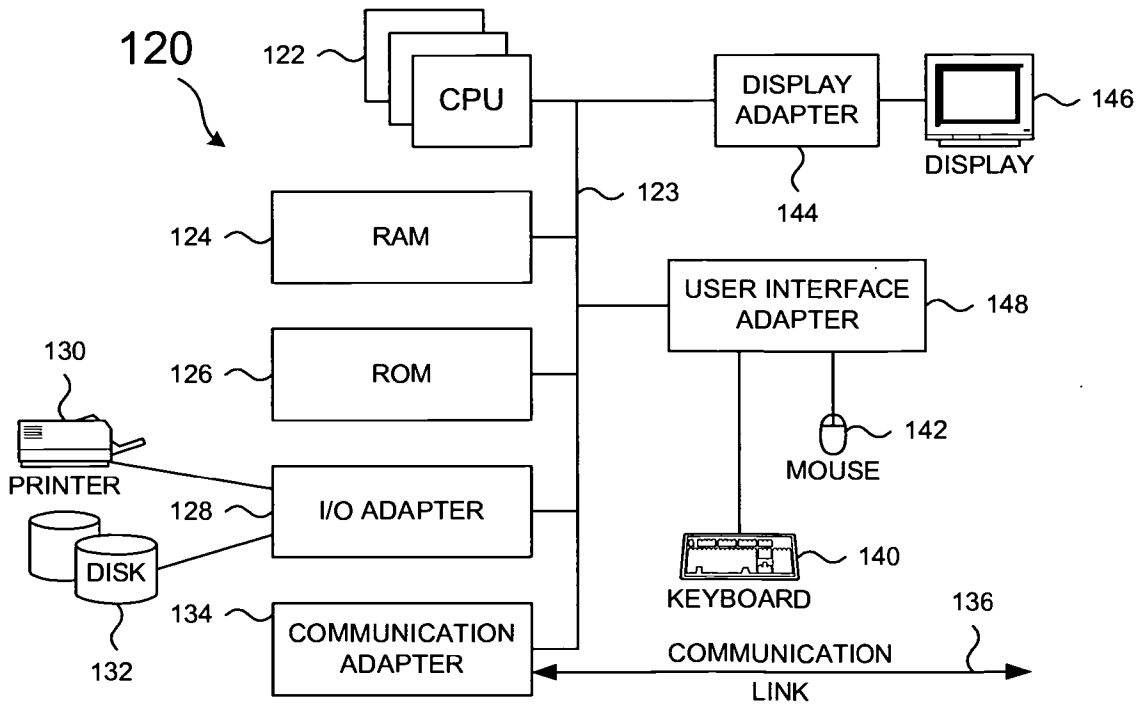


FIG. 1B
(PRIOR ART)

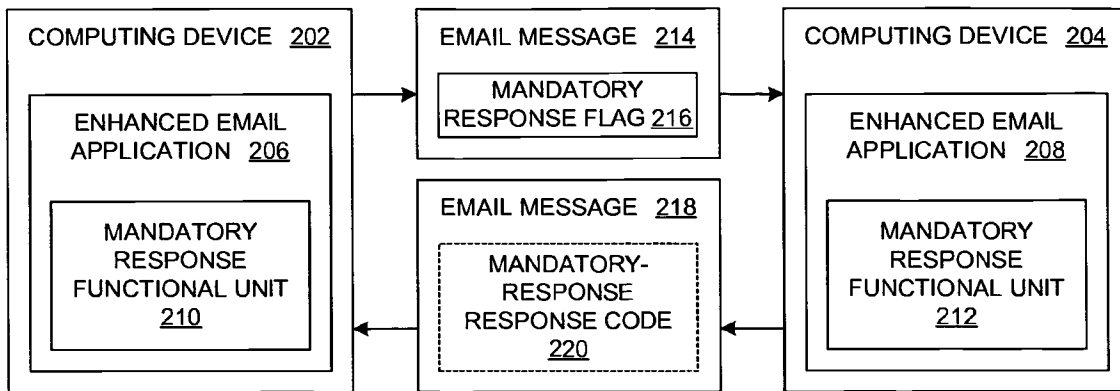


FIG. 2

```

Message-ID: <BAY10-F27BA89BD946D0AA37A0@ibm.com>
Received: from 61.64.67.100 by bay10.mail.ibm.com;
Sat, 29 Jan 2005 20:53:59 GMT
In-Reply-To: <BAY10-F18E133A529A4EBA3830@ibm.com>
304 ~ X-Mandatory-Response: 1.0
From: "IBM ADMIN 93825" <admin93825@ibm.com>
To: admin-hr@ibm.com
Subject: New employee
Date: Sat, 29 Jan 2005 15:53:59 -0500
Mime-Version: 1.0
Content-Type: text/plain; format=flowed
    
```

FIG. 3

```

...
From: "IBM ADMIN 93825" <admin93825@ibm.com>
To: admin-hr@ibm.com
Subject: New employee
Date: Sat, 29 Jan 2005 15:53:59 -0500
...
Jane--Has the new employee arrived yet? --John
    
```

402 ~ <x-mandatory-response: 1.0>

FIG. 4

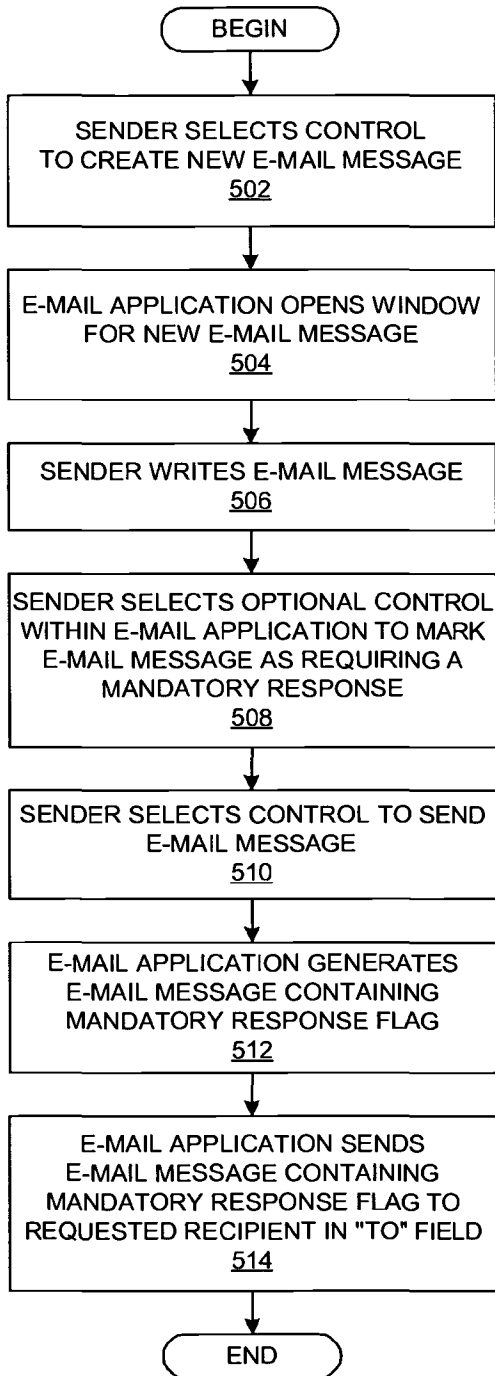


FIG. 5

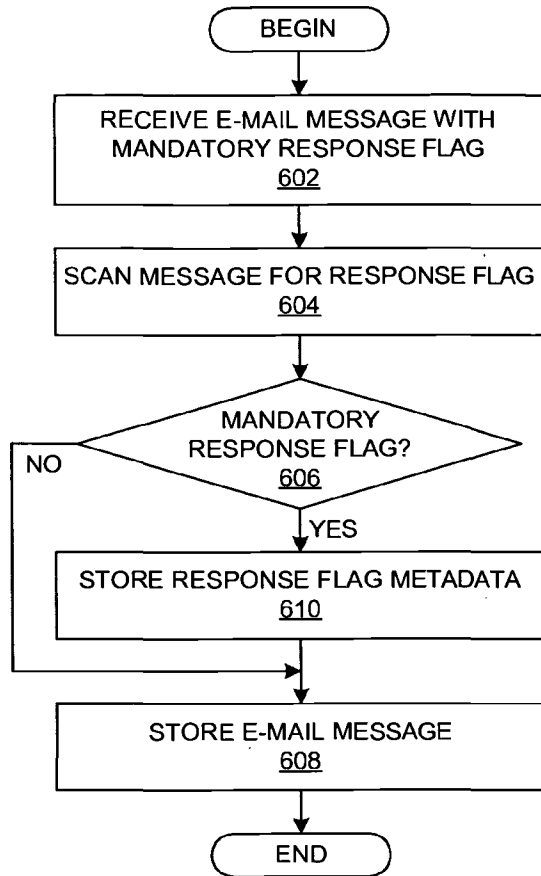


FIG. 6

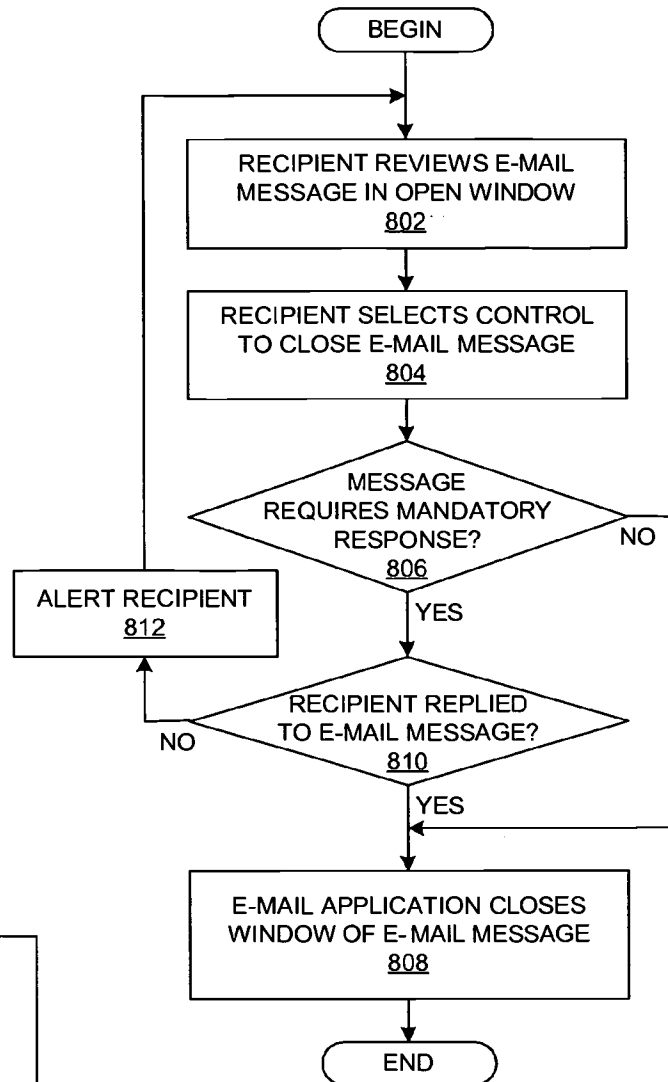


FIG. 8

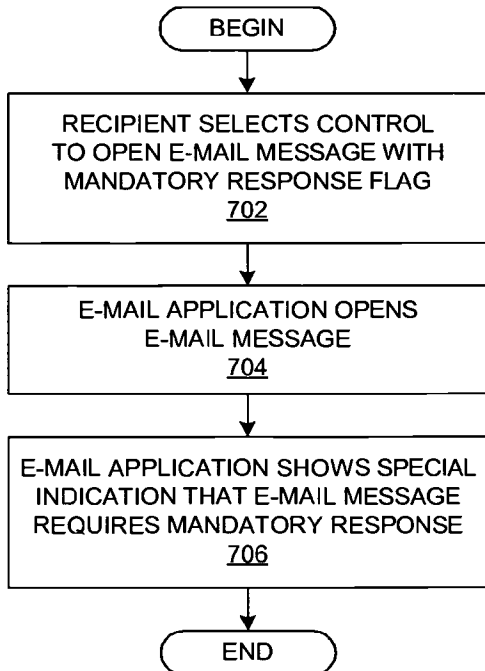


FIG. 7

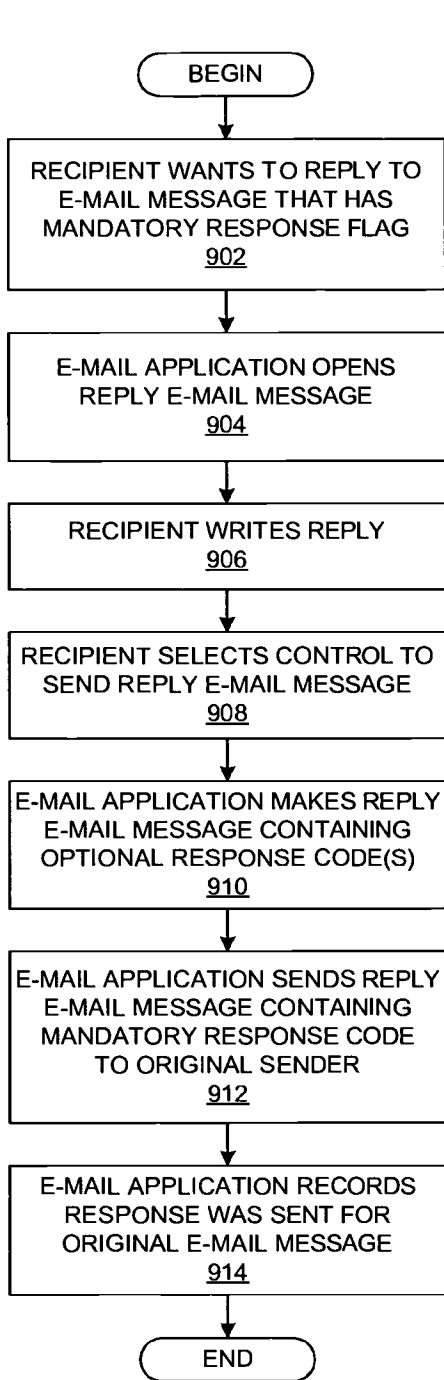


FIG. 9

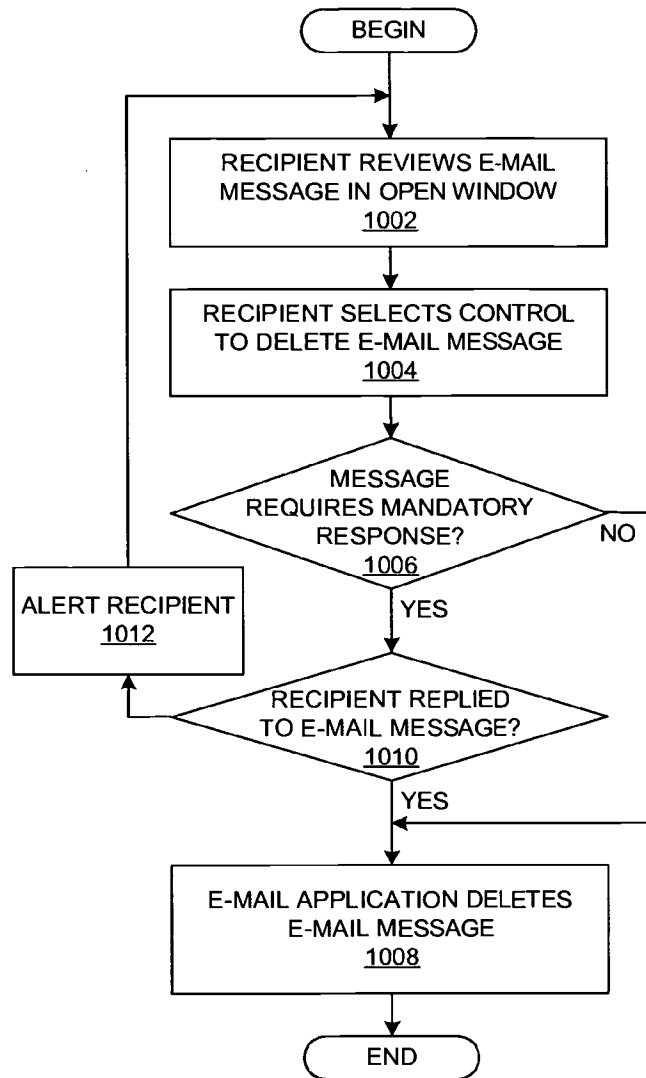


FIG. 10

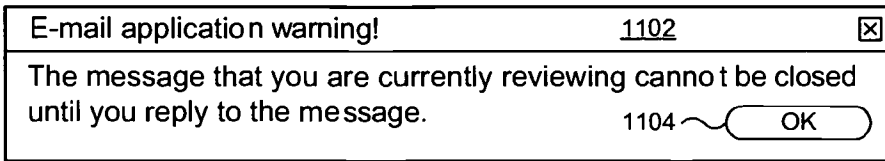


FIG. 11A

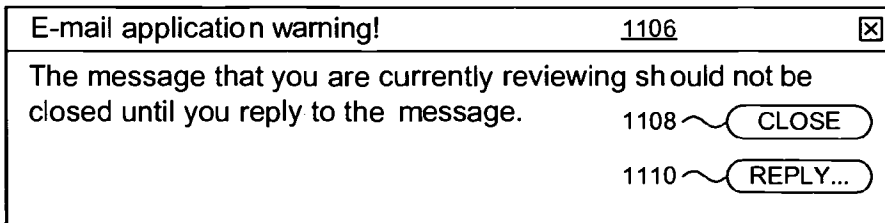


FIG. 11B

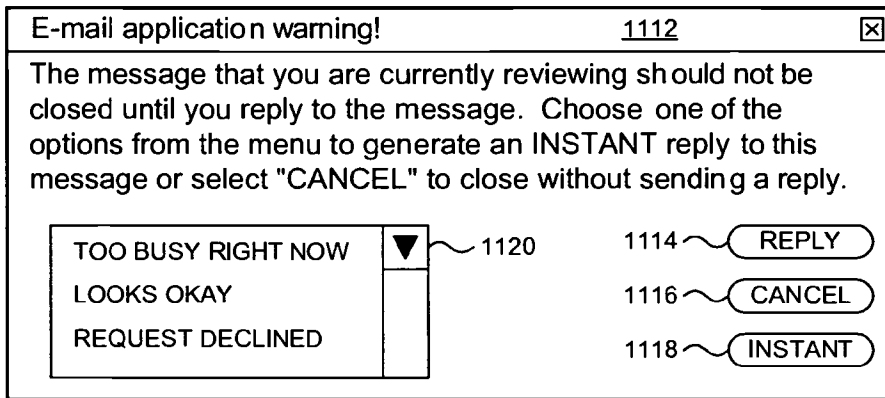


FIG. 11C

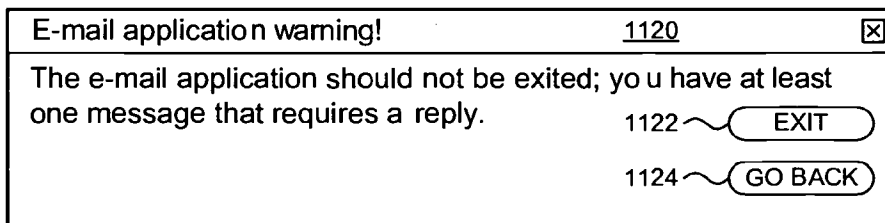


FIG. 11D

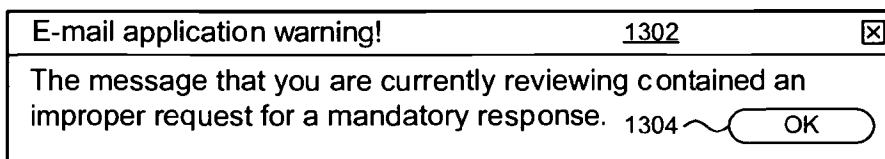


FIG. 13

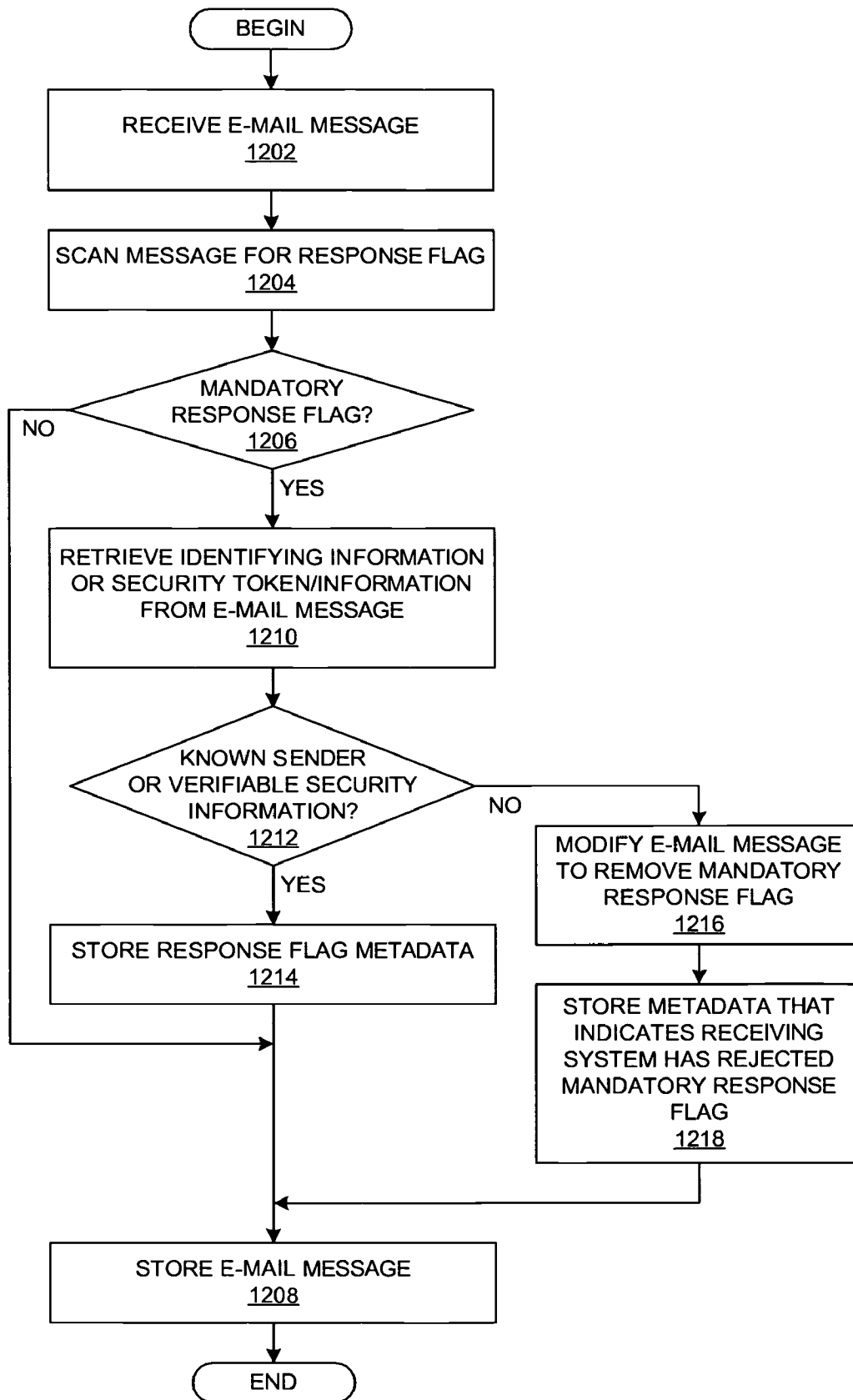


FIG. 12

METHOD AND SYSTEM FOR ACCOMMODATING MANDATORY RESPONSES IN ELECTRONIC MESSAGING

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to an improved data processing system and, in particular, to a method and apparatus for multicomputer data transferring. Still more particularly, the present invention provides a method and apparatus for e-mail message processing.

[0003] 2. Description of Related Art

[0004] A significant portion of a typical work day for many white-collar employees centers around communication in various forms, e.g., meetings, phone calls, and various forms of electronic messaging, such as e-mail and instant messages. In some cases, a corporation may be able to identify that more frequent use of electronic communications has increased the productivity of the overall corporation, and the same may be true for certain employees.

[0005] However, in some cases, an employee can demonstrate that his or her productivity suffers in proportion to the number of e-mail messages that he or she receives. In general, though, the amount of communication that is accomplished by e-mail messages continues to increase. This situation is compounded by the ease with which employees are able to communicate with each other by e-mail messages. E-mail messages are easily sent to a recipient, and e-mail messages are easily queued in anticipation of a response. Hence, the volume of e-mail is problematic in some cases because the task of responding to e-mail messages consumes an increasingly larger portion of a typical information worker's day. Moreover, the act of responding to e-mail messages can become monotonous in addition to time-consuming, which may cause an employee to become careless in responding to important e-mail messages. Potential errors may include incorrect information within a response or undue delay by neglecting to respond to an important e-mail message. As a result, business processes may be effected in uncertain ways.

[0006] Productivity-enhancing features have been added to e-mail applications to assist workers in handling the larger workload that is represented by the larger volume of e-mail. Prior art solutions have provided the ability to mark an e-mail message with a priority flag that indicates a normal priority, a high priority, or a highest priority, thereby allowing an employee to identify and respond to the most important e-mail messages from the sender's perspective. Other prior art solutions have provided the ability to generate return receipts to the sender when the sender's e-mail message is received at its intended destination or when the recipient opens the e-mail message, thereby providing an acknowledgment that a particular message has been received and/or opened.

[0007] However, these solutions allow a recipient to determine how quickly the recipient will respond to an incoming e-mail message. For example, a recipient may open an e-mail message that is flagged as highest priority and then decide that the e-mail message does not represent an important matter, after which the recipient postpones the generation of a response. Many business processes are time-

critical, though, and there is a need to provide features in e-mail applications that reduce the amount of time between the receipt of an important e-mail message by a recipient and the generation of a response to that e-mail message by the recipient.

[0008] Therefore, it would be advantageous to provide productivity-enhancing features within e-mail applications for the handling of email messages so that important messages receive the appropriate attention from the recipient of an e-mail message.

SUMMARY OF THE INVENTION

[0009] A method, system, apparatus, or computer program product is presented for processing electronic messages. An electronic message is received for a recipient from a sender, and a data field is detected in the received electronic message that indicates a request by the sender for a response from the recipient for the received electronic message. The recipient is alerted to the detected request for the response for the received electronic message, and after alerting the recipient, actions are required by the recipient with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender. For example, the recipient can be prevented from closing a review of the received e-mail message, from deleting the received e-mail message, and from exiting the e-mail application until the recipient has responded to the received email message.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, further objectives, and advantages thereof, will be best understood by reference to the following detailed description when read in conjunction with the accompanying drawings, wherein:

[0011] **FIG. 1A** depicts a typical network of data processing systems, each of which may implement the present invention;

[0012] **FIG. 1B** depicts a typical computer architecture that may be used within a data processing system in which the present invention may be implemented;

[0013] **FIG. 2** depicts a block diagram that shows an exchange of e-mail messages between email applications that have been enhanced to include functionality to implement an embodiment of the present invention;

[0014] **FIG. 3** depicts an exemplary dataset in which a mandatory response flag may be embedded within a set of e-mail message headers;

[0015] **FIG. 4** depicts an exemplary dataset in which a mandatory response flag may be embedded within an e-mail message body;

[0016] **FIG. 5** depicts a flowchart that shows a process in which a sender creates an e-mail message that contains a request for a mandatory response for the e-mail message;

[0017] **FIG. 6** depicts a flowchart that shows a process in which a receiving data processing system processes an e-mail message that contains a mandatory response flag;

[0018] **FIG. 7** depicts a flowchart that shows a process in which a recipient opens an email message that contains a mandatory response flag;

[0019] **FIG. 8** depicts a flowchart that shows a process in which a recipient attempts to disregard the requirement of a mandatory response with respect to an e-mail message that the recipient is viewing by attempting to close the e-mail message;

[0020] **FIG. 9** depicts a flowchart that shows a process in which a recipient replies to a reviewed e-mail message that contains a mandatory response flag;

[0021] **FIG. 10** depicts a flowchart that shows a process in which a recipient attempts to disregard the requirement of a mandatory response with respect to an e-mail message that the recipient is viewing by attempting to delete the message;

[0022] **FIGS. 11A-11D** depicts a set of diagrams that represent a set of GUI windows through which an e-mail application alerts a user by displaying warning messages and error messages to the user as a result of a user action when the e-mail application has an e-mail message that contains a mandatory request flag;

[0023] **FIG. 12** depicts a flowchart that shows a process in which the usage of mandatory response flags is monitored by an email application; and

[0024] **FIG. 13** depicts a diagram that shows a GUI window through which an e-mail application displays a warning message to a user for an improper mandatory response flag.

DETAILED DESCRIPTION OF THE INVENTION

[0025] In general, the devices that may comprise or relate to the present invention include a wide variety of data processing technology. Therefore, as background, a typical organization of hardware and software components within a distributed data processing system is described prior to describing the present invention in more detail.

[0026] With reference now to the figures, **FIG. 1A** depicts a typical network of data processing systems, each of which may implement a portion of the present invention. Distributed data processing system **100** contains network **101**, which is a medium that may be used to provide communications links between various devices and computers connected together within distributed data processing system **100**. Network **101** may include permanent connections, such as wire or fiber optic cables, or temporary connections made through telephone or wireless communications. In the depicted example, server **102** and server **103** are connected to network **101** along with storage unit **104**. In addition, clients **105-107** also are connected to network **101**. Clients **105-107** and servers **102-103** may be represented by a variety of computing devices, such as mainframes, personal computers, personal digital assistants (PDAs), etc. Distributed data processing system **100** may include additional servers, clients, routers, other devices, and peer-to-peer architectures that are not shown.

[0027] In the depicted example, distributed data processing system **100** may include the Internet with network **101** representing a worldwide collection of networks and gateways that use various protocols to communicate with one

another, such as Lightweight Directory Access Protocol (LDAP), Transport Control Protocol/Internet Protocol (TCP/IP), Hypertext Transport-Protocol (HTTP), Wireless Application Protocol (WAP), etc. Of course, distributed data processing system **100** may also include a number of different types of networks, such as, for example, an intranet, a local area network (LAN), or a wide area network (WAN). For example, server **102** directly supports network **109** and client **110**; network **109** incorporates wireless communication links. Network-enabled phone **111** and PDA **112** can directly transfer data between themselves across wireless link **113** using an appropriate technology, e.g., via Bluetooth™ wireless technology or Wi-Fi technology (IEEE 802.11) that allows the creation of so-called personal area networks (PAN) or personal ad-hoc networks. Phone **111** connects to network **109** through wireless link **114**, and PDA **113** connects to network **109** through wireless link **115**. In a similar manner, PDA **113** can transfer data to PDA **107** via wireless link **116**.

[0028] The present invention could be implemented on a variety of hardware platforms; **FIG. 1A** is intended as an example of a heterogeneous computing environment and not as an architectural limitation for the present invention.

[0029] With reference now to **FIG. 1B**, a diagram depicts a typical computer architecture of a data processing system, such as those shown in **FIG. 1A**, in which the present invention may be implemented. Data processing system **120** contains one or more central processing units (CPUs) **122** connected to internal system bus **123**, which interconnects random access memory (RAM) **124**, read-only memory **126**, and input/output adapter **128**, which supports various I/O devices, such as printer **130**, disk units **132**, or other devices not shown, such as an audio output system, etc. System bus **123** also connects communication adapter **134** that provides access to communication link **136**. User interface adapter **148** connects various user devices, such as keyboard **140** and mouse **142**, or other devices not shown, such as a touch screen, stylus, microphone, etc. Display adapter **144** connects system bus **123** to display device **146**.

[0030] Those of ordinary skill in the art will appreciate that the hardware in **FIG. 1B** may vary depending on the system implementation. For example, the system may have one or more processors, such as an Intel® Pentium®-based processor and a digital signal processor (DSP), and one or more types of volatile and non-volatile memory. Other peripheral devices may be used in addition to or in place of the hardware depicted in **FIG. 1B**. The depicted examples are not meant to imply architectural limitations with respect to the present invention.

[0031] In addition to being able to be implemented on a variety of hardware platforms, the present invention may be implemented in a variety of software environments. A typical operating system may be used to control program execution within each data processing system. For example, one device may run a Unix® operating system, while another device contains a simple Java® runtime environment. A representative computer platform may include a browser, which is a well known software application for accessing hypertext documents in a variety of formats, such as graphic files, word processing files, Extensible Markup Language (XML), Hypertext Markup Language (HTML),

Handheld Device Markup Language (HDML), Wireless Markup Language (WML), and various other formats and types of files.

[0032] The present invention may be implemented on a variety of hardware and software platforms, as described above with respect to **FIG. 1A** and **FIG. 1B**. More specifically, though, the present invention is directed to an improved data processing system for enhancing the functionality of e-mail applications or similar types of electronic messaging applications. Various embodiments of the present invention are explained in more detail hereinbelow with respect to the remaining figures. It should be noted that the present invention supports electronic messages of many different formats. Although the term “e-mail message” is used throughout the description of the present invention, an e-mail message comprise various types of electronic messages, e.g., text messages, instant messages, fax messages, voicemail messages, video messages, audio messages, and other types of messages; the present invention is applicable to various types of electronic communication applications and/or devices within which the various types of electronic messages can be processed.

[0033] With reference now to **FIG. 2**, a block diagram depicts an exchange of e-mail messages between email applications that have been enhanced to include functionality to implement an embodiment of the present invention. Computing devices **202** and **204** represent one of a variety of possible data processing systems that are able to support an embodiment of the present invention, e.g., such as the data processing systems that are shown in **FIG. 1A**. Computing devices **202** and **204** support the execution of e-mail applications **206** and **208**, respectively, which exchange e-mail messages as a form of electronic communication, e.g., through a LAN, through the Internet, or through some other type of communication link. E-mail applications **206** and **208** have been enhanced to include mandatory response functional units **210** and **212**, respectively, which implement the processes of the present invention. E-mail applications **206** and **208** may represent any one of a variety of commercially available e-mail applications, and functional units **210** and **212** may be implemented in many different forms, such as subroutines and/or procedures, applets, plug-ins, ActiveX™ controls, scripts, or any other appropriate form of software module.

[0034] As explained above, prior art e-mail applications allow a recipient to determine how quickly he or she will respond to a received e-mail message. For example, a recipient may open an e-mail message that is flagged as highest priority and then decide that the e-mail message does not represent an important matter, after which the recipient postpones the generation of a response. Many business processes are time-critical, though, and there is a need to provide features in e-mail applications that reduce the amount of time between the receipt of an important e-mail message and the generation of a response for that e-mail message.

[0035] The present invention addresses this need by enhancing the functionality of an e-mail application in the following manner. A user of e-mail application **206**, which contains mandatory response functional unit **210**, operates e-mail application **206** to request that an important outgoing e-mail message is flagged as an e-mail message to which its

recipient is required to provide a mandatory response. E-mail application **206** relies on functional unit **210** either to assist in the generation of an outgoing message or to perform the necessary modifications to an outgoing message so that it is flagged as an e-mail message to which its recipient is required to provide a mandatory response. For example, email message **214** contains mandatory response flag **216**; mandatory response flag **216** acts as an indicator from e-mail application **206** to e-mail application **208** that e-mail message **214** should be handled as an important message with a required mandatory response. Mandatory response flag **216** may be implemented in a variety of data formats, as explained hereinbelow.

[0036] After handling e-mail message **214** appropriately, e-mail application **208** transmits its user's response e-mail message **218** to e-mail application **206**. In a preferred embodiment, response message **218** is not required to include any type of response flag, response code, or processing status code as additional information that is passed from e-mail application **208** to e-mail application **206**. Alternatively, though, response message **218** may contain a response flag, response code, processing status code, or similar type of datum which provides additional information to e-mail application **206** about the manner in which e-mail application **208** and/or its user has handled the receipt of e-mail message **214**. A return code allows e-mail application **206** to perform additional appropriate actions, e.g., by informing its user of the manner in which e-mail message **214** was handled by the recipient of e-mail message **214**, i.e. the user of e-mail application **208**, which may be of interest to the user of e-mail application **206**; the optional return code and its associated processing is discussed in more detail further below.

[0037] With reference now to **FIG. 3**, an exemplary dataset is illustrated in which a mandatory response flag may be embedded within a set of e-mail message headers in accordance with an embodiment of the present invention. An e-mail message comprises an envelope, a set of message headers, and the message body, which is the content portion of the e-mail message. The envelope comprises a set of routing headers that are used by the transport protocol for the transmission and delivery of an e-mail message, e.g., as specified SMTP (Simple Mail Transport Protocol). Most e-mail systems support the SMTP protocol for transferring e-mail messages between data processing systems. SMTP can support the transfer of electronic messages that are formatted to conform to its requirements, including messages with text and/or other types of content. Messages headers provide information about the sender and recipient of a message along with information about the manner in which the message should be handled or processed. Most e-mail messages are formatted so that they conform to the standard as described in Resnick et al., “Internet Message Format”, RFC (Request for Comments) 2822, April, 2001, which is one of the standards that is available from The Internet Engineering Task Force (IETF); RFC 2822 provides a syntax for text messages. Other standards provide a syntax for supporting other types of content, e.g., as extensions to RFC 822, such as Freed et al., “Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies”, RFC 2054, November 1996.

[0038] Message headers are name-value pairs. Each header is formatted as a single line of text; some of the

headers are required, such as "Date", "From", or "To", while other headers are optional but often used, such as "Subject" or "Cc". Any message header that is not recognized by an e-mail application should be ignored, yet all of the headers are propagated between systems, whether or not they are recognized. Extensions or non-standard headers are required to commence as "X-" in order to indicate their non-standard nature.

[0039] Referring to FIG. 3, message headers 302 represent a set of message headers that have accompanied a e-mail message body. In one embodiment of the present invention, an e-mail message that requires a mandatory response is flagged by inserting a mandatory response flag as a message header of its accompanying e-mail message; in other words, a mandatory response flag is implemented using a message header as the indicating data field. In a preferred embodiment, the mandatory response flag is implemented as an RFC-2822-compliant header or an extension thereto, as shown in FIG. 3; message header 304 indicates that its accompanying e-mail message should be processed by the receiving e-mail application in a manner that attempts to obtain a mandatory response. Alternatively, the mandatory response flag may be implemented as a MIME header. As yet another alternative, the mandatory response flag may be implemented as a data field that is embedded within another extension message header that has accompanied the e-mail message, in which case the mandatory response flag would occupy only a portion of the extension message header in addition to other information.

[0040] With reference now to FIG. 4, an exemplary dataset is illustrated in which a mandatory response flag may be embedded within an e-mail message body in accordance with an embodiment of the present invention. As noted above, an e-mail message comprises its envelope, its set of message headers, and its message body. In contrast to FIG. 3, which illustrates an exemplary embodiment in which a mandatory response flag is implemented as a message header of the e-mail message, FIG. 4 illustrates an exemplary embodiment of the present invention in which a mandatory response flag is implemented as a datum or data field within the message body itself. In this example, a mandatory response flag has been formatted as tag 402 at the end message body 404; in one embodiment, the mandatory response flag may be formatted as markup-language tags, which can be ignored by a processing application if not recognized. The mandatory response flag may appear at any appropriate location within the message body. Other embodiments may simply implement the mandatory response flag as a specially recognized text string, e.g., "***MANDATORY RESPONSE!***", which would not only be programmatically recognized by a processing application but could also be understood by the recipient, i.e. the receiving user.

[0041] As mentioned with respect to FIG. 2 above and as discussed in more detail hereinbelow, the returned status codes, i.e. the status codes that may accompany a response message that has been returned in response to a received message that had a mandatory response flag, can also be implemented as a message header, extension header, or within the body of a message.

[0042] With reference now to FIG. 5, a flowchart depicts a process in which a sender creates an e-mail message that

contains a request for a mandatory response for the e-mail message in accordance with an embodiment of the present invention. The process commences with the sender, i.e. the sending user, selecting a graphical user interface (GUI) control within an e-mail application in order to initiate the creation of an e-mail message (step 502); the instance of the e-mail application is similar to e-mail application 206 that is shown in FIG. 2, which has been enhanced to include functionality that supports the implementation of a mandatory response flag. The e-mail application opens a window for the creation of the new e-mail message (step 504), and the sender writes the e-mail message with input to a computing device (step 506).

[0043] The sender then selects an optional control within the e-mail application to mark the e-mail message as requiring a mandatory response (step 508), e.g., by pushing a GUI button, by selecting a GUI checkbox, or in some other manner. It should be noted, though, that the functionality of the present invention may be invoked through a variety of interfaces and mechanisms, e.g., including text-based command lines. It should also be noted that the functionality of the present invention is not necessarily invoked via user input or user interaction by the sender; the request for a mandatory response may be automatically and programmatically generated in certain circumstances, e.g., as configured by an administrative user or based on the application of an enterprise policy manager that determines certain operational conditions in which messages from/to certain persons, roles, groups, projects, etc., are processed to include mandatory response flags.

[0044] At some point in time, the user requests to send the newly written e-mail message (step 510), e.g., by selecting a "SEND" button in the e-mail application, and the e-mail application generates an e-mail message that contains the newly written content in the message body and that also contains the mandatory response flag (step 512). The e-mail application sends the e-mail message containing the mandatory response flag to the requested recipient(s) in the "TO" field or message header of the message (step 514), and the process at the message-originating data processing system is concluded.

[0045] With reference now to FIG. 6, a flowchart depicts a process in which a receiving data processing system processes an e-mail message that contains a mandatory response flag in accordance with an embodiment of the present invention. The process commences with the receipt of an e-mail message that might contain a mandatory response flag (step 602), and an e-mail application on a computing device at the receiving end of the transmission lexically scans or otherwise analyzes the received e-mail message for a mandatory response flag (step 604); the instance of the e-mail application is similar to e-mail application 208 that is shown in FIG. 2, which has been enhanced to include functionality that supports the usage of a mandatory response flag. If the received e-mail message does not contain a mandatory response flag (step 606), then the e-mail message is stored for subsequent retrieval and user review (step 608), thereby concluding the process.

[0046] However, if it is determined that the received e-mail message contains a mandatory response flag at step 606, then the e-mail application stores metadata in association with the e-mail message (step 610) such that the

metadata reflects that the e-mail message contains a mandatory response flag. Step 610 is not necessary because the e-mail application could check each e-mail message individually with respect to a mandatory response flag whenever an action needs to be performed on the e-mail message and whenever the action would be affected by the presence of a mandatory response flag in the e-mail message; however, in some cases, it may be more convenient programmatically to check each incoming message one time as an initial step in the overall process. The process then continues by storing the e-mail message at step 608, and the process is concluded. In this manner, if an e-mail message does not contain a mandatory response flag, then the e-mail message continues to be processed in a manner that is known in the prior art; otherwise, additional features of the present invention are available to be applied against the e-mail message, as described in more detail hereinbelow.

[0047] With reference now to FIG. 7, a flowchart depicts a process in which a recipient opens an email message that contains a mandatory response flag. The process commences with the recipient, i.e. the receiving user, selecting a control within an e-mail application to open an e-mail message (step 702), and the e-mail application opens the selected e-mail message (step 704). The e-mail application may optionally show a special indication that the selected e-mail message requires a mandatory response (step 706), and the process of opening the message is concluded. The e-mail application may indicate the presence of a mandatory response flag: using a message within a pop-up window; other information within a status bar; through the use of colors on a display screen; or through some other means of alerting the user.

[0048] With reference now to FIG. 8, a flowchart depicts a process in which a recipient attempts to disregard the requirement of a mandatory response with respect to an e-mail message that the recipient is viewing by attempting to close the e-mail message. The process commences with the recipient, i.e. the receiving user, reviewing an e-mail message within a GUI window of an e-mail application (step 802). The recipient selects a control to close the e-mail message (step 804), e.g., by selecting a menu item or a close box. The e-mail application then determines whether or not the e-mail message was flagged as requiring a mandatory response (step 806), e.g., either by checking the metadata that is associated with the e-mail message or by scanning the e-mail message itself. If the e-mail message does not have an associated mandatory response flag, then the e-mail application closes the e-mail message or its window (step 808), whichever is appropriate, and the process is concluded.

[0049] However, if the e-mail message does have an associated mandatory response flag, then the e-mail application checks whether or not the user has replied to the e-mail message (step 810). If a reply has been made for the e-mail message, then the e-mail application closes the e-mail message at step 808, and the process is concluded. However, if a reply has not been made for the e-mail message, then the recipient is alerted (step 812), and the process loops back to step 802 so that the user can continue reviewing the e-mail message until the user generates a reply message, e.g., in the manner that is shown in FIG. 9. In this manner, the e-mail application strictly adheres to a requirement that the user must reply to the received e-mail message in some manner

before the e-mail application will allow the user to perform some other action; alternative processes for this situation are discussed further below.

[0050] With reference now to FIG. 9, a flowchart depicts a process in which a recipient replies to a reviewed e-mail message that contains a mandatory response flag in accordance with an embodiment of the present invention. The process commences with the recipient, i.e. the receiving user, already reviewing an e-mail message, e.g., as described with respect to FIG. 7. The recipient then selects a control, e.g., by pushing a GUI button, to reply to the e-mail message that the recipient is already reviewing (step 902), i.e. the message that contains the mandatory response flag. The e-mail application opens a window that allows a user to compose a reply e-mail message (step 904), and the recipient writes the e-mail message (step 906). The recipient then selects a control to send the reply e-mail message (step 908), and the e-mail application generates a reply e-mail message that contains the newly written response as a message body (step 910); optionally, the e-mail application may also support the use of mandatory-response return status codes, which would also be included within the reply e-mail message.

[0051] The email application then sends the reply e-mail message to the sender of the original message, e.g., using the e-mail address that was contained within the "FROM" message header or the "REPLY-TO" message header of the original message (step 912). The e-mail application then records that a response was returned for the original e-mail message by storing metadata that is associated with the original e-mail message (step 914), and the process is concluded.

[0052] With reference now to FIG. 10, a flowchart depicts a process in which a recipient attempts to disregard the requirement of a mandatory response with respect to an e-mail message that the recipient is viewing by attempting to delete the message. The process commences with the recipient, i.e. the receiving user, reviewing an e-mail message within a GUI window of an e-mail application (step 1002). The recipient selects a control to delete the e-mail message (step 1004), e.g., by selecting a menu item or a close box. The e-mail application then determines whether or not the e-mail message was flagged as requiring a mandatory response (step 1006), e.g., either by checking the metadata that is associated with the e-mail message or by scanning the e-mail message itself. If the e-mail message does not have an associated mandatory response flag, then the e-mail application deletes the e-mail message (step 1008), and the process is concluded.

[0053] However, if the e-mail message does have an associated mandatory response flag, then the e-mail application checks whether or not the user has replied to the e-mail message (step 1010). If a reply has been made for the e-mail message, then the e-mail application deletes the e-mail message at step 1008, and the process is concluded. However, if a reply has not been made for the e-mail message, then the recipient is alerted (step 1012), and the process loops back to step 1002 so that the user can continue reviewing the e-mail message until the user generates a reply message, e.g., in the manner that is shown in FIG. 9. In this manner, the e-mail application strictly adheres to a requirement that the user must reply to the received e-mail message

in some manner before the e-mail application will allow the user to perform some other action; alternative processes for this situation are discussed further below.

[0054] With reference now to **FIGS. 11A-11D**, a set of diagrams represent a set of GUI windows through which an e-mail application alerts a user by displaying warning messages and error messages to the user as a result of a user action when the e-mail application has an e-mail message that contains a mandatory request flag. **FIGS. 11A-11D** may be used in different scenarios depending upon the manner in which the enhanced e-mail application is implemented or configured to handle an e-mail message that contains a mandatory response flag. Other scenarios could be handled in different ways that are not illustrated within **FIGS. 11A-11D**, and these different processes would also be considered as embodiments of the present invention because each different process would represent a different way of attempting to fulfill a request from the sender of the original message that the recipient should or must provide a reply message in response to the original message.

[0055] Referring now to **FIG. 11A**, window **1102** is displayed to the recipient, and window **1102** contains an error message for the recipient that informs the user that the user must reply to the message that is being reviewed before closing the e-mail message; "OK" button **1104** allows the user to close window **1102** and return to reviewing the e-mail message. Window **1102** might be displayed during the process that is shown in **FIG. 8**, while a similar window might be displayed during the process that is shown in **FIG. 10**. **FIG. 8** and **FIG. 10** illustrate a strict process in which a user is not permitted to perform another action with respect to a message that contains a mandatory response flag unless the user first responds or replies to the message, thereby fulfilling the request of the sender of the message that the user must respond to the message. In the examples that are shown in **FIG. 8** and **FIG. 10**, the recipient's e-mail application enforces this requirement strictly; in **FIG. 8**, the user must respond while reviewing the message, preferably as a requirement upon first reviewing the e-mail message by the recipient, while in **FIG. 10**, the user must respond before deleting the message, e.g., in a case in which the user attempts to delete the message without reading it.

[0056] Referring now to **FIG. 11B**, window **1106** is displayed to the recipient at a similar point in time as described with respect **FIG. 8**, i.e. a recipient of the original e-mail message has attempted to close an e-mail message after reviewing the e-mail message without replying to the e-mail message. Window **1106** contains an error message for the recipient that informs the user that the user should reply to the message that is being reviewed before closing the e-mail message; "CLOSE" button **1108** allows the user to continue to close the e-mail message without creating a replay message, while "REPLY . . ." button **1110** closes window **1106** and then creates an input window for the user to compose the reply e-mail message.

[0057] Referring now to **FIG. 11C**, window **1112** is displayed to the recipient at a similar point in time as described with respect to **FIG. 8**, i.e. a recipient of the original e-mail message has attempted to close an e-mail message after reviewing the e-mail message without replying to the e-mail message. Window **1112** contains an error message for the recipient that informs the user that the user should reply to

the message that is being reviewed before closing the e-mail message. "REPLY . . ." button **1114** closes window **1106** and then creates an input window for the user to compose the reply e-mail message, and "CANCEL" button **1116** allows the user to continue to close the e-mail message without creating a reply message. "INSTANT" button **1118** closes window **1112** and then creates a reply e-mail message with an automatically generated reply message in which the message body is predetermined or pre-configured; in this example, when "INSTANT" button **1118** is selected, the e-mail application determines which menu item within menu **1120** has been selected by the user as a quick response to the original e-mail message, thereby fulfilling the sender's request that the recipient is required to provide a mandatory response. The text strings that are used as menu items may be obtained in a variety of manners. For example, the text strings may be required and standardized within a data format specification, e.g., in a standard similar to RFC 2822. Alternatively, the text strings may be configurable through the enhanced e-mail application by allowing user-specifiable or system-administrator-specifiable parameters. As another alternative, the text strings may be extracted from the original e-mail message that was received from the sender, in which case the text strings may have been configured as user-specifiable or system-administrator-specifiable parameters in the sender's instance of the enhanced e-mail application.

[0058] Referring now to **FIG. 11D**, window **1120** is displayed to the recipient when the recipient of the original e-mail message has attempted to exit the e-mail application without replying to an e-mail message that contains a request for a mandatory response. In this example, the user can select "GO BACK" button **1122** to return to the e-mail application to reply to one of the e-mail messages, which might be emphasized within a list of messages in some visual manner to indicate that it requires a mandatory response. Otherwise, the user can select "EXIT" button **1124** to continue to exit the e-mail application.

[0059] As noted above, **FIGS. 11A-11D** may be used in different scenarios depending upon the manner in which the enhanced e-mail application is implemented or configured to handle an e-mail message that contains a mandatory response flag. The recipient is prompted to perform a mandatory action or a suggested action in response to attempting to perform another action without replying to the original e-mail message; in some cases, the recipient is provided with options that delay the creation of a response to the original e-mail message. In one embodiment, these different processing options may be configurable through the enhanced e-mail application by allowing user-specifiable or system-administrator-specifiable parameters.

[0060] Alternatively, the different processing options for handling the user's actions with respect to a mandatory response flag may be suggested and/or standardized within a data format specification, e.g., in a private specification that is proprietary to the creator of the e-mail application or in a public standard similar to RFC 2822. For example, a message header, a message body tag, etc., that represents a mandatory response flag may contain one or more standardized data values that indicate one or more processing options; in this manner, the sending e-mail application informs the receiving e-mail application of the processing option that is expected to be performed by the receiving

e-mail application. After extracting and storing a mandatory response flag from a received e-mail message, the receiving e-mail application would tailor its execution in accordance with the one or more indicated processing options in the mandatory response flag. In the examples that are shown in **FIG. 3** and **FIG. 4**, the mandatory response flags contain a "1.0" data value; these particular mandatory response flags may instruct the receiving e-mail application to require strict adherence to the requirement that the recipient must respond to the received e-mail message as soon as possible: (A) when the recipient first reviews the e-mail message, as shown in **FIG. 8**; (B) before the recipient can delete the e-mail message, as shown in **FIG. 10**; and/or (C) before the recipient can exit the e-mail application, as suggested in **FIG. 11D**. Other data values would instruct the receiving e-mail application to perform different actions in response to the recipient's actions, e.g., as suggested in **FIG. 11B** and **FIG. 11C**.

[0061] Likewise, a message header, a message body tag, etc., that represents a mandatory response flag may contain one or more standardized data values that indicate one or more types of status codes that are to be returned to the sending e-mail application. For example, the receiving e-mail application might collect information about the manner in which the recipient responded to requests to generate a reply message for the mandatory response flag, e.g., the number of requests to generate a reply message that the recipient ignored. As another example, the receiving e-mail application might measure the amount of time that elapsed between the time at which the user first reviewed the received e-mail message to the time at which the user created the reply message for the received e-mail message. The recipient could be informed through the warning or error message windows about the information that is being collected by the receiving e-mail application.

[0062] The present invention provides features within an e-mail application that reduces the amount of time between the receipt of an important e-mail message and the generation of a response for that e-mail message. However, as mentioned above, many business processes are time-critical, and the features of the present invention may be abused through overuse by many people. For example, too many people might flag e-mail messages as requiring a mandatory response, in which case an email system could degenerate into a scenario in which almost every e-mail message was marked as important enough to require a mandatory response, thereby causing users to ignore most requests for mandatory responses. The present invention addresses this potential problem by examining incoming messages with mandatory response flags, as explained in more detail below.

[0063] With reference now to **FIG. 12**, a flowchart depicts a process in which the usage of mandatory response flags is monitored by an email application in accordance with an embodiment of the present invention. In general, **FIG. 12** illustrates a process in which a message with a mandatory response flag is analyzed by the receiving e-mail application to ensure that the message contains some form of information on which the receiving e-mail application can make a determination that the recipient would authorize the sender to request a mandatory response for incoming messages.

[0064] The process commences when the receiving e-mail application receives an e-mail message for a recipient from

a sender (step **1202**), and the receiving e-mail application scans the received e-mail message for a mandatory response flag (step **1204**). A determination is made as to whether or not a mandatory response flag is present (step **1206**); if not, the e-mail message is processed and stored in a normal fashion (step **1208**), and the process is concluded.

[0065] If the receiving e-mail message contains a mandatory response flag, then the receiving e-mail application retrieves sender identifying information from the received e-mail message or a security token and/or other security-related information from the receiving e-mail message (step **1210**). For example, the sender identifying information may be represented as the sender's e-mail address, which is contained in a "FROM" message header. A security token or other security-related information might be stored within a MIME extension of the received e-mail message.

[0066] The receiving e-mail application then determines whether the sender identifying information is known to the receiving e-mail application or whether the security token or other security information is verifiable (step **1212**). For example, the sender identifying information might be checked against a special database, a configurable datastore, or the recipient's e-mail address book; hence, a sender is known to the recipient if the recipient's e-mail address book contains the sender's e-mail address. In the case in which a security token or security-related information is contained in the received e-mail message, the receiving e-mail message would attempt to verify the security information, e.g., by verifying a digital signature on a security token using the public key from the sender's public key certificate.

[0067] If the sender is known to the recipient or the security information can be verified, then the receiving e-mail application stores the mandatory response flag as meta-data in association with the received e-mail message (step **1214**), e.g., within an internal data structure or e-mail database for subsequent use as previously described above. In this manner, the receiving e-mail application performs certain determinations about whether the incoming e-mail message has originated from a sender who has privileges or is otherwise authorized or recognized to be able to request a mandatory reply in response to the receipt of the sender's e-mail message. The e-mail message is then processed and stored in a normal fashion at step **1208**, and the process is concluded.

[0068] If the sender is not known to the recipient or the security information cannot be verified at step **1212**, then the receiving e-mail application determines that the incoming e-mail message has not originated from a sender who has privileges or is otherwise authorized or recognized to be able to request a mandatory reply in response to the receipt of the sender's e-mail message. Hence, the receiving e-mail application modifies the e-mail message to remove the mandatory response flag (step **1216**), e.g., by deleting the appropriate message header or message body tag or text string. In this manner, the mandatory response flag does not subsequently cause the e-mail application to bother the recipient to reply to the received e-mail message in a mandatory way, e.g., as illustrated in **FIGS. 11A-11D**. However, the receiving e-mail application may store this fact as metadata in association with the e-mail message in order to record the fact that the request for a mandatory response was rejected by the receiving e-mail application (step **1218**). The e-mail mes-

sage is then processed and stored in a normal fashion at step 1208, and the process is concluded.

[0069] Using the exemplary process that is shown in FIG. 12 or through the use of a similar authorization or recognition mechanism, the present invention supports functionality that allows an e-mail application to control usage of the user-selectable mandatory response feature, thereby providing a mechanism for preventing the degenerated scenario that was mentioned hereinabove. It should be noted that the manner in which the e-mail application filters the received e-mail messages may be configurable by a user or by a system administrator, e.g., through the use of policies that are applied and evaluated against the incoming e-mail messages.

[0070] With reference now to FIG. 13, a diagram represents a GUI window through which an e-mail application displays a warning message to a user for an improper mandatory response flag. As illustrated in FIG. 12, a receiving e-mail application may filter the incoming e-mail messages to determine if they contain a mandatory response flag from a sender that is not authorized or otherwise allowed to make such requests. Window 1302 informs the user that an e-mail message contained an unauthorized or improper mandatory request flag, and "OK" button 1304 allows the user to return to the user's current operation, e.g., reviewing the e-mail message.

[0071] The present invention is particularly useful when combined with calendar functionality. For example, the present invention may be used to request that a user should attend a specified meeting that cannot be held unless each recipient of a meeting request message positively responds to the meeting request message. If a user were to open the e-mail application and then exit the e-mail application without reviewing the meeting request message, then the user might not notice that the meeting request message was listed within an inbox folder; with the present invention, assuming that the meeting request message contains a mandatory response flag, the user's attention would be directed to the meeting request message via a warning message when the user attempted to exit the e-mail application. The user would then become aware of the pending, time-critical message, and the user could accept or decline the meeting invitation. In this example, to address the issue of overuse as discussed with respect to FIG. 12, a calendar application might be configured to demarcate any appointment and meeting messages that it generates with mandatory response flags; the calendar application could be configured to include security-related information or tokens that are programmatically available or shared between enterprise applications.

[0072] The advantages of the present invention should be apparent in view of the detailed embodiments of the present invention that have been discussed hereinabove. The present invention provides a mechanism for requiring a response from a recipient with respect to a sender's electronic message. A messaging client recognizes a message that was flagged for a mandatory response and may prevent the recipient from closing a review of the message or from deleting the message without first responding to the message. This mechanism can be used by a sender to ensure that a message will not be ignored and that a timely response will be obtained with minimal impact to the working environment of the recipient.

[0073] It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will

appreciate that the processes of the present invention are capable of being distributed in the form of instructions in a computer readable medium and a variety of other forms, regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include media such as EPROM, ROM, tape, paper, floppy disc, hard disk drive, RAM, and CD-ROMs and transmission-type media, such as digital and analog communications links.

[0074] A method is generally conceived to be a self-consistent sequence of steps leading to a desired result. These steps require physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. It is convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, parameters, items, elements, objects, symbols, characters, terms, numbers, or the like. It should be noted, however, that all of these terms and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

[0075] The description of the present invention has been presented for purposes of illustration but is not intended to be exhaustive or limited to the disclosed embodiments. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiments were chosen to explain the principles of the invention and its practical applications and to enable others of ordinary skill in the art to understand the invention in order to implement various embodiments with various modifications as might be suited to other contemplated uses.

What is claimed is:

1. A method for processing electronic messages within data processing systems, the method comprising:
 - receiving an electronic message for a recipient from a sender;
 - detecting that the received electronic message contains a data field that indicates a request by the sender for a response from the recipient for the received electronic message;
 - alerting the recipient to the detected request for the response for the received electronic message; and
 - after alerting the recipient, requiring actions by the recipient with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender.
2. The method of claim 1 further comprising:
 - preventing the recipient from deleting the received electronic message until the recipient uses the data processing system to send a response for the received electronic message to the sender.
3. The method of claim 1 further comprising:
 - preventing the recipient from closing a review of the received electronic message until the recipient uses the data processing system to send a response for the received electronic message to the sender.
4. The method of claim 1 further comprising:
 - preventing the recipient from exiting an electronic messaging application that operates on the data processing

system until the recipient uses the data processing system to send a response for the received electronic message to the sender.

5. The method of claim 1 further comprising:

presenting, while alerting the recipient to the detected request for the response for the received electronic message, at least one choice to the recipient that allows the recipient to delay creation of a response for the received electronic message.

6. The method of claim 1 further comprising:

presenting, while alerting the recipient to the detected request for the response for the received electronic message, at least one choice to the recipient that allows the recipient to create a response for the received electronic message in which the response contains predetermined content.

7. The method of claim 6 wherein the predetermined content is configurable by the recipient.

8. The method of claim 6 wherein the predetermined content is extracted from the received electronic message.

9. The method of claim 1 wherein the required actions by the recipient are indicated within the data field.

10. The method of claim 1 further comprising:

extracting information from the received electronic message; and

determining, based on the extracted information, whether the sender is authorized to send to the recipient an electronic message that contains a data field that indicates a request by the sender for a response from the recipient for the received electronic message.

11. The method of claim 10 further comprising:

in response to a determination that the sender is not authorized, modifying the received electronic message to remove the data field that indicates a request by the sender for a response from the recipient for the received electronic message.

12. The method of claim 10 wherein the step of determining whether the sender is authorized further comprises:

checking whether a return address for the sender that has been extracted from the received electronic message is stored within a datastore of the recipient.

13. The method of claim 10 wherein the step of determining whether the sender is authorized further comprises:

verifying security information that has been extracted from the received electronic message.

14. A computer program product on a computer readable medium for use in a data processing system for processing electronic messages, the computer program product comprising:

means for receiving an electronic message for a recipient from a sender;

means for detecting that the received electronic message contains a data field that indicates a request by the sender for a response from the recipient for the received electronic message;

means for alerting the recipient to the detected request for the response for the received electronic message; and

means for requiring actions by the recipient, after alerting the recipient, with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender.

15. The computer program product of claim 14 further comprising:

means for preventing the recipient from deleting the received electronic message until the recipient uses the data processing system to send a response for the received electronic message to the sender.

16. The computer program product of claim 14 further comprising:

means for preventing the recipient from closing a review of the received electronic message until the recipient uses the data processing system to send a response for the received electronic message to the sender.

17. The computer program product of claim 14 further comprising:

means for preventing the recipient from exiting an electronic messaging application that operates on the data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender.

18. The computer program product of claim 14 further comprising:

means for extracting information from the received electronic message; and

means for determining, based on the extracted information, whether the sender is authorized to send to the recipient an electronic message that contains a data field that indicates a request by the sender for a response from the recipient for the received electronic message.

19. The computer program product of claim 18 wherein the means for determining whether the sender is authorized further comprises:

means for checking whether a return address for the sender that has been extracted from the received electronic message is stored within a datastore of the recipient.

20. An apparatus for processing electronic messages, the apparatus comprising:

means for receiving an electronic message for a recipient from a sender;

means for detecting that the received electronic message contains a data field that indicates a request by the sender for a response from the recipient for the received electronic message;

means for alerting the recipient to the detected request for the response for the received electronic message; and

means for requiring actions by the recipient, after alerting the recipient, with respect to usage of a data processing system until the recipient uses the data processing system to send a response for the received electronic message to the sender.

* * * * *

Exhibit 1006



US006854007B1

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Hammond

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(45) **Date of Patent:** **Feb. 8, 2005**

(54) **METHOD AND SYSTEM FOR ENHANCING RELIABILITY OF COMMUNICATION WITH ELECTRONIC MESSAGES**

(75) Inventor: **Nancey J. Hammond**, Eagle, ID (US)

(73) Assignee: **Micron Technology, Inc.**, Boise, ID (US)

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(58) **Field of Search** 719/313; 709/206, 709/207, 200, 313, 310, 204

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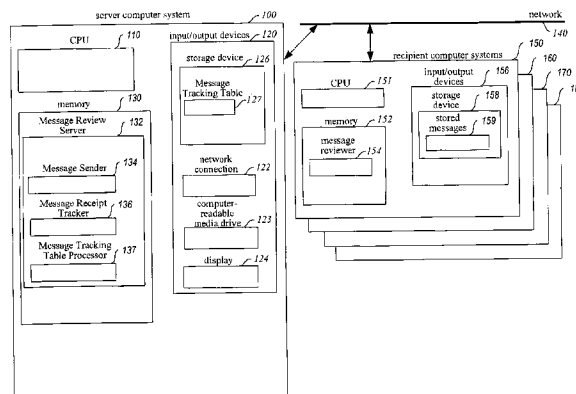
Primary Examiner—Lewis A. Bullock, Jr.

(74) *Attorney, Agent, or Firm*—Dorsey & Whitney LLP

(57) **ABSTRACT**

A system for enhancing the reliability of communicating with electronic messages. The system sends an electronic message to designated recipients, and then automatically helps ensure that each message has been successfully delivered within a specified period of time and that each message has been reviewed within a specified period of time. In addition, the system automatically performs specified activities after review of a message takes place. The sender of an electronic message initiates reliability-enhanced messaging by specifying message delivery information and message review information. The sender can specify that if delivery or review notifications are not received within specified periods of time, the message will be resent to the recipient or a reminder message will be sent to the recipient or to another user. The message information can include various frequency and duration options, such as resending a message only once or resending it every 2 hours for a week. Message information can also specify to resend the message with a higher transmission priority or review urgency so that its delivery and review is more likely, or could specify to use a different recipient system for the recipient (e.g., to a second email address if a first address fails, or to a pager if a cellular phone is not available). Each recipient of a message can have individualized message delivery information. The system tracks whether each message has been delivered to each recipient, and uses the message delivery information to resend the messages whose delivery and review was not confirmed.

96 Claims, 7 Drawing Sheets



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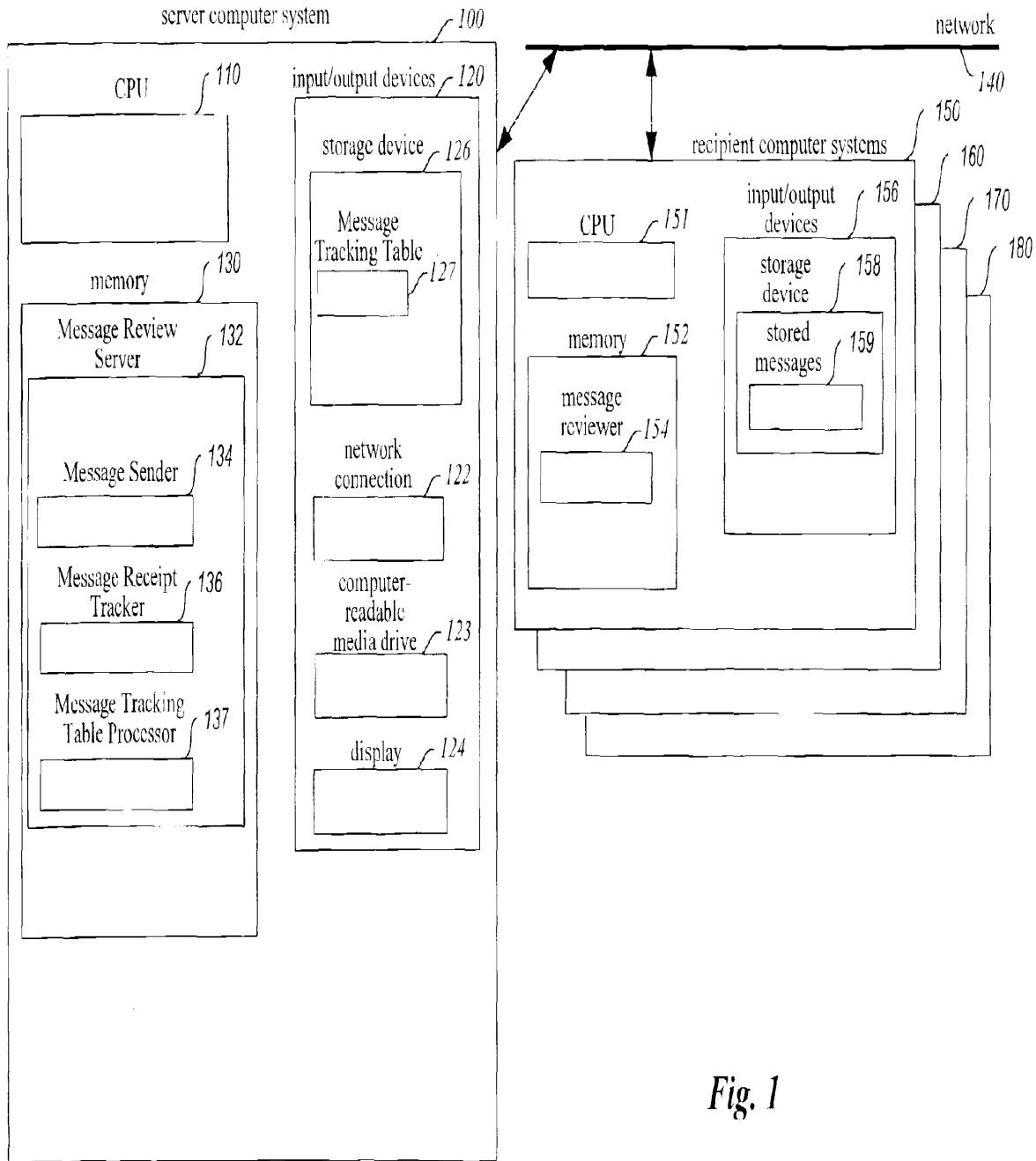


Fig. 1

Message Tracking Table

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Row/ Column	1 Message ID	2 Recipient ID	3 Send Time	4 Delivery Time	5 Review Time	6 Resend Time Period	7 Review Reminder Time Period	8 Post- Review Time Period
1	1	ABC	07/26/XX 18:26:33	07/26/XX 18:28:15	07/28/XX 10:12:33	1 hour	1 day	1 hour
2	1	BCD	07/26/XX 18:26:33	07/27/XX 00:15:12	07/27/XX 11:33:37	2 hours	18 hours	
3	2	CDE	07/28/XX 10:05:10		07/30/XX 09:08:13		2 days	1 day
4	3	ABC	08/10/XX 09:10:13	08/10/XX 09:10:17		1 minute		
⋮								

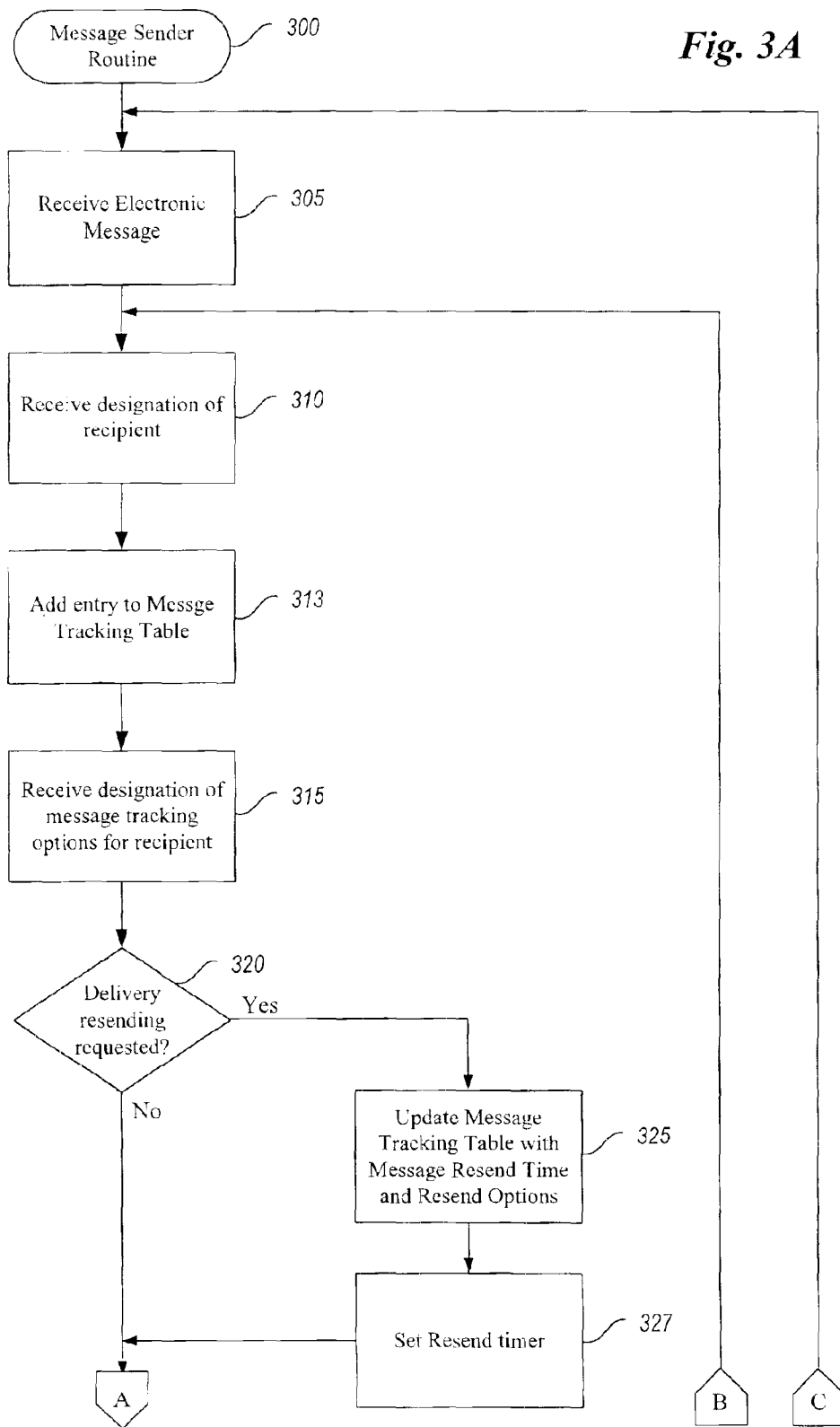
Message Tracking Table (continued)

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Row/ Column	9 Resend Record	10 Review Reminder Record	11 Post- Review Record	12 Resend Options	13 Review Reminder Options	14 Post- Review Options
1		07/27/XX 18:30:10	07/28/XX 11:13:00	High Priority	High Urgency	Message Y
2	07/26/XX 20:26:45 07/26/XX 22:28:13			Max 3 times	Template X	
3			07/31/XX 09:10:00 08/01/XX 09:10:10		Supervisor	Template R Template S
4						
⋮						

Fig. 2

Fig. 3A



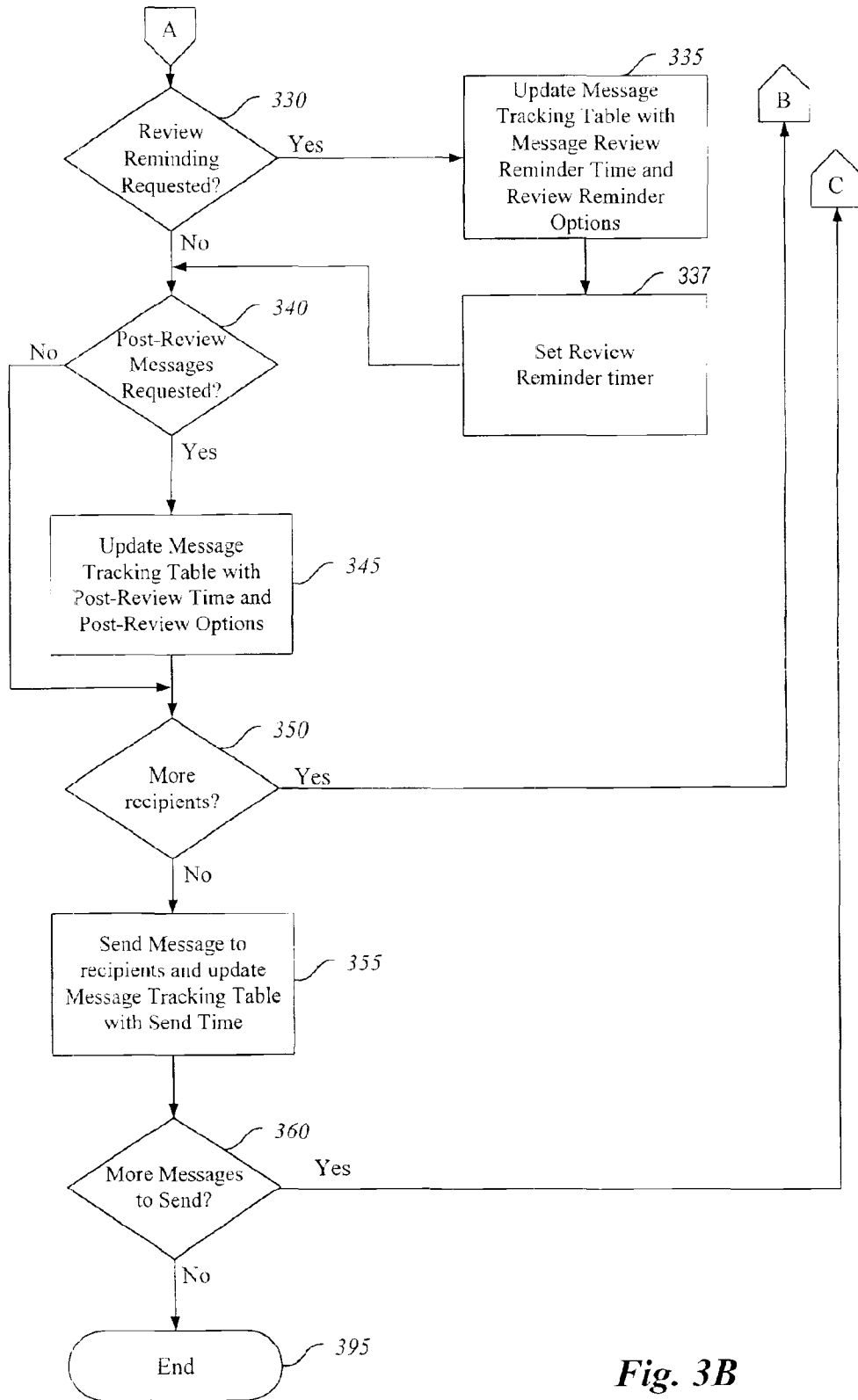


Fig. 3B

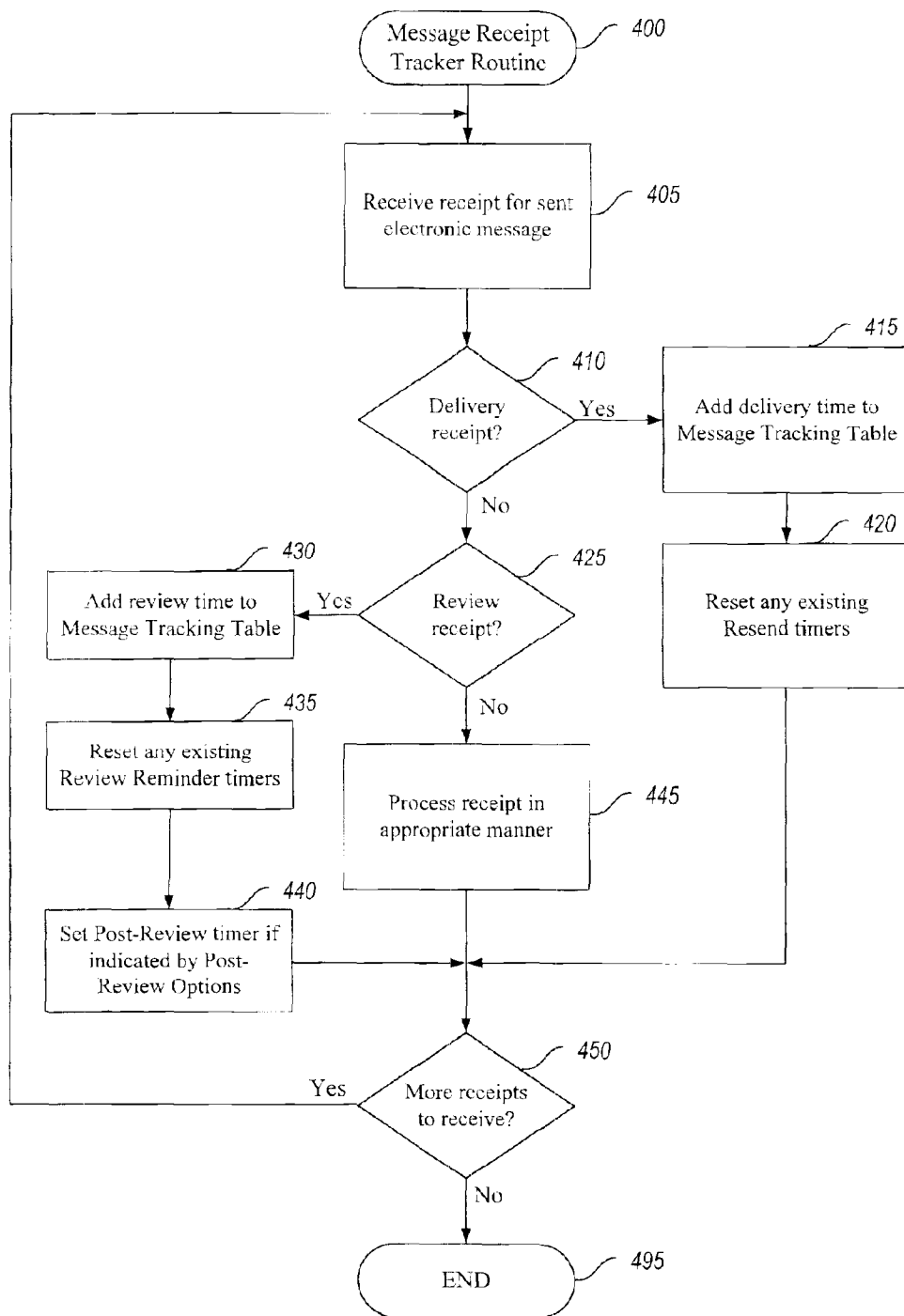
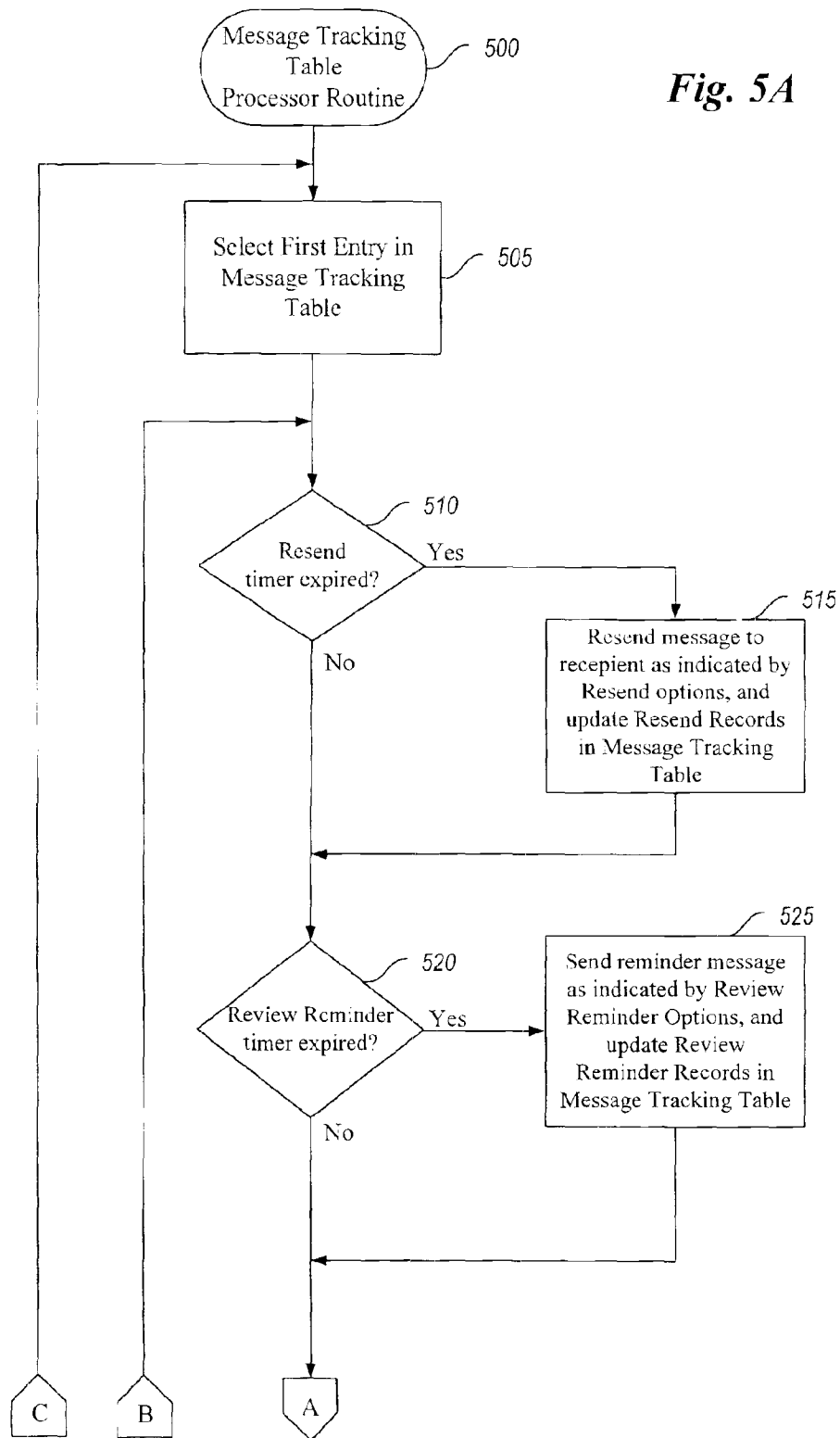


Fig. 4

Fig. 5A



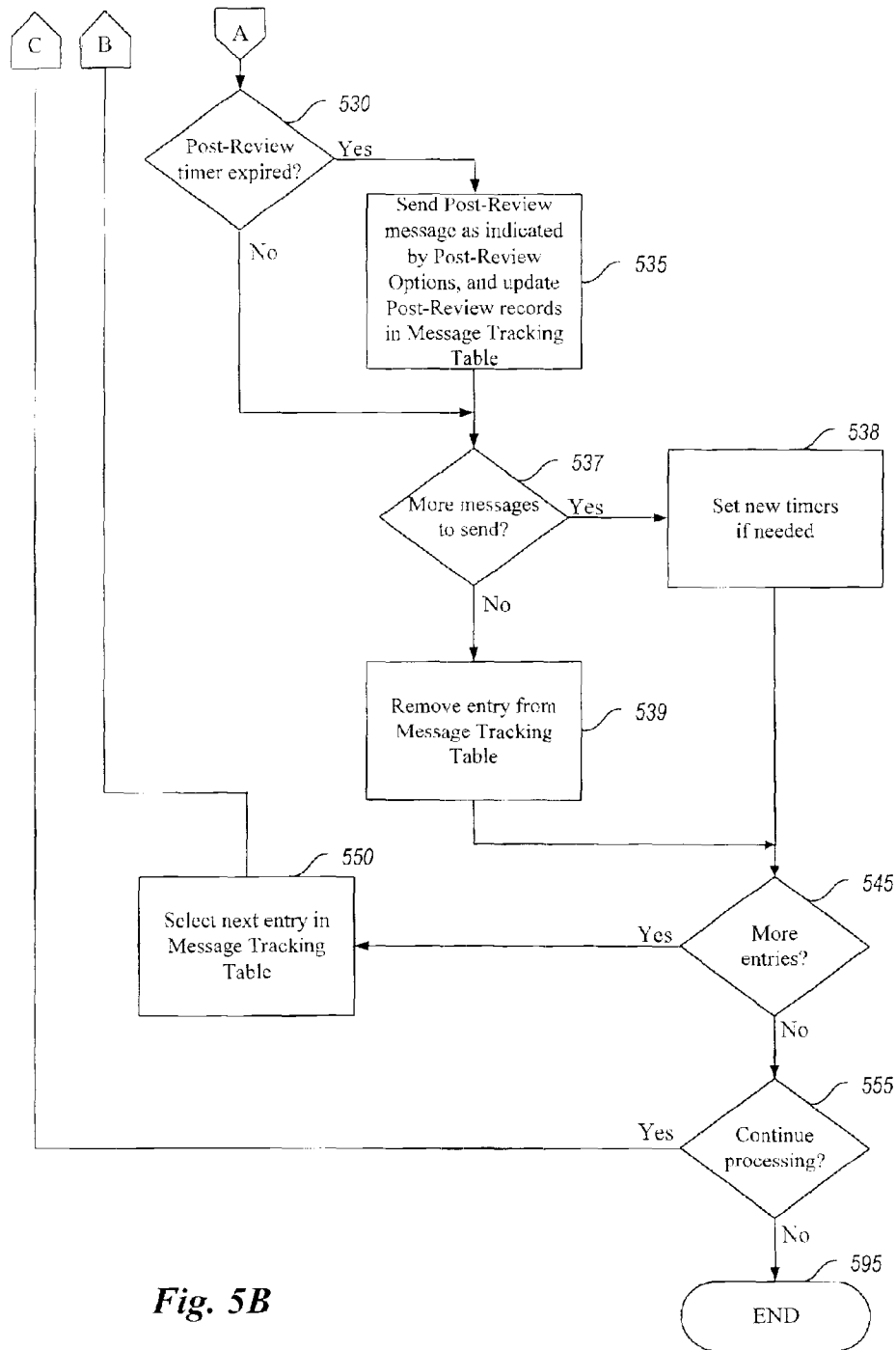


Fig. 5B

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METHOD AND SYSTEM FOR ENHANCING RELIABILITY OF COMMUNICATION WITH ELECTRONIC MESSAGES

TECHNICAL FIELD

The present invention relates generally to communicating via electronic messages, and more particularly to enhancing the reliability of the communication.

BACKGROUND OF THE INVENTION

Electronically-communicated messages ("electronic messages") such as email, paging messages, and voice mail have become increasingly popular and pervasive in recent years. For the creator of an electronic-message, the ability to send the message to one or more recipients provides for quick and efficient communication. Such communication via electronic messages has become common in both business and personal settings.

While the initial distribution of electronic messages by a sender is quick and convenient, ensuring that an electronic message is delivered (i.e., received by the recipient) and reviewed (e.g., reading an email or paging text, viewing an email image, listening to a voice mail message, etc.) within a certain time frame is not convenient. Due to the asynchronous nature of most electronic message transmission systems, immediate feedback is not provided as to whether the electronic message has been reliably received by each of the recipients. Some transmission systems provide a facility such that if an error is detected by a sending system (e.g., a recipient system is currently unavailable at the time of sending, the sending system may attempt to resend the electronic message. In such systems, if the error reoccurs, the transmission system typically notifies the sender that delivery failed. Thus, the sender receives no indication that message delivery problems exist until after an amount of time, which can be lengthy, has elapsed. In other transmission systems, the sender will receive no notification even if the delivery of the electronic message fails.

Moreover, even if the delivery of an electronic message to a recipient is successful, it is often important that the recipient review the electronic message within a certain amount of time. Transmission systems typically do not provide a mechanism to reliably ensure that a recipient has reviewed a successfully delivered message. A few transmission systems allow the sender to request notification when an electronic message is received by a recipient and when it is accessed (e.g., opened by an application program with which the recipient can review the message) by the recipient. In some such systems, the recipient's system will provide to the sender's system a delivery receipt or a review receipt to provide notification when delivery or review of an electronic message has occurred. Thus, if a review receipt has not yet been received, then the recipient may not have reviewed the electronic message. However, the sender has no automatic means of prompting or convincing the recipient to review the electronic message. Finally, if it desirable that some action be automatically performed after a recipient has reviewed an electronic message (e.g., sending a follow-up message), there is no automatic means of providing this functionality.

SUMMARY OF THE INVENTION

Some embodiments of the present invention provide a method and system for enhancing the reliability of commu-

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nicating with electronic messages. In particular, the system sends an electronic message to designated recipients, and then automatically helps ensure that each message has been successfully delivered and that each message has been reviewed. If the delivery or review of the electronic message has not been confirmed after a certain time period, the system can automatically resend the electronic message or take some other appropriate action. In addition, even if delivery or review has been confirmed, the system can automatically perform additional specified activities.

The system allows a sender of an electronic message to specify message tracking information, such as message delivery information and message review information, that specifies actions to take when a message is not delivered or not reviewed within a specified period of time. For example, the sender can specify that if a delivery notification is not received within a specified period of time, the message will be resent to the recipient. Alternately, if a review notification is not received within a specified period of time, the sender can specify that a reminder message be sent to the recipient or to another user (e.g., the recipient's supervisor or assistant). The message tracking information can include various frequency and duration options, such as resending a message only once or instead resending it every 2 hours for a week. In addition, message tracking information can specify to resend the message with a higher transmission priority or review urgency so that its delivery and review is more likely, or could specify to resend the message or send a reminder message to a different recipient system for the recipient (e.g., to a second email address if a first address fails, or to a pager if a cellular phone is not available).

The system also allows a sender of an electronic message to specify message tracking information that specifies actions to take after a message is successfully delivered or reviewed. For example, the sender can specify that a supervisor receive a confirmation when a recipient receives an electronic message and when the recipient reviews the message. Alternately, a recipient can be sent a follow-up message after review of a first electronic message. The message tracking information can include various frequency and duration options, such as sending confirmation messages immediately and sending follow-up messages after a specified period of time has elapsed since review of the original message.

In one embodiment, the sender can individualize the message delivery information for each recipient of a message, while in another embodiment the sender can use the same message delivery information for all recipients. The system tracks whether each message has been delivered and reviewed by to each recipient, and uses the message information to resend the messages whose delivery or review is not confirmed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating an embodiment of the Message Review Server system of the present invention.

FIG. 2 is an example of a Message Tracking Table.

FIGS. 3A and 3B are an exemplary flow diagram of an embodiment of the Message Sender routine.

FIG. 4 is an exemplary flow diagram of an embodiment of the Message Receipt Tracker routine.

FIGS. 5A and 5B are an exemplary flow diagram of an embodiment of the Message Tracking Table Processor routine.

DETAILED DESCRIPTION OF THE INVENTION

An embodiment of the present invention provides a method and system for enhancing the reliability of commu-

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nicating with electronic messages. In particular, the Message Review Server (MRS) system sends an electronic message to designated recipients, and then automatically helps ensure that each message has been successfully delivered and that each message has been reviewed. If the delivery or review of the electronic message has not been confirmed after a certain time period, the system can automatically resend the electronic message or take some other appropriate action. In addition, even if delivery or review has been confirmed, the MRS system can automatically perform additional specified activities.

The MRS system allows the sender of an electronic message to specify message delivery information that specifies actions to take when a message is not delivered within a specified period of time. For example, the sender can specify that if a delivery notification is not received within a specified period of time, the message will be resent to the recipient. The message delivery information can also include various frequency and duration options, such as resending the message only once or instead resending it every 2 hours for a week in addition, message delivery information could indicate to resend the message with a higher transmission priority so that successful delivery is more likely, or could indicate to resend the message to a different recipient system for the recipient (e.g., to a second email address if a first address fails, or to a pager if a cellular phone is not available). The MRS system tracks whether each message has been delivered to each recipient, and uses the message delivery information to resend the messages whose delivery was not verified to be successful.

The message delivery information can be specified at the time of sending the original message, or in some embodiments, even after the message has been sent. In one embodiment, each recipient of a message can have individualized message delivery information, while in another embodiment all recipients of a message will share the same message delivery information. In addition, the MRS system can store such message delivery information in a variety of ways. For example, such information could be stored with the message (e.g., as a header or as attributes of a message object). Alternately, message delivery information can be stored in a Message Tracking Table accessible by the MRS system.

The MRS system also allows a sender of a message to specify message review information that specifies actions to take when a message is not reviewed within a specified period of time. As with the message delivery information, this information can be specified in some embodiments at the time of sending the message and in other embodiments at later times, and in some embodiments message review information is specified individually for each recipient while in other embodiments the information is specified uniformly for all recipients of a message. To enhance the likelihood that the message is timely reviewed by a recipient, the sender can specify a time period after which a reminder message will be sent if the sender has not been notified within that time period that the recipient has reviewed the message. This reminder message can have a variety of formats. For example, in one embodiment, the same message is resent to the recipient, but it is marked as being urgent and for immediate attention. In an alternate embodiment, a different message is sent to the recipient (e.g., a reminder to read the original message). In another embodiment, a message can be sent to an alternate recipient who can assist in ensuring that the original recipient review the original message (e.g., a supervisor of or an assistant to the original recipient). As with the original message, this

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reminder message can be reliably sent with the MRS system so as to enhance the reliability of its delivery and review.

After an electronic message has been delivered to or reviewed by a recipient, it may be desirable to have the MRS system automatically take various actions. For example, it may be desirable to automatically send one or more additional messages at specified periods after the message was delivered or reviewed. If the original message was to provide product information to a customer, an automatic follow-up message to the customer offering additional help or soliciting comments may be beneficial. Alternately, the original message may have been the first part in a multi-part series of messages (e.g., a serial novel), with later messages sent only after earlier messages have been reviewed. Thus, the sender can also specify message post-delivery and post-review information, including a time period after the delivery or review of the original message at the end of which a specified action is to be taken. For the specified action to be taken immediately, the time period can be set to zero.

Thus, the MRS system can automatically locate and resend an original message when delivery has not been confirmed, can automatically send one or more reminder messages to the recipient or to others to prompt the recipient to review the original message when review of the electronic message has not been confirmed; and can automatically perform additional activity when delivery or review of the original message has been confirmed.

FIG. 1 illustrates a server computer system **100** suitable for executing an embodiment of the Message Review Server (MRS) system, as well as recipient computer systems **150**, **160**, **170**, and **180** suitable for receiving electronic messages transmitted by the MRS system. In the illustrated embodiment, the server computer system and recipient computer systems are connected via network **140**, although any transmission medium (e.g., circuit-based telephone lines, packet-based computer lines, wireless RF, etc.) can be used for the transmission of the electronic messages. The server computer system includes a CPU **110**, input/output devices **120**, and a memory **130**. The input/output devices include a storage device **126**, a network connection **122**, a computer-readable media drive **123**, and a display **124**, with a Message Tracking Table **127** stored on the storage device. The Message Review Server system **132** is executing in memory, and is composed of the Message Sender **134**, Message Receipt Tracker **136**, and Message Tracking Table Processor **137** components.

Use of the MRS system begins when a sender of an electronic message, such as a user of the server computer system or another computer attached to the network **140**, supplies a message to the Message Sender component. In addition to supplying the message, the sender identifies one or more recipients for the electronic message, and can specify various optional message tracking information (i.e., message delivery information, message review information, and message post-review information). If the reliability of the delivery of the message to a recipient is to be enhanced, a sender will supply delivery information including a resend period of time and can optionally supply other resend options. If the reliability of the review of the message by a recipient is to be enhanced, the sender will supply review reminder information including a review reminder period of time and can optionally supply other review reminder options. Finally, if actions are to be taken after a recipient has reviewed the message, post-review information including a post-review period of time and post-review options can be supplied.

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The Message Sender component collects the supplied message tracking information, sends the message to the specified recipients, and stores the message tracking information and the message send time in the Message Tracking Table. The Message Sender component also sets appropriate Resend timers (based on the delivery resend time period) and Review Reminder Timers (based on the Review Reminder Time period) for the recipients as indicated in the message tracking information supplied by the sender. Use of various timers will be explained in greater detail below. If different recipients of a message are to have different message tracking options, a separate entry in the Message Tracking Table will be created for each recipient of each message. Alternately, if all recipients of a message have the same message tracking options, a single entry in the Message Tracking Table can be created for the message.

The Message Receipt Tracker component attempts to identify when sent messages have been delivered to recipients and when sent messages have been reviewed by recipients. In one embodiment, the recipient computer systems provide receipts when messages are received and when messages are reviewed, and in this embodiment the Message Receipt Tracker is notified of these receipts. Alternately, the Message Receipt Tracker can periodically query a recipient to determine if the recipient has received and reviewed a message, or can monitor a recipient's activities to determine when the recipient accesses and reviews a message. After a message has been accessed, activities such as scrolling a text window or selecting text may indicate that the message is being reviewed, or movement of the recipient's eyes could indicate where attention is focused. After receiving notification of message delivery or review, the Message Receipt Tracker stores appropriate information from the notification in the Message Tracking Table (e.g., the time of delivery for a notification indicating that a message was delivered to a recipient and the time of review for a message that was reviewed by a recipient). After receiving a notification, the Message Receipt Tracker also resets any existing timers related to the notification (e.g., a Resend timer for a delivery notification or a Review Reminder Timer for a review notification). If a review notification is received, the Message Receipt Tracker also determines if the corresponding message and recipient have post-review activities specified, and if so sets an appropriate Post-Review timer.

The Message Tracking Table Processor component periodically reviews the information in the Message Tracking Table as well as the current timers to determine whether a specified tracking time period has expired, thus indicating a corresponding action needs to be taken. When a Resend timer has expired, the Message Tracking Table Processor uses the resend options specified for the one or more recipients (or uses default options if none have been specified) and resends the message to the one or more recipients. If a Review Reminder Timer has expired, the Message Tracking Table Processor uses the review reminder options to create a reminder electronic message to be sent, and then sends the message to one or more recipients as indicated by the options. Similarly, if a Post-Review timer has expired, the Message Tracking Table Processor performs the activities specified in the Post-Review options, such as sending a follow-up message to one or more recipients.

After sending a message in response to expiration of a time period, the Message Tracking Table Processor records the time of sending the message in an appropriate portion of the Message Tracking Table for the message and the one or more recipients. In addition, if it is appropriate to set another timer (e.g., if a message will continue to be resent until the

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MRS system is notified that it has been delivered to the recipients), a new timer with the appropriate time period is set. Alternately, if all required actions have been taken for a message and one or more recipients (e.g., notification has been received that the message has been reviewed and no Post-Review actions have been specified), the entry in the Message Tracking Table corresponding to the message and the one or more recipients is modified so that it is no longer checked by the Message Tracking Table Processor. In one embodiment, a flag is set in the entry, while in another embodiment the entry is removed from the Message Tracking Table. Those skilled in the art will appreciate that rather than using timers, an alternate embodiment can have the Message Tracking Table Processor calculate directly from information in the Message Tracking Table whether any action currently needs to be taken, such as by reviewing the specified time periods and the specified records (i.e., the send times for messages as well as the delivery and read times for the original message).

The recipient computer system **150** includes a CPU **151**, a memory **152**, and input/output devices **156**, including a storage device **158**. One or more stored messages **159** can be stored on the storage device, with the stored messages accessible corresponding to one or more users of the recipient computer system. A message reviewer **154** is executing in memory **152** to allow a user of the recipient computer system to review messages that have been received by the recipient computer system and stored in the stored messages. In an alternate embodiment, messages can be stored on the server computer system, and the message reviewer on a recipient computer system (e.g., a thin client) can retrieve the appropriate messages from the server computer system. In an embodiment in which notification of message delivery and message review is provided by recipient computer systems, the message reviewer or some other component on the recipient computer system can communicate this information to the server computer system.

Those skilled in the art will appreciate that computer systems **100** and **150** are merely illustrative and are not intended to limit the scope of the present invention. In particular, a recipient computer system can take on a variety of forms depending on the type of electronic message (e.g., a pager to receive paging messages, a personal computer system to receive email or voice mail messages, a telephone console to review voice mail messages, etc.). The computer systems may contain additional components or may lack some illustrated components, such as the server computer system including an appropriate transmission connection for the transmission method used (e.g., a network connection for email messages). In addition, those skilled in the art will appreciate that a single server computer system may have more than one transmission method to transmit more than one type of electronic message. Accordingly, the present invention may be practiced with other computer system configurations.

As an illustrative example of a Message Tracking Table, consider Message Tracking Table **127** shown in FIG. 2. The illustrated Message Tracking Table contains entries for email electronic messages that are read by recipients, and each recipient of an email message can have unique message tracking information. Thus, a separate entry is created in the Message Tracking Table for each recipient of each message. In addition, entries are removed from the illustrated Message Tracking Table after all specified actions have been performed.

As is shown in rows 1 and 2 of the table, message 1 has been sent to recipients ABC and BCD. The Send Time

column reflects the time that message 1 was originally sent by the Message Review Server to each of the recipients. As is shown by the Delivery Time column, notifications of delivery for each of the recipients has been received and recorded. Similarly, the Review Time column indicates that each of the recipients has reviewed message 1 at the time indicated. Row 1 indicates that the Resend time period, the Review Reminder Time period, and Post-Review time period are respectively set for recipient ABC as one hour, one day, and one hour. Conversely, the Resend time period and Review Reminder Time period for recipient BCD are respectively set to 2 hours and 18 hours, and the Post-Review time period is not specified.

Row 1 also indicates that message 1 was received by recipient ABC in less than the specified Resend Time period, and thus the Resend Record column does not contain any record of message 1 being resent to recipient ABC. If message 1 had been resent, the Resend Options column for row 1 indicates that the message would have resent with a high transmission priority. While the message was timely delivered to recipient ABC, the Review Time for row 1 indicates that the Review Reminder Time period was exceeded before message 1 was reviewed by ABC, and thus the Review Reminder Record column indicates that a reminder message was sent at the date and time specified.

In this illustrated embodiment, the default options for sending any message is to send the original message to the recipient and to continue to do so until the entry is removed from the Message Tracking Table. However, Post-Review activities occur only once unless otherwise specified in the Post-Review options. Thus, the Review Reminder Options column for row 1 indicates that the reminder message sent was message 1 sent to recipient ABC (since no alternative message or recipient was specified), but that the reminder message was identified as being highly urgent. Since the Review Time column indicates that the original message was reviewed before the Review Reminder Time period had expired a second time, only a single reminder message was sent (as is shown in the Review Reminder Record column). Finally, the Post-Review Time column indicates that after one hour has elapsed from the Review Time, the activity specified by the Post-Review Options should be performed. The Post-Review Options column indicates that Message Y is to be sent, with the recipient defaulting to recipient ABC. After that action has been taken, as indicated by the Post-Review Record, row 1 is ready to be deleted from the Message Tracking Table because all actions related to that row have been performed.

Row 2 of the table indicates that message 1 was resent to recipient BCD two times, with the Resend Options for row 2 indicating that message 1 was to be resent a maximum of 3 times. Since the Review Time for row 2 occurred in less than the Review Reminder Time period, a reminder message was not sent for row 2. The Review Reminder Options for row 2 indicate that were a reminder message to be sent, template X would have been used to create the reminder message. For example, template X may have indicated that "RE:" be added to the subject line of the original message, and that a one line reminder statement be added to the beginning of the body of the original message. Since message 1 has been reviewed by recipient BCD and no Post-Review Time period has been specified, row 2 is also ready to be deleted from the Message Tracking Table.

Row 3 indicates that message 2 was sent to recipient CDE. The lack of a Resend Time period specified for row 3 indicates that delivery notification was not requested by the sender of message 2. While the Review Reminder Time

period indicates that notification of the Review Time was requested, the review of the message occurred within the time period and thus no review reminder messages were sent. The Review Reminder Options indicate that had a reminder message been sent, the message would have been sent to the supervisor of recipient CDE so that the supervisor could prompt CDE to read message 2. The supervisor could have been identified directly by the sender of message 2, or the Message Tracking Table Processor may have access to such information from another source. The Post-Review Time and Post-Review Options for row 3 indicate that one day after message 2 was reviewed, an additional message based on template R is to be sent, and that one day later, a message based on template S is to be sent. The Post-Review Records indicate that these actions have taken place. Thus, since all actions have been performed for row 3, row 3 is ready to be deleted from the Message Tracking Table.

Row 4 indicates that message 3 is to be sent to recipient ABC. The Delivery Time and Resend Time periods indicate that message 3 was received by recipient ABC within the Resend Time period, so no resends of message 3 to recipient ABC occurred. Since no Review Reminder Time period was specified, the sender of message 3 did not request notification of when message 3 was reviewed. Thus, since no Review Time was entered for row 4 and no Post-Review Time period or Options were specified, row 4 is ready to be deleted since all of its specified actions have been performed.

Those skilled in the art will appreciate that Message Tracking Table 127 is merely illustrative. A Message Tracking Table could contain additional columns (e.g., a flag column to indicate that a row has been completely processed), or may lack some of the displayed columns. In addition, a single row could be created for each message, with the row removed or flagged only when all activities for all recipients of the message have been performed. In addition, if messages are stored on the server computer system rather than on recipient computer systems, the Message Tracking Table could include one or more columns to indicate when it is safe to delete the message from the server. For example, if all recipients have reviewed the message and none wish to save the message, the message could be safely deleted. Alternately, even if some recipients have not received or reviewed the message, it may be appropriate to delete the message after a specified time period has elapsed.

FIGS. 3A and 3B are an exemplary flow diagram of an embodiment of the Message Sender routine 300. The Message Sender routine receives an electronic message to be sent to one or more recipients, receives message tracking information for the recipients, sends the message to the recipients, adds an entry in a Message Tracking Table for each recipient, stores the message tracking information for each recipient and the send time of the message in the recipient's entry, and sets Resend and Review Reminder Timers for each recipient if the sender has specified that the MRS system is to enhance the reliability that the message to that recipient is delivered and is reviewed, respectively. In the illustrated embodiment, the electronic messages being sent are emails which are to be read by the recipients, and each recipient can have different message tracking information. In addition, entries are removed from the Message Tracking Table after all activities have been performed for that entry.

The routine begins at step 305 where an electronic message to be sent is received from a sender. The routine continues at step 310 to receive a designation of a recipient for the electronic message. The routine continues at step 313

to add an entry to the Message Tracking Table for the designated recipient. In step **315**, the routine then receives a designation of message tracking information for the recipient from the sender. The message tracking information can include information such as whether the reliability of the delivery and the review of the message are to be enhanced, and if so, time periods for each after which the original message will be resent or a reminder message will be sent if notification of the delivery or review respectively has not been received. In addition, the sender can specify options that indicate how and to whom the original and reminder messages are to be sent. The sender can also specify activity to occur after review of the message by the recipient, such as sending a follow-up message or executing a function after a specified period of time has elapsed. In an alternate embodiment, the MRS system could calculate or use default information for some of the message tracking information. For example, historical data could indicate that delivery of messages to a particular recipient often fail, so a short Resend Time period should be used. Similarly, historical data could indicate that another recipient often needs multiple reminder messages before the original message is reviewed, so the Review Reminder Options could be automatically selected to reflect this information.

After step **315**, the routine continues to step **320** to determine if the sender has requested that the delivery reliability of the message be enhanced. If so, the routine continues at step **325** to update the Message Tracking Table with the specified message Resend Time and with any specified Resend Options. The routine then continues at step **327** to set a Resend timer for this recipient that will begin when the message is sent. After step **327**, or if it was determined in step **320** that the delivery reliability of the message was not to be enhanced, the routine continues at step **330** to determine if the review reliability for the message is to be enhanced. If so, the routine continues at step **335** to update the Message Tracking Table entry with the specified Review Reminder Time for the message as well as any specified Review Reminder Options. The routine then continues at step **337** to set a Review Reminder Timer for the recipient that will begin when the message is sent.

After step **337**, or if it was determined in step **330** that the reliability of the message review was not to be enhanced, the routine continues at step **340** to determine if any post-review activities were requested by the sender. In the illustrated embodiment, post-review activity involves the sending of electronic messages. Those skilled in the art will appreciate that any executable activity could be performed in the same manner. If it is determined in step **340** that a post-review sending of a message is requested, the routine continues at step **345** to update the Message Tracking Table with the specified Post-Review Time period for the message as well as any Post-Review Options. After step **345**, or if it was determined in step **340** that no post-review messages were requested, the routine continues at step **350** to determine if there are more recipients to be specified for the received electronic message. If so, the routine returns to step **310**, and if not, the routine continues to step **355**. In step **355**, the routine sends the message to the designated recipient and updates the Message Tracking Table with the send time for the message. Any timers which were set will now begin a countdown. After step **355**, the routine continues at step **360** to determine if there are more messages to send. If so, the routine returns to step **305**, and if not, the routine ends at step **395**. Those skilled in the art will appreciate that the routine could instead receive a single set of message tracking information for all recipients of a message, thus creating a

single entry in the Message Tracking Table for each message. In addition, all recipients and message tracking information could be specified at a single time, and the message could be sent to all Recipients at the same time.

FIG. 4 is an exemplary flow diagram of an embodiment of the is Message Receipt Tracker routine **400**. The Message Receipt Tracker routine receives notifications (in the illustrated embodiment, receipts) related to sent electronic messages (e.g., that a message was delivered or reviewed), adds the appropriate information from the notifications to the Message Tracking Table, resets any existing timers related to the notifications, and sets a Post-Review timer after receiving a review notification if needed for the corresponding message and recipient. The routine begins at step **405** where a receipt for a sent electronic message is received. The routine continues at step **410** to determine if the receipt is a delivery receipt that indicates the message was received by the recipient. If so, the routine continues at step **415** to add the delivery time from the receipt to the entry in the Message Tracking Table corresponding to the message and the recipient. The routine then continues at step **420** to reset any existing Resend timers for this message and recipient.

If it was instead determined in step **410** that the receipt was not a delivery receipt, the routine continues at step **425** to determine if the receipt is a review receipt. If so, the routine continues at step **430** to add the Review Time from the review receipt to the entry in the Message Tracking Table corresponding to the message and the recipient. The routine then continues at step **435** to reset any existing Review Reminder Timers. The routine at step **440** then determines if any Post-Review activities (in the illustrated embodiment, the sending of messages) have been specified for this message and recipient, and if so sets a Post-Review timer corresponding to the Post-Review Options specified in the Message Tracking Table.

If it was instead determined in step **425** that the receipt is not a review receipt, the routine continues in step **445** to process the receipt in the appropriate manner, such as by adding appropriate information to an entry in the Message Tracking Table. For example, if a resent message or a reminder message requested a delivery or review receipt, this information could, in some embodiments, be included in the Message Tracking Table. After step **420**, **440**, or **445**, the routine continues at step **450** to determine if there are more receipts to receive. If so, the routine returns to step **405**, and if not the routine ends at step **495**.

FIGS. 5A and **5B** are an exemplary flow diagram of an embodiment of the Message Tracking Table Processor routine **500**. The Message Tracking Table Processor routine periodically processes the entries in the Message Tracking Table, and determines for each entry if any specified time periods have expired. If so, the routine automatically takes the appropriate action, such as resending an original message or sending a reminder message. Alternately, in some embodiments sender-specified or default information can instruct the routine to request confirmation from the sender before taking activity such as resending a message or sending a reminder message. In addition, after a time period expires, the routine sets new timers if the time period continues to apply, and removes entries from the Message Tracking Table after all specified actions have been performed.

The routine begins at step **505** where the first entry in the Message Tracking Table is selected. The routine continues at step **510** to determine if the Resend Time period has expired since the last time the message was resent, or if it has not yet

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been resent, since the original sending of the message. If the time period has expired, the routine continues at step 515 to resend the message to the recipient as indicated by the Resend Options. The routine then updates the Resend Records in the Message Tracking Table to include the date and time that the original message was resent.

After step 515, or if it was determined in step 510 that the Resend Time period had not expired, the routine continues at step 520 to determine if the Review Reminder Time period has expired. If so, the routine continues at step 525 to send a reminder message as indicated by the Review Reminder Options. The routine also updates the Review Reminder Records in the Message Tracking Table to reflect the date and time that the reminder message was sent. After step 525, or if it was instead determined in step 520 that the Review Reminder Time period had not expired, the routine continues at step 530 to determine if a Post-Review Time period has expired. If so, the routine continues at step 535 to send a post-review message as indicated by the Post-Review Options. The routine also updates the Post-Review Records in the Message Tracking Table to include the date and time that the post-review message was sent.

After step 535, or it was instead determined in step 530 that the Post-Review Time period has not expired, the routine continues at step 537 to determine if additional activities (e.g., continuing to resend the original message or sending additional reminder or post-review messages) need to be performed for the message and recipient specified in the current entry. For example, if any timers are still pending for this entry or if the timer that just expired needs to be reset, additional activities may need to be performed for this entry. However, if all activities are completed for this entry, the routine continues at step 539 to remove the entry from the Message Tracking Table. If it is instead determined in step 537 that there may be additional activities (e.g., additional messages to be sent), the routine instead continues in step 538 to set a new timer for the one or more time periods that have just expired.

After step 538 or 539, the routine continues at step 545 to determine if there are more entries in the Message Tracking Table. If so, the routine continues at step 550 to select the next entry in the Message Tracking Table, and then returns to step 510. If it was instead determined in step 535 that there are not more entries in the Message Tracking Table, the routine continues at step 555 to determine whether to continue processing the Message Tracking Table from the beginning. If so, the routine returns to step 505, and if not the routine ends at step 595.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

What is claimed is:

1. A method in a computer system for a sender of an electronic message to ensure that the electronic message is delivered to and reviewed by intended recipient users, the method comprising:

- composing the electronic message;
- indicating a plurality of intended recipient users;
- selecting a delivery recipient user from the intended recipient users;
- selecting a review recipient user from the intended recipient users;
- sending the electronic message to the plurality of intended recipient users;

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requesting from the delivery recipient user a delivery notification when the electronic message is delivered to the delivery recipient user;

requesting from the review recipient user a review notification when the review recipient user reviews the electronic message;

determining a delivery waiting period for receiving the delivery notification;

selecting a delivery time interval corresponding to the delivery waiting period;

determining a review waiting period for receiving the review notification and selecting a review time interval corresponding to the review waiting period; and

without user intervention,

when the delivery notification from the delivery recipient user is not received by the sender within the selected delivery time interval corresponding to the delivery waiting period, resending the electronic message to the delivery recipient user; and

when the review notification from the review recipient user is not received by the sender within the selected review time interval corresponding to the review waiting period, sending a second electronic message to the review recipient user.

2. The method of claim 1 wherein multiple delivery recipient users and multiple review recipient users are selected, wherein the resending is performed for each delivery recipient user when a delivery notification for that delivery recipient user is not received by the sender within the delivery waiting period, and wherein the sending of the second electronic message is performed for each review recipient user when a review notification for that review recipient user is not received by the sender within the review waiting period.

3. The method of claim 1 wherein the sent second electronic message is distinct from the sent electronic message, wherein the sent electronic message indicated a priority level for review of the sent electronic message, and wherein the sent second electronic message indicates an elevated priority level for review of the sent second electronic message.

4. The method of claim 1 including:

determining a user responsible for delivery of electronic messages; and

when the delivery notification for the delivery recipient user is not received by the sender within the delivery waiting period, sending an electronic message to the determined user.

5. The method of claim 1 including:

determining a user able to prompt review of the sent electronic message by the review recipient user; and

when the review notification for the review recipient user is not received by the sender within the review waiting period, sending an electronic message to the determined user to prompt review of the sent electronic message by the review recipient user.

6. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a plurality of recipients a user-specified period of time has elapsed without receiving a confirmation of delivery of the electronic message to each recipient; and

when it is determined that the user-specified period of time has elapsed without receiving the confirmation of

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delivery to the recipient, automatically resending the electronic message.

7. The method of claim 6 wherein the determined period of time for each recipient is based on past performance of delivering electronic messages to that recipient.

8. The method of claim 6 wherein an electronic message can be sent with one of a plurality of priority levels, and wherein the resending of the electronic message is performed with a higher priority level than the sending of the electronic message.

9. The method of claim 6 including requesting of the confirmation of the delivery to the recipient.

10. The method of claim 9 wherein the requesting of the confirmation includes querying the recipient after the sending of the electronic message to determine if the sent electronic message was delivered to the recipient.

11. The method of claim 6 including:

after receiving the confirmation, automatically sending a third electronic message after a second user-specified period of time.

12. The method of claim 6 wherein the resending of the electronic message involves determining a user responsible for delivery of electronic messages and sending to the determined user an electronic message distinct from the sent electronic message.

13. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a plurality of recipients a pre-determined period of time has elapsed for each recipient without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender; and when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message, wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving a confirmation for that recipient.

14. The method of claim 13 including requesting the confirmation.

15. The method of claim 13 including monitoring review of electronic messages by the recipient to determine when the recipient reviews the sent electronic message.

16. The method of claim 15 wherein the monitoring of the review includes:

detecting when the recipient accesses the sent electronic message; and

monitoring user interaction with the accessed electronic message to determine if review of the accessed electronic message has occurred.

17. The method of claim 13 wherein the determined period of time for each recipient is based on past performance of the recipient in reviewing electronic messages sent to that recipient.

18. The method of claim 13 wherein the electronic message can be sent with one of a plurality of urgency levels indicating an urgency to review the electronic message, and wherein the sending of the another electronic message includes a higher urgency level than the sending of the electronic message.

19. The method of claim 13 wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

20. The method of claim 13 wherein the another electronic message includes the electronic message, and wherein

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the sent another electronic message indicates an elevated priority that the sent another electronic message be reviewed.

21. The method of claim 13 wherein the another electronic message is sent to a second recipient distinct from the recipient, and wherein the another electronic message prompts the second recipient to facilitate review by the recipient of the sent electronic message.

22. The method of claim 13 including:

after receiving the confirmation, automatically sending a third electronic message after a second pre-determined period of time.

23. The method of claim 13 including:

when it is determined that the period of time has elapsed without receiving the confirmation and that the confirmation is not received within a second period of time, automatically sending a third electronic message.

24. The method of claim 13 including setting a timer to expire at the pre-determined period of time after the sending of the electronic message, and wherein the another electronic message is automatically sent when the confirmation is not received before the timer expires.

25. A method for a sender of an electronic message to ensure that the electronic message is reviewed by a recipient, the computer-implemented method comprising:

determining whether after sending of a first electronic message to a recipient a sender specified amount of time has elapsed without the sender receiving at least one of a first confirmation that the electronic message has been received by the recipient and an indication that the recipient reviewed the sent electronic message;

when it is determined that the period of time has elapsed without receiving the first confirmation or the indication,

automatically requesting a second confirmation from the sender to send a second electronic message to the recipient, which is the same as the first electronic message; and

when the confirmation is received from the sender, automatically sending the second electronic message to the recipient.

26. The method of claim 25 wherein the electronic message is sent to a plurality of recipients, and including receiving a specification of an amount of time for each recipient such that the automatic requesting of the second confirmation is performed for each recipient when an indication that the sent electronic message was reviewed by that recipient is not received within the specified amount of time for that recipient.

27. The method of claim 25 wherein the requesting of the second confirmation includes graphically presenting to the sender a request to send the second electronic message, the request including a selectable confirmation element such that selection of the confirmation element indicates the confirmation from the sender.

28. The method of claim 25 including:

when it is determined that the period of time has elapsed without receiving the first confirmation or indication that the resent message has been reviewed, automatically requesting a third confirmation from the sender to send a third electronic message if the first confirmation or indication is not received within a second amount of time.

29. A computer-readable medium containing instructions for controlling a computer system to deliver an electronic message, by:

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determining whether after sending of the electronic message to a plurality of recipients a predetermined period of time specified for each recipient has elapsed without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender; and

when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message, wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving the confirmation for that recipient.

30. The computer-readable medium of claim **29** wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

31. The computer-readable medium of claim **29** wherein the computer system is further controlled by:

when the confirmation is not received within the predetermined amount of time, determining a second amount of time; and

when the confirmation is not received within the determined second amount of time, automatically sending a third electronic message.

32. A computer system for ensuring that an electronic message is reviewed by a recipient, comprising:

a message sender for receiving an indication of the recipient for the electronic message and for sending the electronic message to the recipient;

a message tracker for determining whether the recipient within a message sender specified amount of time has reviewed the electronic message sent by the message sender; and

a message processor for automatically sending another electronic message to the recipient when it is determined that the message sender specified amount of time has elapsed without the recipient having reviewed the electronic message.

33. The computer system of claim **32** wherein the message processor is further configured for receiving indications of a plurality of recipients for the electronic message and for receiving a specification of an amount of time for each recipient, wherein the message tracker is further configured for determining for each of the recipients whether the sent electronic message was reviewed by that recipient within the specified amount of time for that recipient, and wherein the message processor is further configured for sending the another message for each recipient for which the message tracker determines that that recipient did not review the sent electronic message within the specified amount of time for that recipient.

34. The computer system of claim **32** wherein the message processor is further configured for determining a second message sender specified amount of time whether the another message has been reviewed by the recipient and for automatically sending a third electronic message to the recipient when the another message has not been reviewed within the second message sender specified amount of time.

35. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a plurality of recipients a user-specified period of time has elapsed without receiving a confirmation of delivery of the electronic message to each recipient, wherein the determined period of time for the recipient

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is based on past performance of delivering electronic messages to that recipient; and

when it is determined that the user-specified period of time has elapsed without receiving the confirmation of delivery to the recipient, automatically resending the electronic message.

36. The method of claim **35** wherein an electronic message can be sent with one of a plurality of priority levels, and wherein the resending of the electronic message is performed with a higher priority level than the sending of the electronic message.

37. The method of claim **35** including requesting of the confirmation of the delivery to the recipient.

38. The method of claim **37** wherein the requesting of the confirmation includes querying the recipient after the sending of the electronic message to determine if the sent electronic message was delivered to the recipient.

39. The method of claim **35** including:

after receiving the confirmation, automatically sending a third electronic message after a second user-specified period of time.

40. The method of claim **35** wherein the resending of the electronic message involves determining a user responsible for delivery of electronic messages and sending to the determined user an electronic message distinct from the sent electronic message.

41. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a recipient a user-specified period of time has elapsed without receiving a confirmation of delivery of the electronic message to the recipient;

when it is determined that the user-specified period of time has elapsed without receiving the confirmation, resending the electronic message; and

after receiving the confirmation, automatically sending a third electronic message after a second user-specified period of time.

42. The method of claim **41** wherein the electronic message is sent to a plurality of recipients, wherein a period of time is determined for each recipient, and wherein the resending of the message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving a confirmation of delivery to that recipient.

43. The method of claim **41** wherein the determined period of time for each recipient is based on past performance of delivering electronic messages to that recipient.

44. The method of claim **41** wherein an electronic message can be sent with one of a plurality of priority levels, and wherein the resending of the electronic message is performed with a higher priority level than the sending of the electronic message.

45. The method of claim **41** including requesting of the confirmation of the delivery to the recipient.

46. The method of claim **45** wherein the requesting of the confirmation includes querying the recipient after the sending of the electronic message to determine if the sent electronic message was delivered to the recipient.

47. The method of claim **41** wherein the resending of the electronic message involves determining a user responsible for delivery of electronic messages and sending to the determined user an electronic message distinct from the sent electronic message.

48. A method in a computer system for delivery of an electronic message, the method comprising:

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determining whether after sending of the electronic message to a plurality of recipients a pre-determined period of time has elapsed for each recipient without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender, wherein the predetermined period of time for each recipient is based on past performance of the recipient in reviewing electronic messages sent to that recipient; and

when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message, wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving a confirmation for that recipient.

49. The method of claim 48 including requesting the confirmation.

50. The method of claim 48 including monitoring review of electronic messages by the recipient to determine when the recipient reviews the sent electronic message.

51. The method of claim 50 wherein the monitoring of the review includes:

detecting when the recipient accesses the sent electronic message; and

monitoring user interaction with the accessed electronic message to determine if review of the accessed electronic message has occurred.

52. The method of claim 48 wherein the electronic message can be sent with one of a plurality of urgency levels indicating an urgency to review the electronic message, and wherein the sending of the another electronic message includes a higher urgency level than the sending of the electronic message.

53. The method of claim 48 wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

54. The method of claim 48 wherein the another electronic message includes the electronic message, and wherein the sent another electronic message indicates an elevated priority that the sent another electronic message be reviewed.

55. The method of claim 48 wherein the another electronic message is sent to a second recipient distinct from the recipient, and wherein the another electronic message prompts the second recipient to facilitate review by the recipient of the sent electronic message.

56. The method of claim 48 including:

after receiving the confirmation, automatically sending a third electronic message after a second pre-determined period of time.

57. The method of claim 48 including:

when it is determined that the period of time has elapsed without receiving the confirmation and that the confirmation is not received within a second period of time, automatically sending a third electronic message.

58. The method of claim 48 including setting a timer to expire at the pre-determined period of time after the sending of the electronic message, and wherein the another electronic message is automatically sent when the confirmation is not received before the timer expires.

59. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a recipient a pre-determined period of time has

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elapsed without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender;

when it is determined that the period of time has elapsed without receiving the confirmation, automatically sending another electronic message.

60. The method of claim 59 including requesting the confirmation.

61. The method of claim 59 including monitoring review of electronic messages by the recipient to determine when the recipient reviews the sent electronic message.

62. The method of claim 61 wherein the monitoring of the review includes:

detecting when the recipient accesses the sent electronic message; and

monitoring user interaction with the accessed electronic message to determine if review of the accessed electronic message has occurred.

63. The method of claim 59 wherein the electronic message is sent to a plurality of recipients, wherein a period of time is determined for each recipient, and wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient, has elapsed without receiving a confirmation for that recipient.

64. The method of claim 59 wherein the determined period of time for each recipient is based on past performance of the recipient in reviewing electronic messages sent to that recipient.

65. The method of claim 59 wherein the electronic message can be sent with one of a plurality of urgency levels indicating an urgency to review the electronic message, and wherein the sending of the another electronic message includes a higher urgency level than the sending of the electronic message.

66. The method of claim 59 wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

67. The method of claim 59 wherein the another electronic message includes the electronic message, and wherein the sent another electronic message indicates an elevated priority that the sent another electronic message be reviewed.

68. The method of claim 59 wherein the another electronic message is sent to a second recipient distinct from the recipient, and wherein the another electronic message prompts the second recipient to facilitate review by the recipient of the sent electronic message.

69. The method of claim 59 including:

when it is determined that the period of time has elapsed without receiving the confirmation and that the confirmation is not received within a second period of time after sending the another electronic message, automatically sending a third electronic message to the recipient.

70. The method of claim 59 including setting a timer to expire at the pre-determined period of time after the sending of the electronic message, and wherein the another electronic message is automatically sent when the confirmation is not received before the timer expires.

71. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a recipient a pre-determined period of time has

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elapsed without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender; and

when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message to the recipient, and if it is determined that no confirmation is received from the recipient within a second period of time, automatically sending a third electronic message to the recipient.

72. The method of claim 71 including requesting the confirmation.

73. The method of claim 71 including monitoring review of electronic messages by the recipient to determine when the recipient reviews the sent electronic message.

74. The method of claim 73 wherein the monitoring of the review includes:

detecting when the recipient accesses the sent electronic message; and

monitoring user interaction with the accessed electronic message to determine if review of the accessed electronic message has occurred.

75. The method of claim 71 wherein the electronic message is sent to a plurality of recipients, wherein a period of time is determined for each recipient, and wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving a confirmation for that recipient.

76. The method of claim 75 wherein the determined period of time for each recipient is based on past performance of the recipient in reviewing electronic messages sent to that recipient.

77. The method of claim 75 wherein the electronic message can be sent with one of a plurality of urgency levels indicating an urgency to review the electronic message, and wherein the sending of the another electronic message includes a higher urgency level than the sending of the electronic message.

78. The method of claim 71 wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

79. The method of claim 71 wherein the another electronic message includes the electronic message, and wherein the sent another electronic message indicates an elevated priority that the sent another electronic message be reviewed.

80. The method of claim 71 wherein the another electronic message is sent to a second recipient distinct from the recipient, and wherein the another electronic message prompts the second recipient to facilitate review by the recipient of the sent electronic message.

81. The method of claim 71 including setting a timer to expire at the pre-determined period of time after the sending of the electronic message, and wherein the another electronic message is automatically sent when the confirmation is not received before the timer expires.

82. A method in a computer system for delivery of an electronic message, the method comprising:

determining whether after sending of the electronic message to a recipient a pre-determined period of time has elapsed without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender;

setting a timer to expire at the pre-determined period of time after the sending of the electronic message; and

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when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message, wherein the another electronic message is automatically sent when the confirmation is not received before the timer expires.

83. The method of claim 82 including requesting the confirmation.

84. The method of claim 83 including monitoring review of electronic messages by the recipient to determine when the recipient reviews the sent electronic message.

85. The method of claim 84 wherein the monitoring of the review includes:

detecting when the recipient accesses the sent electronic message; and

monitoring user interaction with the accessed electronic message to determine if review of the accessed electronic message has occurred.

86. The method of claim 82 wherein the electronic message is sent to a plurality of recipients, wherein a period of time is determined for each recipient, and wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving a confirmation for that recipient.

87. The method of claim 86 wherein the determined period of time for each recipient is based on past performance of the recipient in reviewing electronic messages sent to that recipient.

88. The method of claim 82 wherein the electronic message can be sent with one of a plurality of urgency levels indicating an urgency to review the electronic message, and wherein the sending of the another electronic message includes a higher urgency level than the sending of the electronic message.

89. The method of claim 82 wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

90. The method of claim 82 wherein the another electronic message includes the electronic message, and wherein the sent another electronic message indicates an elevated priority that the sent another electronic message be reviewed.

91. The method of claim 82 wherein the another electronic message is sent to a second recipient distinct from the recipient, and wherein the another electronic message prompts the second recipient to facilitate review by the recipient of the sent electronic message.

92. The method of claim 82 including:

after receiving the confirmation, automatically sending a third electronic message after a second pre-determined period of time.

93. The method of claim 82 including:

when it is determined that the period of time has elapsed without receiving the confirmation and that the confirmation is not received within a second period of time, automatically sending a third electronic message.

94. A computer-readable medium containing instructions for controlling a computer system to deliver an electronic message, by:

determining whether after sending of the electronic message to a recipient a pre-determined period of time has elapsed without receiving a confirmation that the recipient reviewed the sent electronic message, the predetermined time period corresponding to a time interval selected by a sender;

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when it is determined that the period of time has elapsed without receiving the confirmation, sending another electronic message;

when the confirmation is not received within the pre-determined amount of time, determining a second amount of time; and

when the confirmation is not received within the determined second amount of time, automatically sending a third electronic message.

95. The computer-readable medium of claim **94** wherein the electronic message is sent to a plurality of recipients,

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wherein a period of time is specified for each recipient, and wherein the sending of the another message is performed automatically for each recipient when the period of time for that recipient has elapsed without receiving the confirmation for that recipient.

96. The computer-readable medium of claim **94** wherein the another electronic message is a reminder message sent to the recipient, the reminder message distinct from the sent electronic message.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,854,007 B1
APPLICATION NO. : 09/153994
DATED : February 8, 2005
INVENTOR(S) : Nancey J. Hammond


Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<u>Column, Line</u>	<u>Reads</u>	<u>Should Read</u>
Column 1, Line 16	“electronic-message,”	--electronic message--
Column 1, Line 59	“if it desirable”	--if is desirable--
Column 2, Line 48	“reviewed by to each”	--reviewed by each--
Column 3, Line 21	“for a week in addition,”	--for a week. In addition,--
Column 6, Line 51	“a singe server”	--a single server--
Column 10, Line 4	“sent to all Recipients”	--sent to all recipients--
Column 10, Line 48	“FIGS. 5A and 5B are an exemplary flow digram”	--FIGS. 5A and 5B are exemplary flow diagrams--
Column 11, Line 22	“or it was instead”	--or if it was instead--
Column 18, Line 25	“period of time for that recipient,”	--period of time for that recipient--
Column 19, Line 8	“that-no confirmation”	--that no confirmation--
Column 20, Line 8	“ 84 . The method of claim 83 ”	-- 84 . The method of claim 82 --

Signed and Sealed this

Twenty-sixth Day of December, 2006



JON W. DUDAS

Director of the United States Patent and Trademark Office

Exhibit 1007



US005325310A

United States Patent [19]

[11] Patent Number: **5,325,310**

Johnson et al.

[45] Date of Patent: **Jun. 28, 1994**

[54] **METHOD AND SYSTEM FOR PERSISTANT ELECTRONIC MAIL REPLY PROCESSING**

[75] Inventors: **William J. Johnson**, Flower Mound; **Daniel P. Ristow**, Watauga; **Marvin L. Williams**, Lewisville, all of Tex.

[73] Assignee: **International Business Machines Corporation**, Armonk, N.Y.

[21] Appl. No.: **905,055**

[22] Filed: **Jun. 26, 1992**

[51] Int. Cl.⁵ **G06K 17/00**

[52] U.S. Cl. **364/514; 358/402**

[58] Field of Search **364/514; 358/402**

[56] **References Cited**

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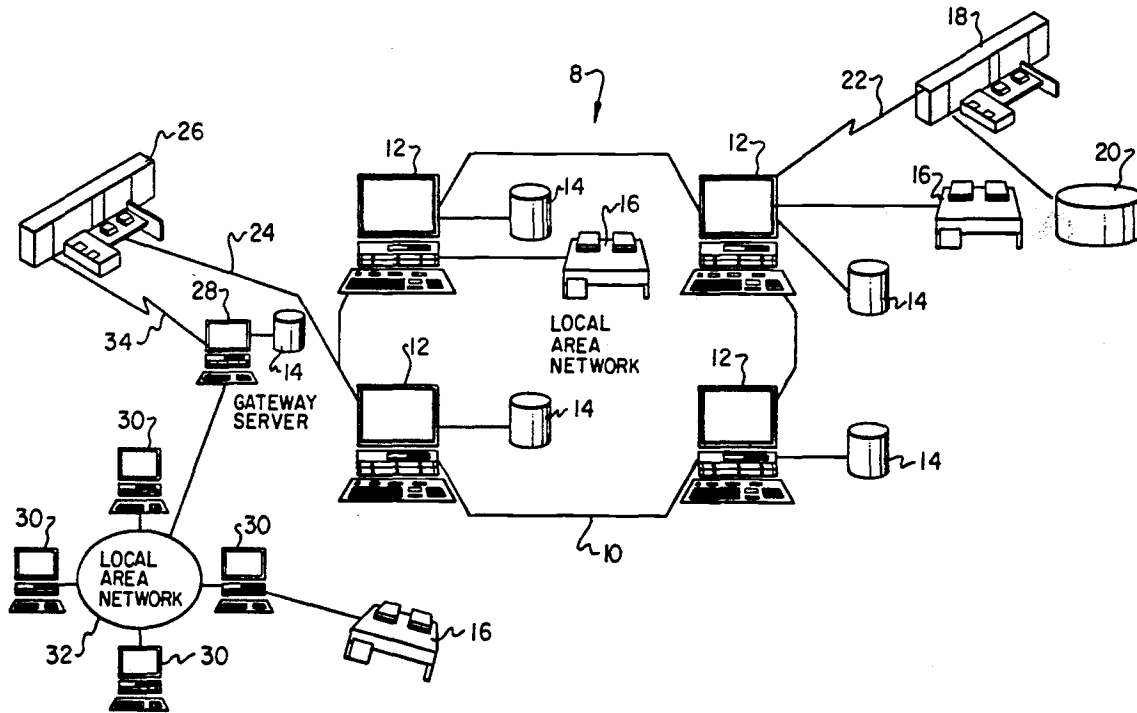
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Primary Examiner—Jack B. Harvey
Assistant Examiner—Thomas Peeso
Attorney, Agent, or Firm—Duke W. Yee; Andrew J. Dillon; Jonathan E. Jobe, Jr.

[57] **ABSTRACT**

A method and system in a data processing system, having a plurality of users enrolled therein and having a number of electronic mail objects which may be transmitted and received within the distributed data processing system, are provided for ensuring a specific response to a selected electronic mail object by a recipient thereof within the data processing system. The method and system include designating an electronic mail object as requiring a specific response and then transmitting the electronic mail object to a recipient. The recipient of the electronic mail object is prompted for a specific response in response to the recipient opening an electronic mail object and is prohibited from performing a selected action until the specific response has been entered by the recipient.

32 Claims, 6 Drawing Sheets



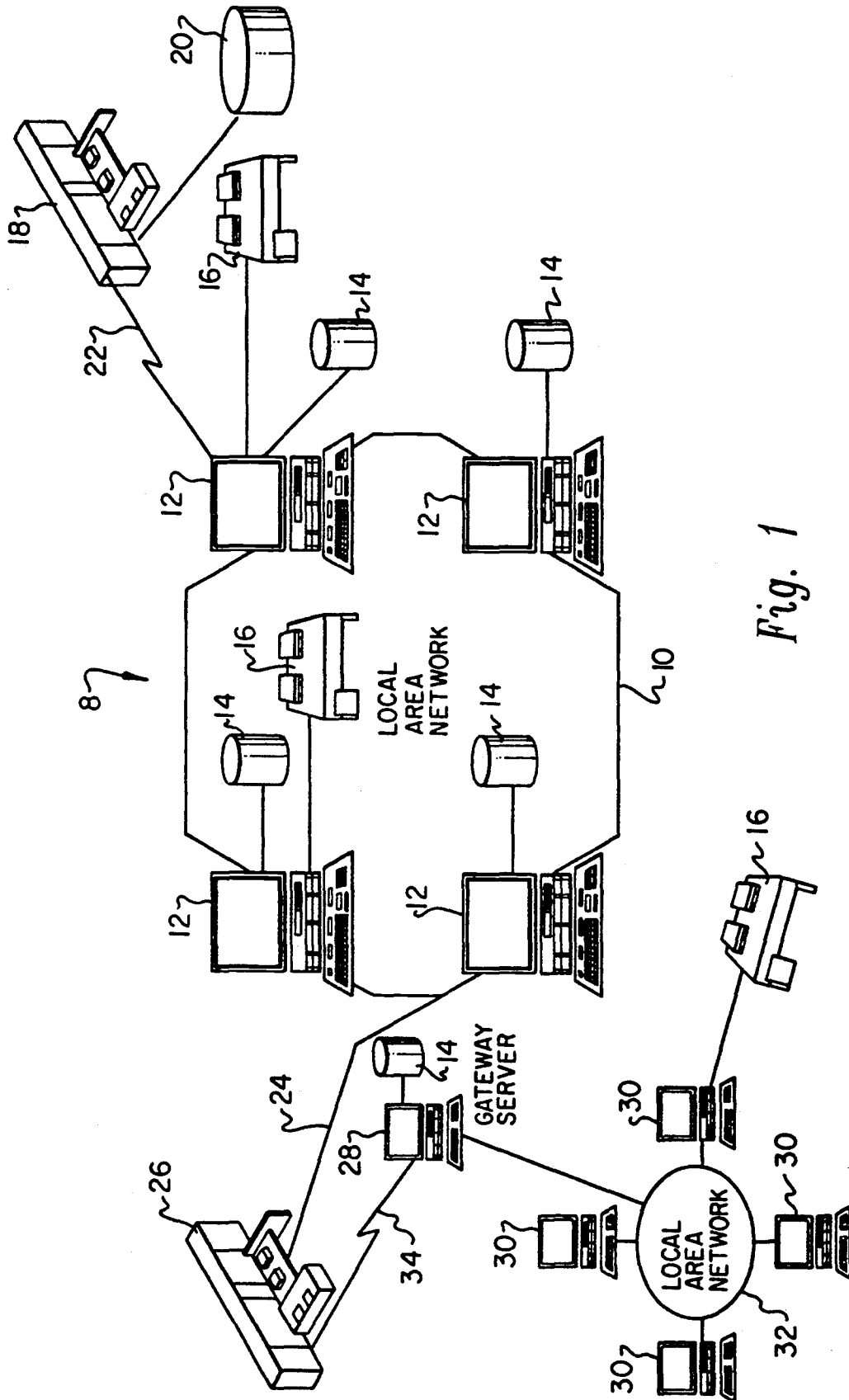


Fig. 1

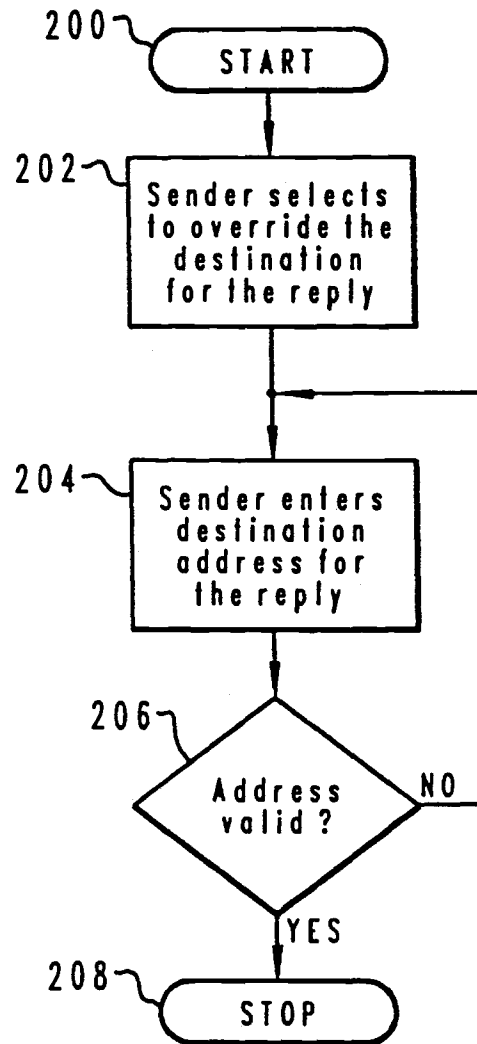


Fig. 2

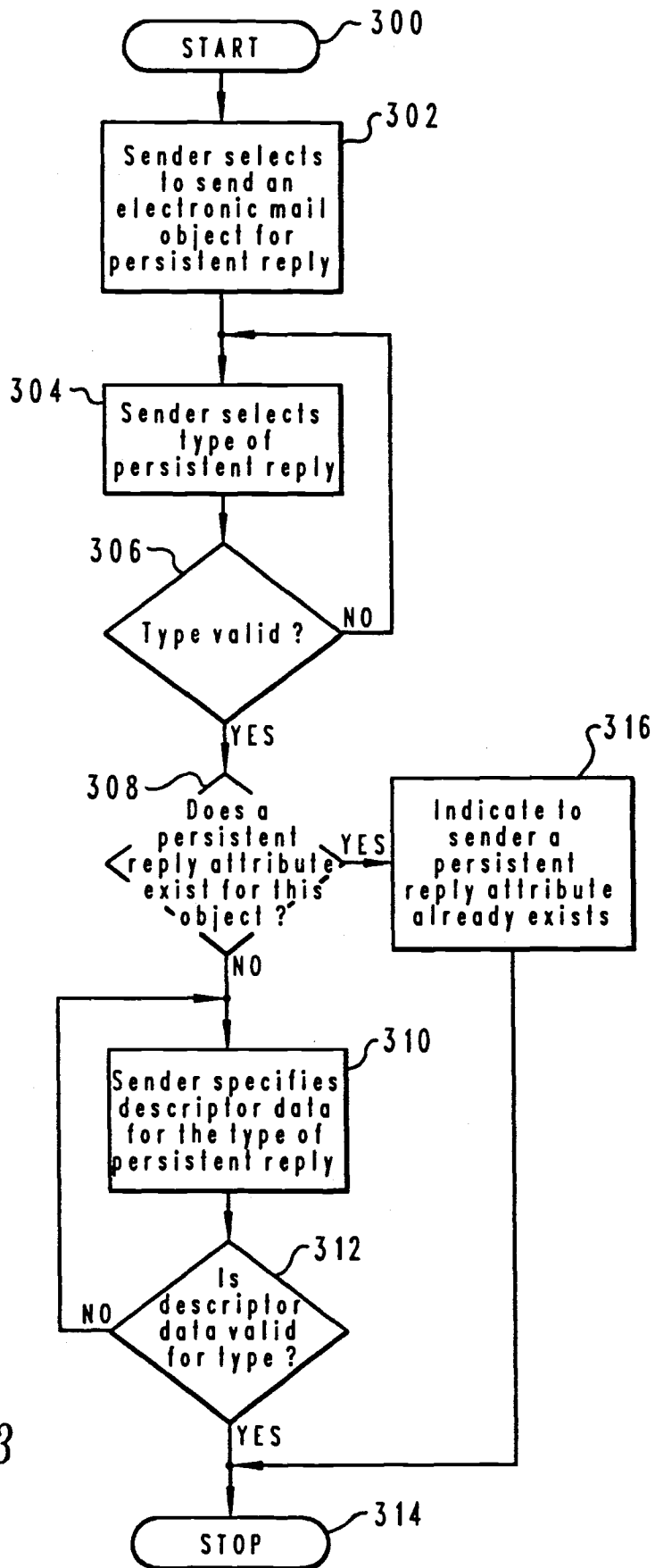


Fig. 3

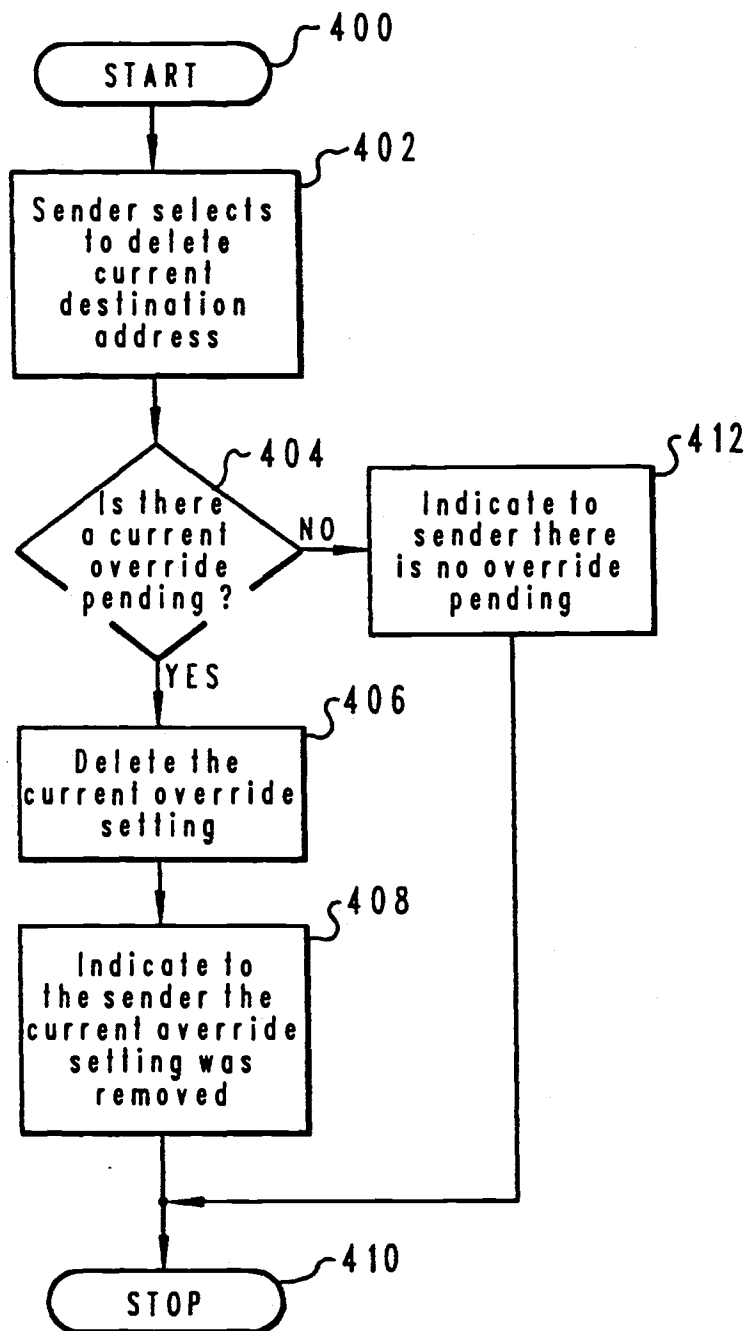


Fig. 4

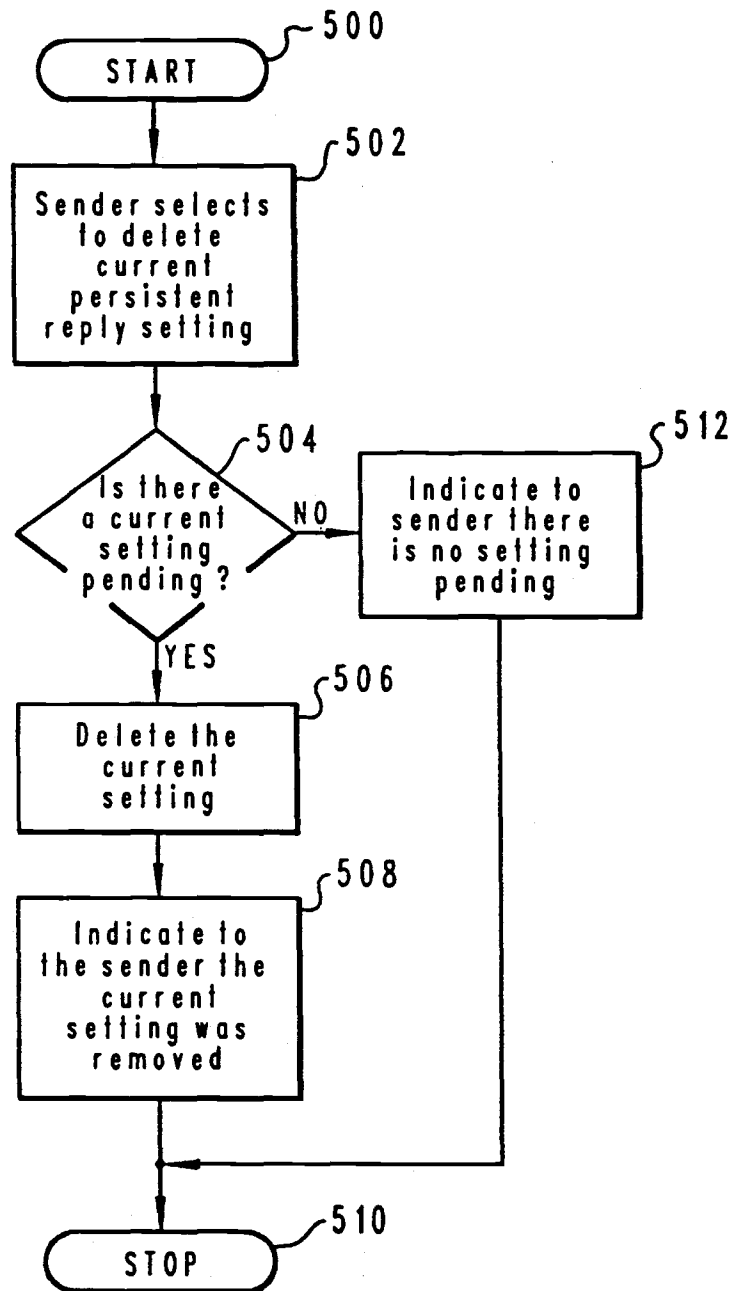


Fig. 5

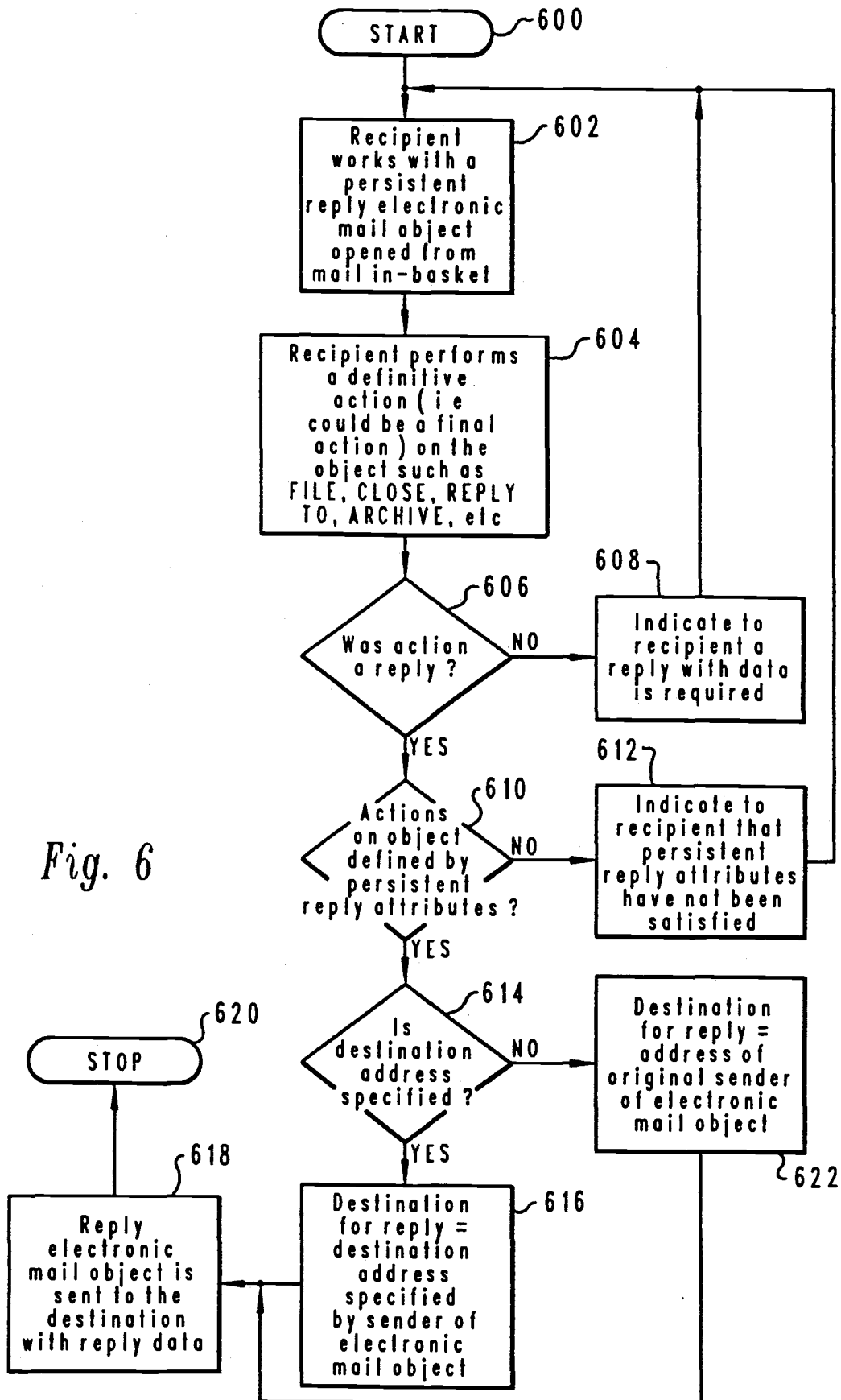


Fig. 6

METHOD AND SYSTEM FOR PERSISTANT ELECTRONIC MAIL REPLY PROCESSING

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention relates in general to an improved electronic mail system and in particular, to a method and system for an improved acknowledgement system for electronic mail objects distributed within an electronic mail system. Still more particularly, the present invention relates to a method and system for an improved acknowledgment system for electronic mail objects distributed within an electronic mail system through ensuring that an electronic mail object has been carefully examined by a recipient.

2. Description of the Related Art

Electronic mail or "E-Mail" systems are well known in the prior art. By "electronic mail system", what is meant is a system whereby messages, notes, and documents in the form of electronic mail objects may be sent and/or received between two computers or work stations. Electronic mail objects also include other items that may be transmitted to a user, such as, for example, voice or verbal messages, and non textual items like graphics or drawings that may be electronically transmitted. For example, two computers coupled together by a Local Area Network ("LAN") may be utilized to communicate detailed messages between the operators thereof. Similarly, two intelligent work stations coupled to a central processor may be utilized to transmit or receive electronic mail objects by utilizing well-known communication techniques.

The sending of electronic mail objects has become a common and popular method for distributing messages and information to numerous people within an organization or between organizations utilizing an electronic mail system. Upon the receipt of an electronic mail object, the recipient may choose to read the electronic mail object, file the electronic mail object, forward the electronic mail object to other users on the system, erase the electronic mail object, respond to the electronic mail object, or some combination of the foregoing options.

It is often desirable in an electronic mail system to distribute an electronic mail object to a number of users with the expectation of a reply confirming the reception and reading of the electronic mail object. For example, a company may send a notice to employees in the form of an electronic mail object, which should be read and understood by the employees. For various legal reasons, each employee is to send a note back, which states that it has been read and understood.

Presently available acknowledgement systems may indicate that an electronic mail object has been sent and received by a recipient, but do not provide a mechanism to ensure or compel a reply by the recipient. The various forms of acknowledgement that are presently available do not ensure that the recipient of the electronic mail object has actually read it, let alone read it carefully.

Consequently, there is a need for an electronic mail system having a mechanism for ensuring that a recipient of an electronic mail object will read it carefully.

SUMMARY OF THE INVENTION

It is one object of the present invention to provide a method and system for an improved electronic mail system.

It is another object of the present invention to provide a method and system for an improved acknowledgement system for electronic mail objects distributed within an electronic mail system.

It is yet another object of the present invention to provide a method and system for an improved acknowledgement system for electronic mail objects distributed within an electronic mail system through ensuring that an electronic mail object has been carefully examined by a recipient.

The foregoing objects are achieved as is now described. A method and system in a data processing system, having a plurality of users enrolled therein and having a number of electronic mail objects which may be transmitted and received within the distributed data processing system, are provided for ensuring a specific response to a selected electronic mail object by a recipient thereof within the data processing system. The method and system include designating an electronic mail object as requiring a specific response and then transmitting the electronic mail object to a recipient. The recipient of the electronic mail object is prompted for a specific response in response to the recipient opening the electronic mail object and is prohibited from performing a selected action until the specific response has been entered by the recipient.

The above as well as additional objects, features, and advantages of the present invention will become apparent in the following detailed written description.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself however, as well as a preferred mode of use, further objects and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

FIG. 1 depicts a pictorial representation of a data processing system, which may be utilized to implement the method of the present invention;

FIG. 2 is a high level flowchart of a method and system for selecting to override the default of the sender's mail address for the reply in accordance with a preferred embodiment of the present invention;

FIG. 3 depicts a high level flowchart of a method and system for selecting a persistent reply option during editing or sending of an electronic mail object in accordance with a preferred embodiment of the present invention;

FIG. 4 is a high level flowchart of a method and system for selecting to remove an override for a destination address in accordance with a preferred embodiment of the present invention;

FIG. 5 depicts a high level flowchart of a method and system for selecting to remove a persistent reply setting in accordance with a preferred embodiment of the present invention; and

FIG. 6 is a high level flowchart of a method and system for processing an electronic mail object associated with one or more persistent reply attributes received from a sender in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

With reference now to the figures, and in particular with reference to FIG. 1, there is depicted a pictorial representation of a data processing system 8, which may be utilized to implement the method and system of the present invention. As may be seen, data processing system 8 may include a plurality of networks, such as Local Area Networks (LAN) 10 and 32, each of which preferably includes a plurality of individual computers 12 and 30, respectively. Of course, those skilled in the art will appreciate that a plurality of Intelligent Work Stations (IWS) coupled to a host processor may be utilized for each such network.

As is common in such data processing systems, each individual computer may be coupled to a storage device 14 and/or a printer/output device 16. One or more storage devices 14 may be utilized, in accordance with the method of the present invention, to store documents or resource objects which may be periodically accessed by any user within data processing system 8. In a manner well known in the prior art, each such document or resource object stored within a storage device 14 may be freely interchanged throughout data processing system 8 by transferring a document to a user at an individual computer 12 or 32, for example.

Still referring to FIG. 1, it may be seen that data processing network 8 may also include multiple mainframe computers, such as mainframe computer 18, which may be preferably coupled to Local Area Network (LAN) 10 by means of communications link 22. Main frame computer 18 may also be coupled to a storage device 20 which may serve as remote storage for Local Area Network (LAN) 10. Similarly, Local Area Network (LAN) 10 may be coupled via communications link 24 through a subsystem control unit/communications controller 26 and communications link 34 to a gateway server 28. Gateway server 28 is preferably an individual computer or Interactive Work Station (IWS) which serves to link Local Area Network (LAN) 32 to Local Area Network (LAN) 10.

As discussed above with respect to Local Area Network (LAN) 32 and Local Area Network (LAN) 10, a plurality of documents or resource objects may be stored within storage device 20 and controlled by mainframe computer 18, as Resource Manager or Library Service for the resource objects thus stored. Of course, those skilled in the art will appreciate that mainframe computer 18 may be located a great geographic distance from Local Area Network (LAN) 10 and similarly Local Area Network (LAN) 10 may be located a substantial distance from Local Area Network (LAN) 32. For example, Local Area Network (LAN) 32 may be located in California while Local Area Network (LAN) 10 may be located within Texas and mainframe computer 18 may be located in New York.

A user located at an individual computer 12 in Local Area Network (LAN) 10 may desire to send an electronic mail object to another user in Local Area Network (LAN) 10 or to a user at an individual computer 30 in Local Area Network 32 utilizing an electronic mail system. The user may wish to ensure that the recipient views or carefully reads the electronic mail object by electing to require the recipient to reply or acknowledge the electronic mail object by entering data employing a preferred embodiment of the present inven-

tion. The electronic mail object may be in the form of text, an image, or a voice message.

In accordance with a preferred embodiment of the present invention, a mechanism for forcing a recipient to reply to an electronic mail object with data is included. For example, a company may send a notice to its employees which should be read and understood by the employees. For legal reasons, each employee is required to send a note back to the sender, which states that the electronic mail object has been read and understood. The present invention provides a mechanism whereby each recipient must reply with data stating that the electronic mail object has been read and understood. The data may be in the form of text, an image scanned into the data processing system, or a voice or verbal message digitized for transmission within a data processing system.

In another example, a company may be trying to obtain feedback on a new logo or design. An image of the logo or design may be transmitted to the employees. The present invention provides a mechanism by which each recipient must reply with data in response to viewing the logo or design.

In accordance with a preferred embodiment of the present invention, the mechanism may prevent the deletion and archival of the note or image until an appropriate reply is made. In fact, the sender of the electronic mail object may mark or associate an attribute with the electronic mail object such that it cannot be exited out of until the appropriate reply has been made. These attributes are called "persistent reply attributes".

Persistent reply attributes are set on an electronic mail object before the electronic mail object is sent for distribution. Interpretation of these persistent reply attributes indicate how the recipient data processing system should govern user interaction for forcing a reply containing data from the recipient of the electronic mail object. By default, the sender of the electronic mail object is assumed to be the recipient for the reply unless an override is set on the electronic mail object.

Referring now to FIG. 2, there is depicted a high level flowchart of a method and system for selecting to override the default of the sender's mail address for the reply in accordance with a preferred embodiment of the present invention. As illustrated, the process begins in block 200 and thereafter proceeds to block 202, which depicts a selection by the sender to override the destination for the reply to an electronic mail object selected for persistent reply. The override is achieved by setting a "persistent reply to report" attribute, which contains a destination address for the reply. This attribute may be the return address for the reply which would automatically pop into the recipient address on the reply or electronic mail object in accordance with a preferred embodiment of the present invention.

Next, the process proceeds to block 204, which illustrates the entering of a destination address for the reply by the sender. Afterwards, the process proceeds to block 206, which depicts a determination of whether or not the address entered by the user is valid. If the address is not valid, the process returns to block 204 so that the sender may enter another destination address for the reply. If the address is valid, the process terminates as illustrated in block 208. Following this method, the sender may designate another address as a destination address for the electronic mail object.

With reference now to FIG. 3, there is depicted a high level flowchart of a method and system for selecting a persistent reply option during editing or sending of an electronic mail object in accordance with a preferred embodiment of the present invention. As illustrated, the process begins in block 300 and thereafter proceeds to block 302, which depicts a selection by the sender to send an electronic mail object for persistent reply. Next, the process proceeds to block 304, which illustrates a selection of the type of persistent reply desired by the sender. Thereafter, the process proceeds to block 306, which depicts a determination of whether or not the type of persistent reply selected by the sender is valid. If the type of persistent reply is not valid, the process then returns to block 304 so that the sender may select another type of persistent reply.

Referring back to block 306, if the type of persistent reply is valid, the process then proceeds to block 308, which illustrates a determination of whether or not a persistent reply attribute exists for the electronic mail object. If a persistent reply attribute does not exist for the electronic mail object, the process then proceeds to block 310, which depicts the sender specifying the descriptor data for the type of persistent reply. Descriptor data is the data required from a recipient of an electronic mail object selected for persistent reply in order to execute a proper reply. Next, block 312 depicts a determination of whether or not the descriptor data is valid for the type of persistent reply chosen. If the descriptor data is not valid for the type of persistent reply chosen, the process returns to block 310 so that the sender may specify data for the type of persistent reply desired. If the descriptor data is valid for the type of persistent reply chosen, the process then terminates as depicted in block 314.

Referring back to block 308, if a persistent reply attribute exists for the electronic mail object, the process then proceeds to block 316, which illustrates indicating to the sender that a persistent reply attribute already exists for the electronic mail object selected for a persistent reply. Again, the process thereafter terminates as depicted in block 314.

Various types of persistent reply attributes may be set for an electronic mail object, such as, for example, REPLY_DATA_LENGTH, CHARACTER_ABSENCE, KEYSTROKE_SAVE, and REPLY_DATA_BY_FIELD. The descriptor data for a REPLY_DATA_LENGTH persistent reply attribute is a numeric value indicating how many new characters must exist in the data body of the reply electronic mail object. Next, the CHARACTER_ABSENCE type of persistent reply attribute specifies a character which will be scanned for in the reply electronic mail object to determine whether or not the reply data entered by a recipient is satisfactory. The presence of this character in the reply electronic mail object will prevent a reply from being completed and sent by the recipient. Typically, an underscore character, "_", is utilized to define reply fields in an electronic mail object. The recipient of the electronic mail object would have to type over all of the underscore characters with other characters in order to enter a satisfactory reply to the electronic mail object.

Another type of persistent reply attribute that may be utilized in accordance with a preferred embodiment of the present invention is KEY_STROKE_SAVE, which involves selecting a numeric value, wherein the absolute value of this attribute indicates the number of

keystrokes that a recipient of an electronic mail object is to hit before a satisfactory reply occurs. A negative numeric value indicates that the reply is forced immediately upon the Nth keystroke. A positive numeric value indicates that the recipient must initiate the reply with the usual interface, but the reply electronic mail object will not be sent unless the limit of keystrokes were hit.

Next, REPLY_DATA_BY_FIELD is a sophisticated persistent reply attribute that allows the sender of an electronic mail object to specify the field locations within an electronic mail object and what allowable textual characters may be made. In accordance with a preferred embodiment of the present invention, the data consists of tuples, where each tuple is defined by a name and a value or string. The tuple, OFFSET, is associated with an offset (a numeric value) from the original electronic mail object start to the first character in the field; the tuple, LENGTH, is associated with a numeric value, wherein the absolute value of the numeric value is the length of the data required, starting at the offset. Next, STRING is a tuple, which includes a string that is the actual singular allowable string allowed at the OFFSET for LENGTH characters. Blanks are included in the LENGTH value, and a negative LENGTH value indicates that a no mixed case is allowed in STRING, while a positive LENGTH value indicates that a mixed case is allowed in STRING. Additionally, STRING may include special characters from the upper character codes in a code page for special meanings such as wildcard, replication, etc.

In addition to the entry of data, a preferred embodiment of the present invention may be utilized to ensure that a recipient performs selected actions on the electronic mail object such as, for example, saving the electronic mail object. In such an example, the descriptor data may require a number of keystrokes, including a combination of control and function keys, to be entered by a recipient that would result in the electronic mail object being saved within the electronic mail system. These keystrokes would have to be entered by the recipient in order to exit the electronic mail object.

Additionally, persistent reply attributes may be also utilized to direct whether the recipient is to reply by utilizing a new electronic mail object, forwarding the electronic mail object with a new document appended to it, or resending the electronic mail object with over-typed or new characters added to the electronic mail object.

Those of ordinary skill in the art will recognize that the above described persistent reply types may be utilized with all types of a reply such as, for example, WYSIWYG mail, FORWARD, RESEND, REPLY, etc. It is also contemplated that persistent reply attributes may be utilized alone or in combination with other persistent reply attributes. Additionally, other types of persistent reply attributes may be utilized in addition to the examples described above. Verbal messages may be digitized for transmission within a data processing system utilizing well known analog to digital techniques. The present invention is not intended to be limited to text. For example, a persistent reply attribute may require an image to be scanned into the data processing system or may require a verbal message from the recipient to be digitally transmitted within the data processing system.

Referring now to FIG. 4, there is depicted a high level flowchart of a method and system for selecting to remove an override for a destination address in accor-

dance with a preferred embodiment of the present invention. As illustrated, the process begins in block 400 and thereafter proceeds to block 402, which depicts a selection by the sender to delete the current destination address. It also is contemplated that multiple destination addresses may be employed in accordance with a preferred embodiment of the present invention. Next, the process proceeds to block 404, which illustrates a determination of whether or not a current override is pending. If a current override is pending, the process then proceeds to block 406, which depicts the deletion of the current override setting. Thereafter, the process proceeds to block 408, which illustrates an indication to the sender that the current override setting was removed. Afterwards, the process terminates as depicted in block 410.

Referring back to block 404, if a current override is not pending, the process proceeds instead to block 412, which illustrates an indication to the sender that no override pending is present. Again, the process thereafter terminates as depicted in block 410.

With reference now to FIG. 5, there is depicted a high level flowchart of a method and system for selecting to remove a persistent reply setting in accordance with a preferred embodiment of the present invention. With this method, a sender may remove any attributes associated with an electronic mail object selected for persistent reply. As depicted, the process begins in block 500 and thereafter proceeds to block 502, which illustrates a selection by the sender to delete the current persistent reply setting. Next, the process proceeds to block 504, which depicts a determination of whether or not a current setting is pending. If a current setting is pending, the process then proceeds to block 506, which illustrates a deletion of the current setting. As a result, all persistent reply attributes that may be associated with the electronic mail object are removed from the electronic mail object. Then, the process proceeds to block 508, which depicts an indication to the sender that the current setting was removed. Thereafter, the process terminates as illustrated in block 510.

Referring again in block 504, if a current setting is not pending, the process then proceeds to block 512, which depicts an indication to the sender that no setting is pending. Thereafter, the process terminates as illustrated in block 510.

With reference now to FIG. 6, there is depicted a high level flowchart of a method and system for processing an electronic mail object associated with one or more persistent reply attributes received from a sender in accordance with a preferred embodiment of the present invention. An electronic mail object associated with one or more persistent reply attributes is also called a persistent reply electronic mail object. As illustrated, the process begins in block 600 and thereafter proceeds to block 602, which depicts the recipient working with a mail in-basket in an electronic mail system. Thereafter, the process proceeds to block 604, which illustrates the performance of a definitive action (i.e., a final action) by the recipient on the persistent reply electronic mail object such as FILE, CLOSE, REPLY TO, ARCHIVE, etc.

Next, the process proceeds to block 606, which depicts a determination of whether or not the action taken by the recipient was a reply satisfying the persistent reply attributes associated with the persistent reply electronic mail object. If the action was not a reply, the process then proceeds to block 608, which illustrates an

indication to the recipient that a reply with data is required. Thereafter, the process returns to block 602 so that the recipient may work with the persistent reply electronic mail object to enter data.

Referring again to block 606, if the action taken by the recipient is determined to be a reply, the process then proceeds to block 610, which depicts a determination of whether or not the actions performed by the recipient on the persistent reply electronic mail object are actions as defined by the persistent reply attributes associated with the persistent reply electronic mail object. If the actions are not those as defined by the persistent reply attributes associated with the persistent reply electronic mail object, the process then proceeds to block 612, which illustrates an indication to the recipient that the persistent reply attributes have not been satisfied. Thereafter, the process returns to block 602 so that the recipient may work with the persistent reply electronic mail object.

Referring again to block 610, if the actions performed on the persistent reply electronic mail object are those as defined by the persistent attributes, the process then proceeds to block 614, which depicts a determination of whether or not a destination address has been specified. This destination address may be set by the sender, as illustrated in FIG. 2. If a destination address has been specified, the process then proceeds to block 616, which illustrates the setting of the destination for the reply equal to the destination address specified by the sender of the electronic mail object. Thereafter, the process proceeds to block 618, which depicts the sending of a reply electronic mail object to the destination with reply data. Subsequently, the process terminates as illustrated in block 620.

Referring back to block 614, if a destination address has not been specified, the process then proceeds to block 622, which depicts the setting of the destination for the reply equal to the address of the original sender of the persistent reply electronic mail object. Then, the process proceeds to block 618, which depicts the sending of the reply electronic mail object to the destination with the reply data. Thereafter, the process terminates as illustrated in block 620.

In accordance with a preferred embodiment of the present invention, a reply may be forced at the time that a persistent reply electronic mail object is opened. Alternatively, a recipient may be prevented from archiving or filing an electronic mail object until the designated response has been entered.

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

What is claimed is:

1. A method in a data processing system, having a plurality of users enrolled therein and having a plurality of electronic mail objects which may be transmitted and received within said data processing system, for ensuring a specific response to a selected electronic mail object by a recipient thereof within said data processing system, said method comprising:

- designating an electronic mail object as requiring a specific response;
- transmitting said electronic mail object to a recipient;

prompting said recipient of said electronic mail object for said specific response in response to said recipient opening said electronic mail object; and prohibiting a selected action until said specific response has been entered by said recipient.

2. The method of claim 1, wherein said specific response includes entering data located in said electronic mail object.

3. The method of claim 1, wherein said specific response includes entering data attached to said electronic mail object.

4. The method of claim 1, wherein said specific response includes attaching a specific graphics image to said electronic mail object.

5. The method of claim 1, wherein said specific response includes entering a verbal message, which is digitized and attached to said electronic mail object.

6. The method of claim 1 further comprising selecting said specific response required by associating said electronic mail object with an attribute specifying said specific response required from said recipient.

7. The method of claim 6, wherein said attribute also defines said selected action.

8. The method of claim 6, wherein said electronic mail object is associated with a second attribute, said second attribute specifying a destination address, wherein in response to said recipient entering said specific response, said specific response is sent to said destination address.

9. The method of claim 6, wherein said electronic mail object originates from a sender and further comprises returning said electronic mail object with said specific response to said sender in response to said recipient entering said specific response.

10. The method of claim 6, wherein said electronic mail object includes a plurality of characters and wherein said attribute specifies that said specific response requires said recipient to type over a selected number of said plurality of characters.

11. The method of claim 6, wherein said attribute specifies that said specific response requires said recipient to enter characters that are appended to said electronic mail object.

12. The method of claim 6, wherein said attribute specifies that said specific response requires said recipient to enter a selected sequence of keys.

13. The method of claim 6 further comprising in response to said recipient entering said specific response, indicating that said recipient has entered said specific response.

14. The method of claim 7 further comprising indicating that said recipient has received said electronic mail object.

15. The method of claim 7, wherein said selected action includes deleting said electronic mail object.

16. The method of claim 7, wherein said selected action includes filing said electronic mail object.

17. A data processing system, having a plurality of users enrolled therein and having a plurality of electronic mail objects which may be transmitted and received within said data processing system, for ensuring a specific response to a selected electronic mail object by a recipient thereof within said data processing system, said data processing system comprising:

designating means for designating an electronic mail object as requiring a specific response;
transmitting means for transmitting said electronic mail object to a recipient;

prompting means for prompting said recipient of said electronic mail object for said specific response in response to said recipient opening said electronic mail object; and

prohibiting means for prohibiting a selected action until said specific response has been entered by said recipient.

18. The data processing system of claim 17, wherein said specific response includes entering data located in said electronic mail object.

19. The data processing system of claim 17, wherein said specific response includes entering data attached to said electronic mail object.

20. The data processing system of claim 17 further comprising selecting means for selecting said specific response required, wherein said electronic mail object is associated with an attribute specifying said specific response required from said recipient.

21. The data processing system of claim 20, wherein said attribute also defines said selected action.

22. The data processing system of claim 20, wherein said electronic mail object is associated with a second attribute, said second attribute specifying a destination address, wherein in response to said recipient entering said specific response, said specific response is sent to said destination address.

23. The data processing system of claim 20, wherein said electronic mail object originates from a sender and further comprises returning means for returning said electronic mail object with said specific response to said sender in response to said recipient entering said specific response.

24. The data processing system of claim 20, wherein said electronic mail object includes a plurality of characters and wherein said attribute specifies that said specific response requires said recipient to type over a selected number of said plurality of characters.

25. The data processing system of claim 20, wherein said attribute specifies that said specific response requires said recipient to enter characters that are appended to said electronic mail object.

26. The data processing system of claim 20, wherein said attribute specifies that said specific response requires said recipient to enter a selected sequence of keys.

27. The data processing system of claim 20, wherein said attribute specifies that said specific response requires said recipient respond with a verbal message which is digitized and attached to said electronic mail object.

28. The data processing system of claim 20, wherein said attribute specifies that said specific response requires said recipient to attach a specific graphics image to said electronic mail object.

29. The data processing system of claim 20 further comprising indicating means for indicating that said recipient has received said electronic mail object.

30. The data processing system of claim 29 further comprising in response to said recipient entering said specific response, indicating means for indicating that said recipient has entered said specific response.

31. The data processing system of claim 21, wherein said selected action includes deleting said electronic mail object.

32. The data processing system of claim 21, wherein said selected action includes filing said electronic mail object.

* * * * *

Exhibit 1008



US005742905A

United States Patent [19]

[11] Patent Number: **5,742,905**

Pepe et al.

[45] Date of Patent: **Apr. 21, 1998**

[54] PERSONAL COMMUNICATIONS INTERNETWORKING

[75] Inventors: **David Matthew Pepe**, Middletown; **Lisa B. Blitzer**, Manalapan; **James Joseph Brockman**, Perrineville; **William Cruz**, Eatontown; **Dwight Omar Hakim**, Matawan, all of N.J.; **Michael Kramer**, Bronx County, N.Y.; **Dawn Diane Petr**, Basking Ridge, N.J.; **Josefa Ramarosan**, Freehold, N.J.; **Gerardo Ramirez**, Bridgewater, N.J.; **Yang-Wei Wang**, Howell, N.J.; **Robert G. White**, Morristown, N.J.

[73] Assignee: **Bell Communications Research, Inc.**, Morristown, N.J.

[21] Appl. No.: **309,336**

[22] Filed: **Sep. 19, 1994**

[51] Int. Cl.⁶ **H04Q 7/20**

[52] U.S. Cl. **455/461; 455/445; 455/417; 379/210**

[58] Field of Search **379/56, 57, 58, 379/63, 210, 211, 212, 213, 214, 142, 67, 88, 201, 207, 229; 455/403, 414, 417, 445, 422, 461**

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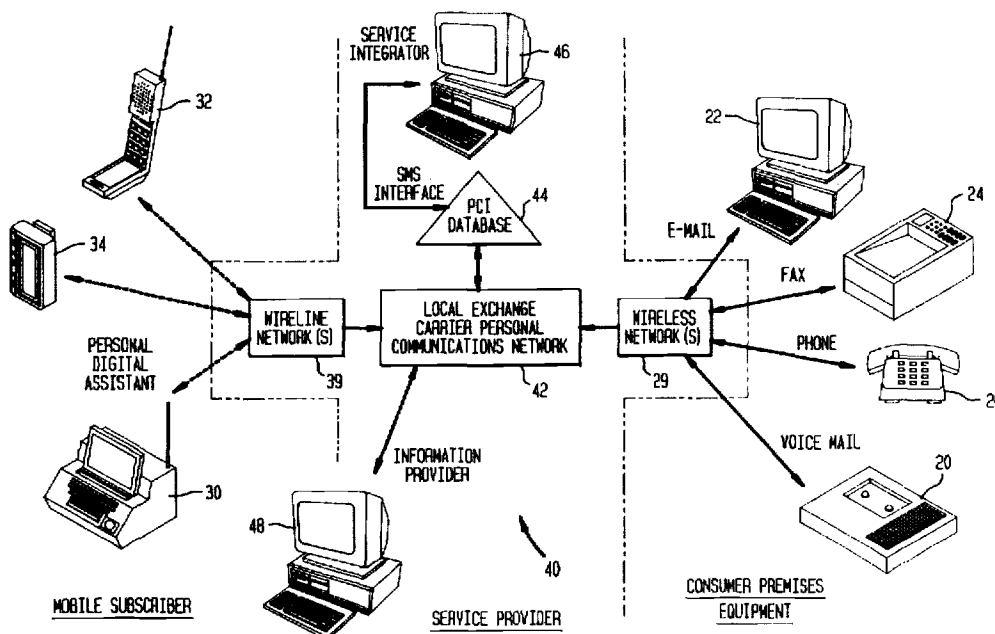
Hientz et al., A Short Message Service—A New Service of Digital Mobile Communication, pp. 517–526, Sep. 1993.

Primary Examiner—Dwayne Bost
Assistant Examiner—William G. Trost
Attorney, Agent, or Firm—Loria B. Yeadon; Joseph Giordano

[57] ABSTRACT

A person communications internetworking provides a network subscriber with the ability to remotely control the receipt and delivery of wireless and wireline voice and text messages. The network operates as an interfaces between various wireless and wireline networks, and also performs media translation, where necessary. The subscriber's message receipt and delivery options are maintained in a database which the subscriber may access by wireless or wireline communications to update the options programmed in the database. The subscriber may be provided with CallCommand service which provides real-time control of voice calls while using a wireless data terminal or PDA.

11 Claims, 26 Drawing Sheets



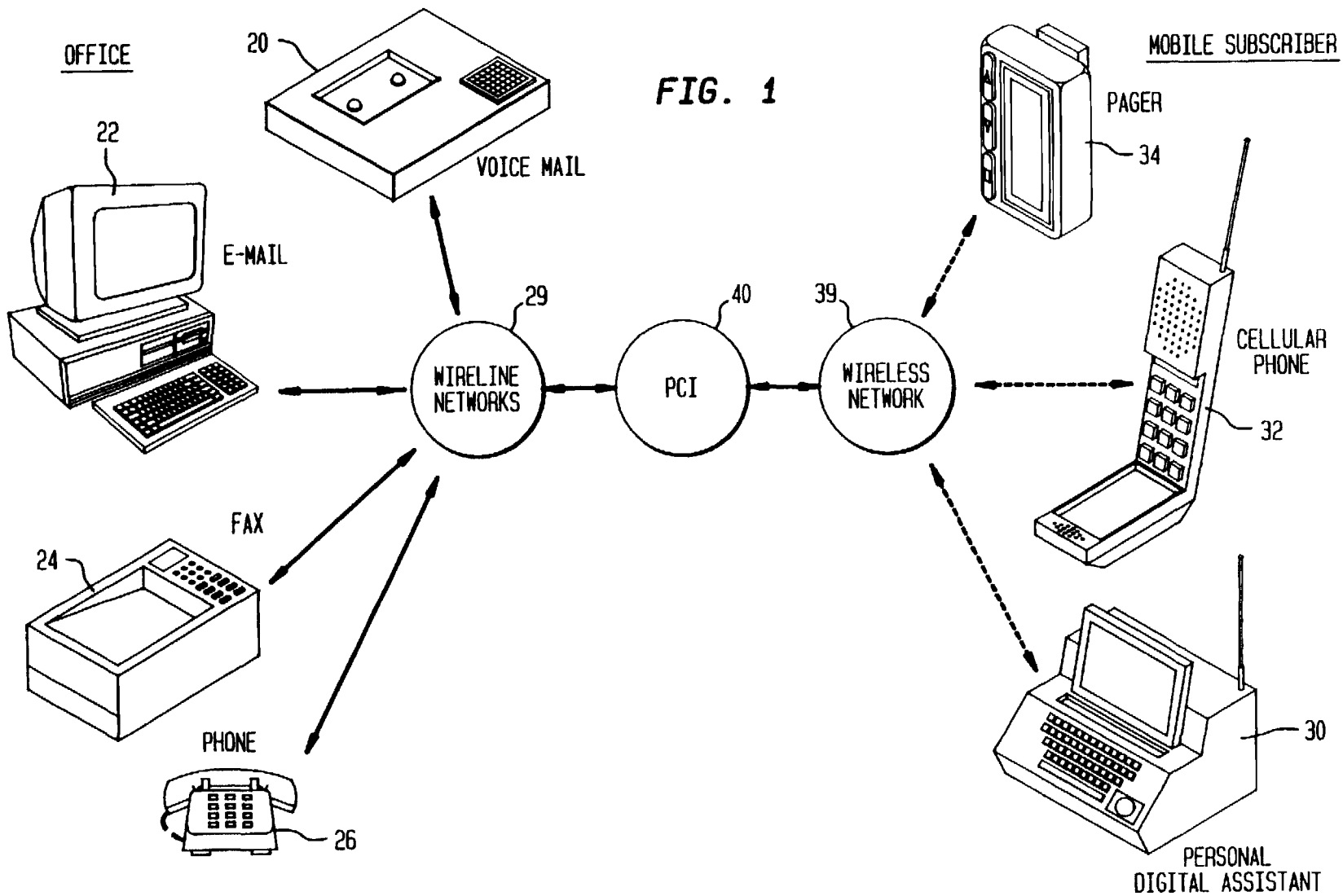


FIG. 2

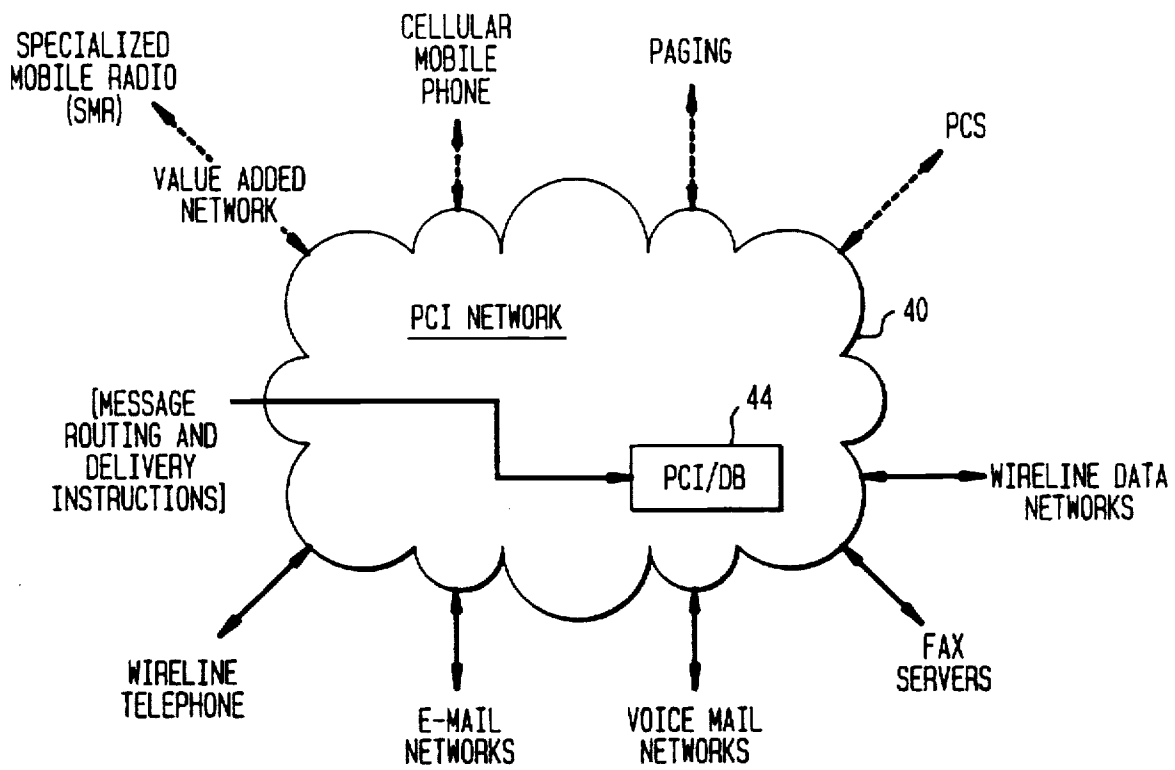


FIG. 3

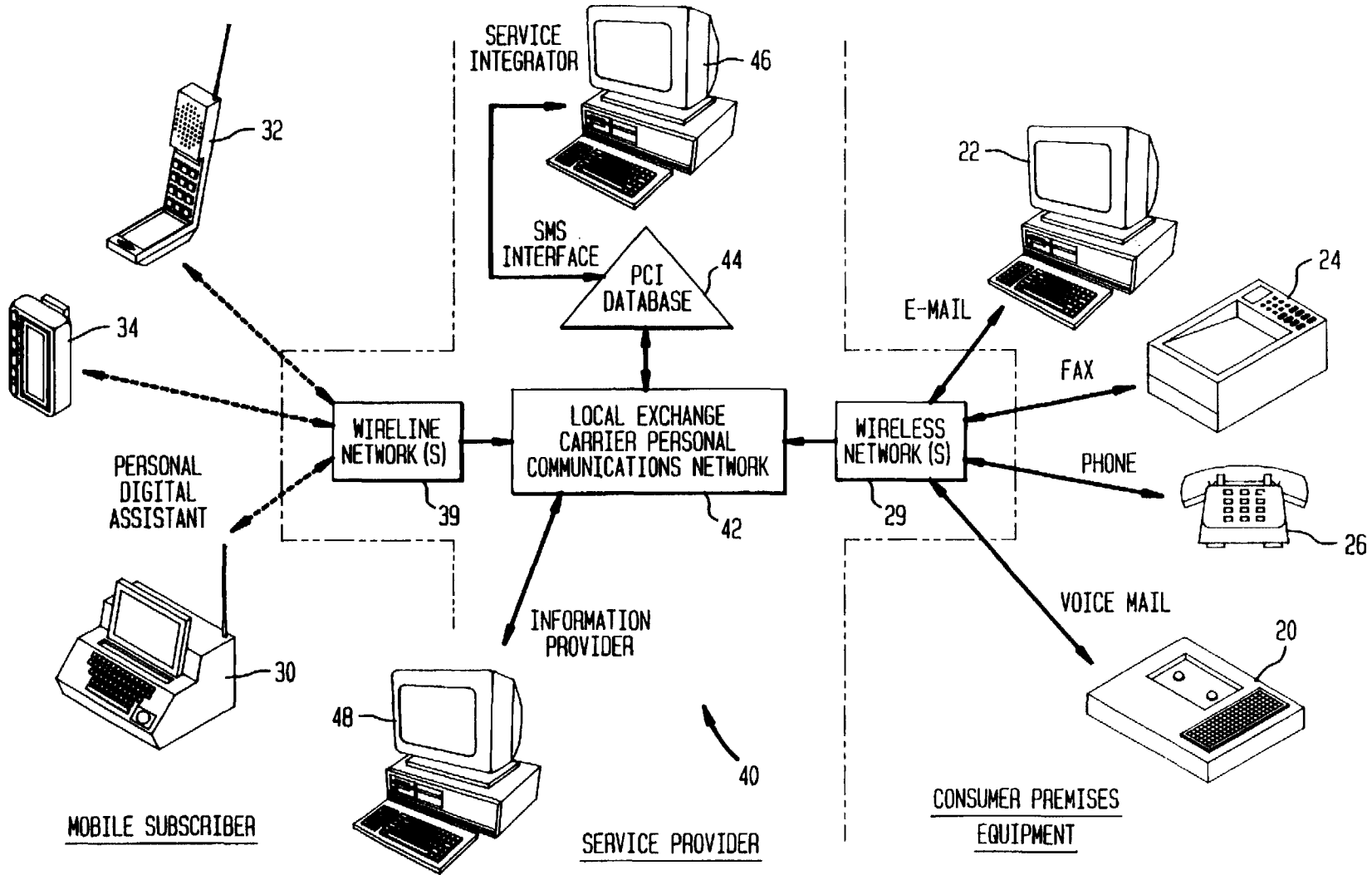


FIG. 4

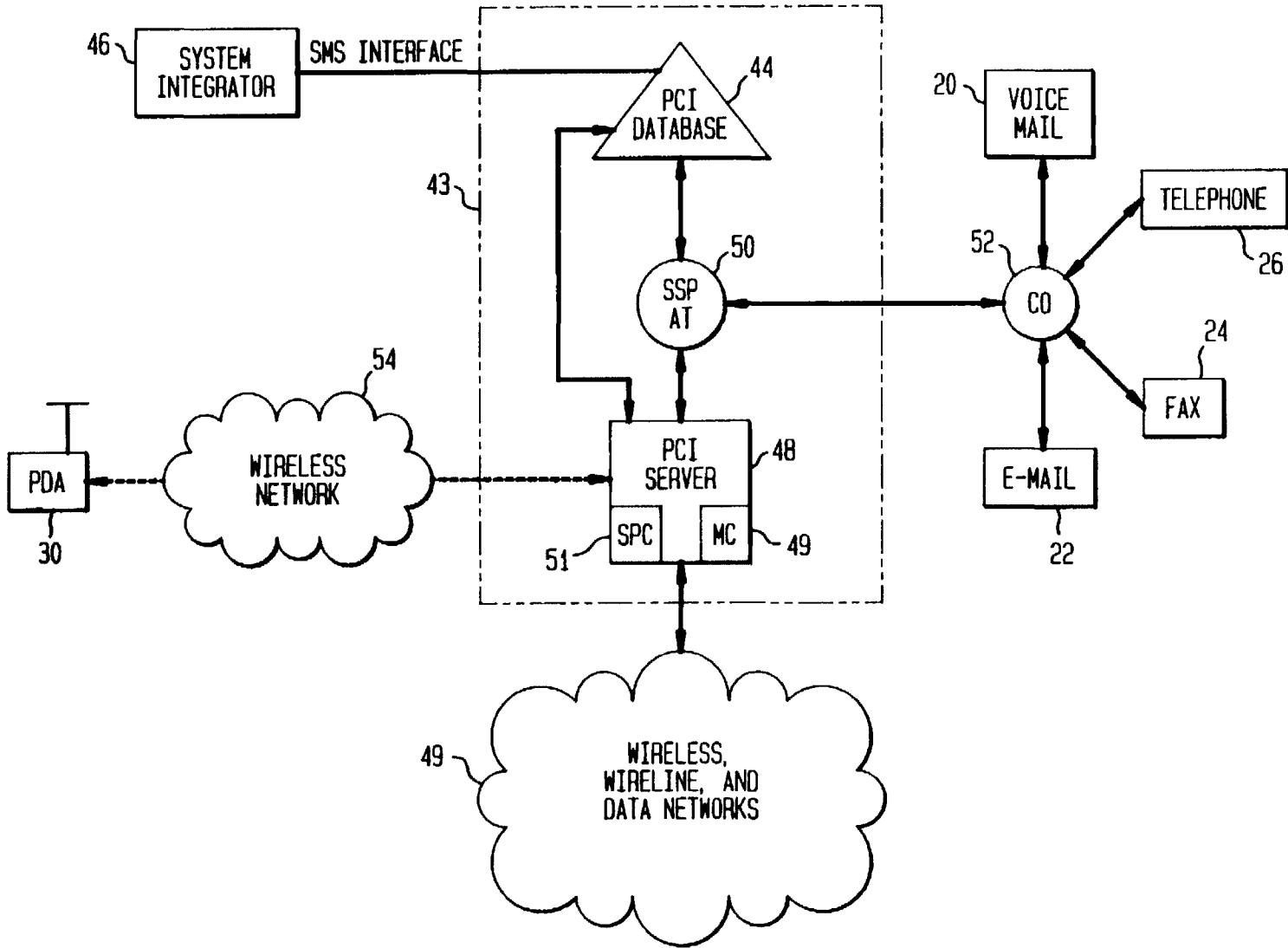


FIG. 5

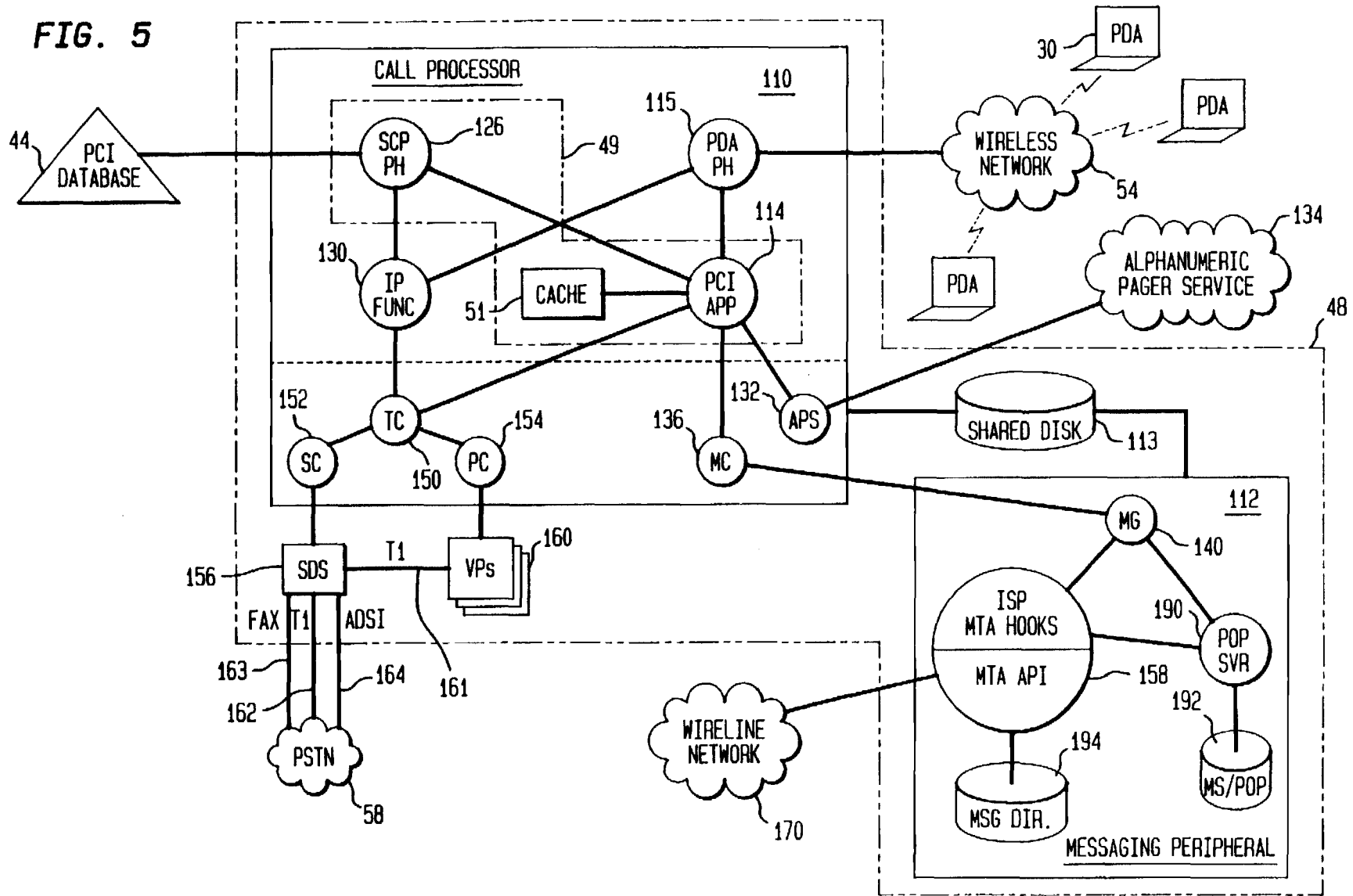


FIG. 6

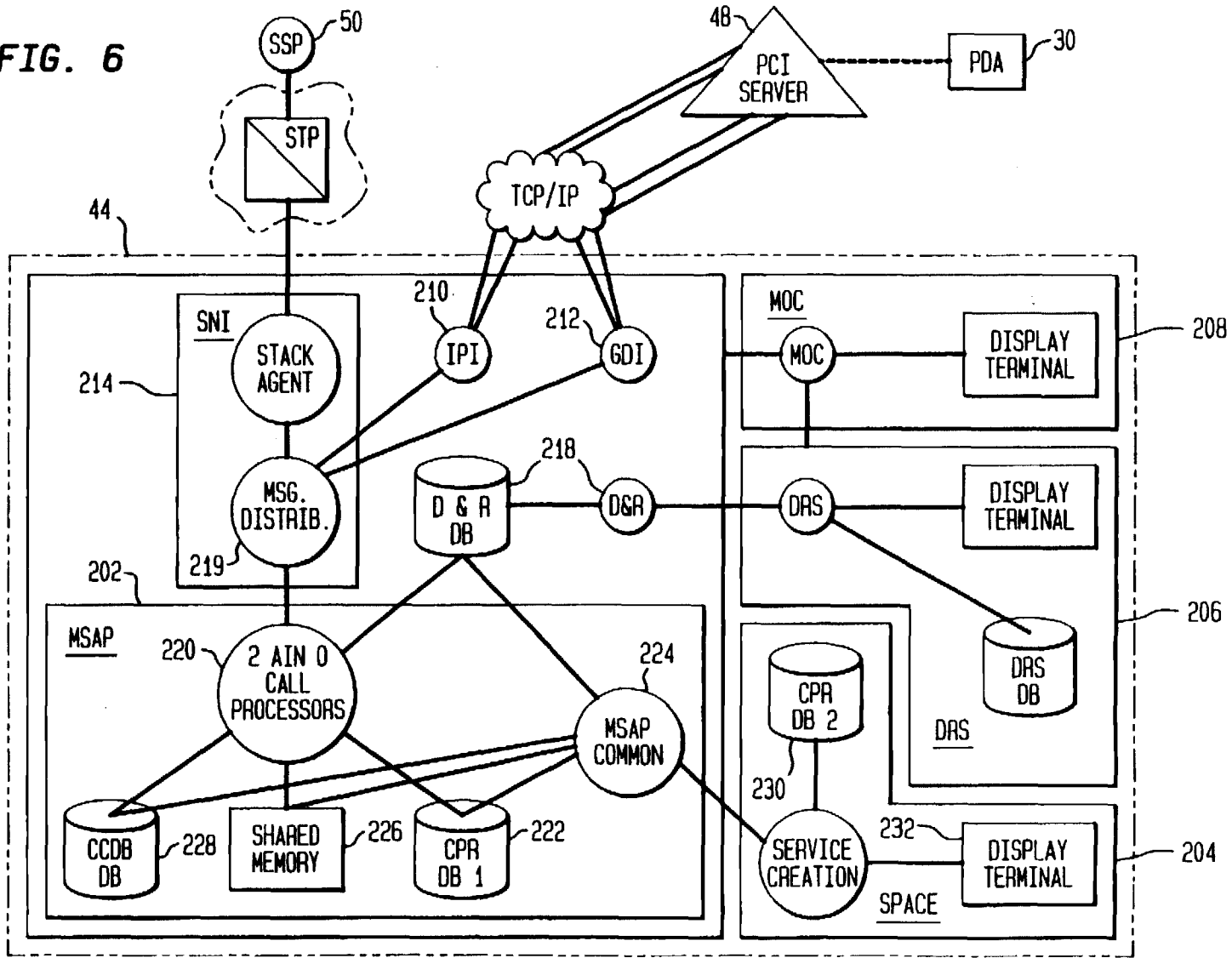


FIG. 7

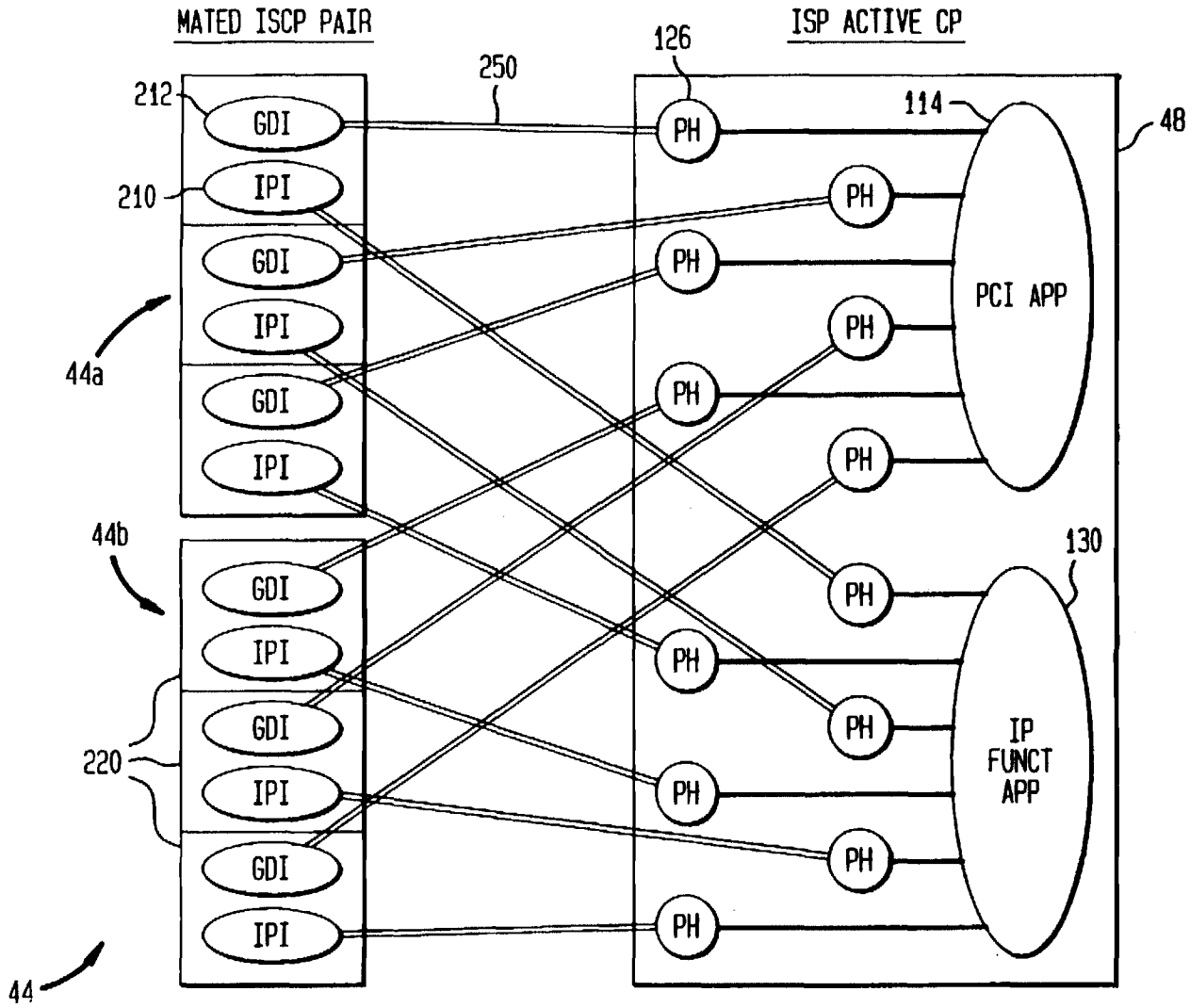


FIG. 8

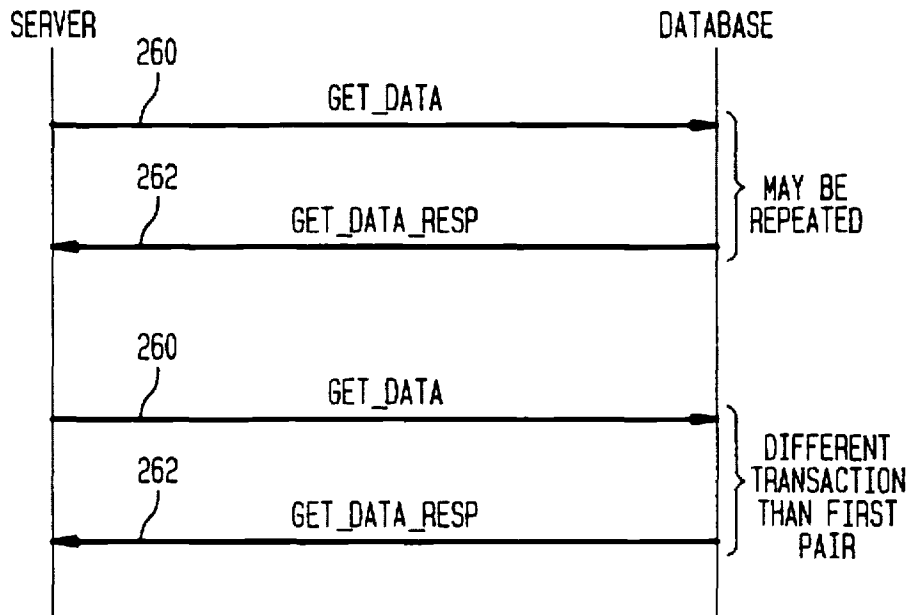


FIG. 9

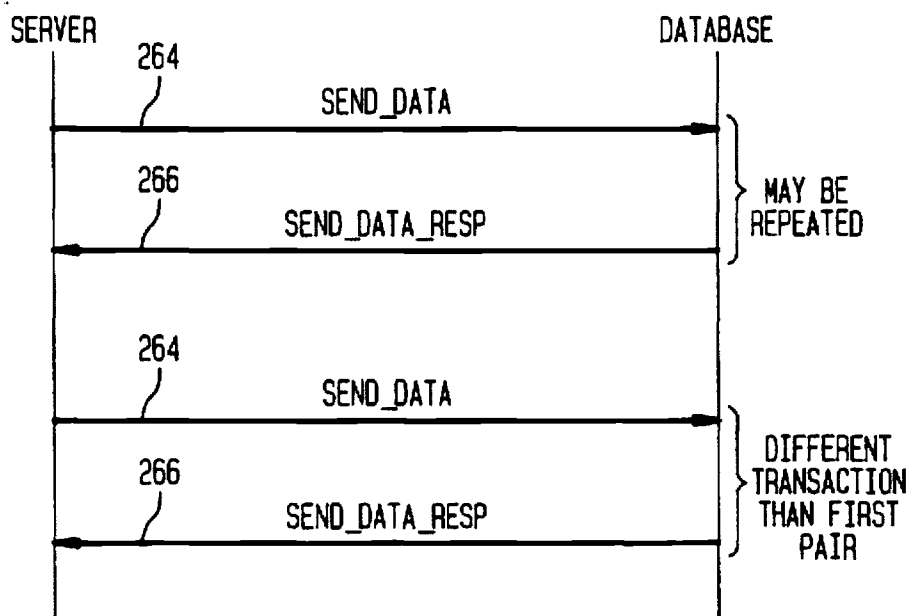


FIG. 10

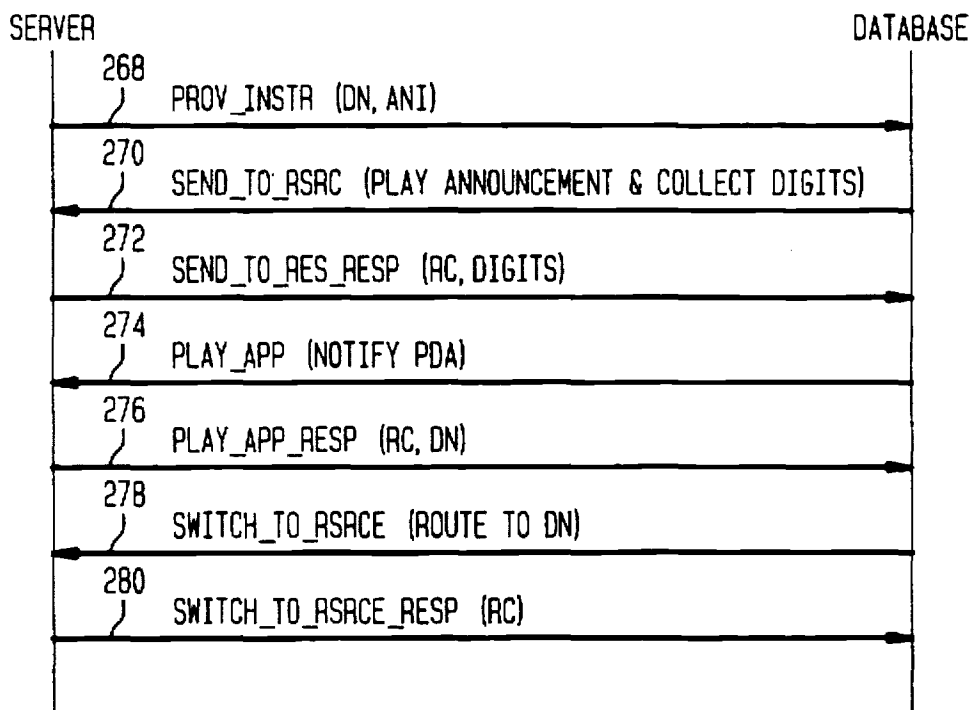


FIG. 11

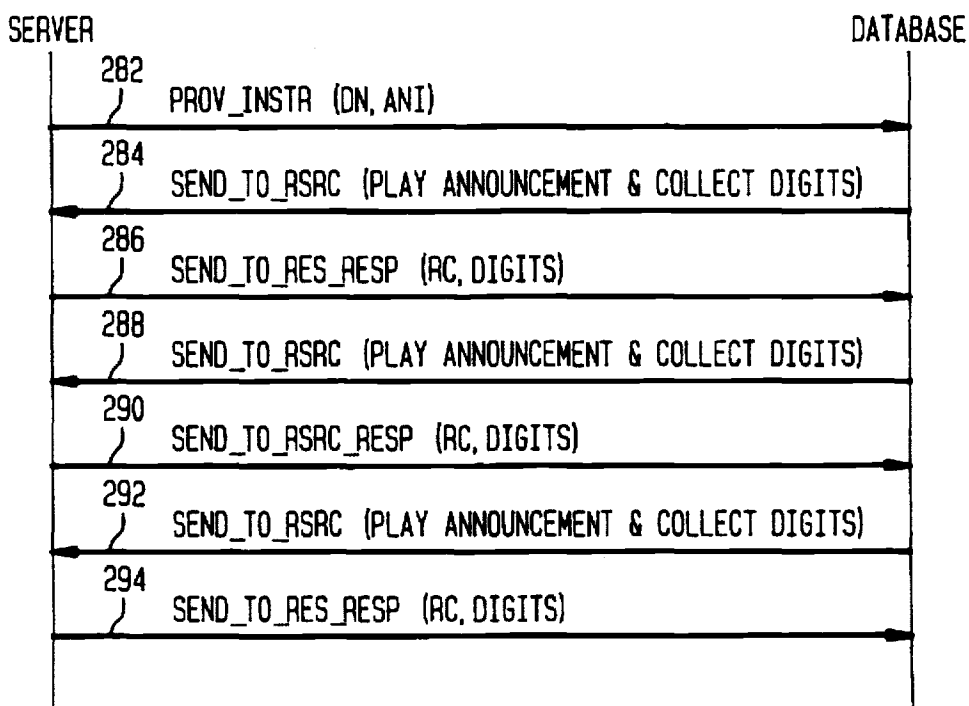


FIG. 12

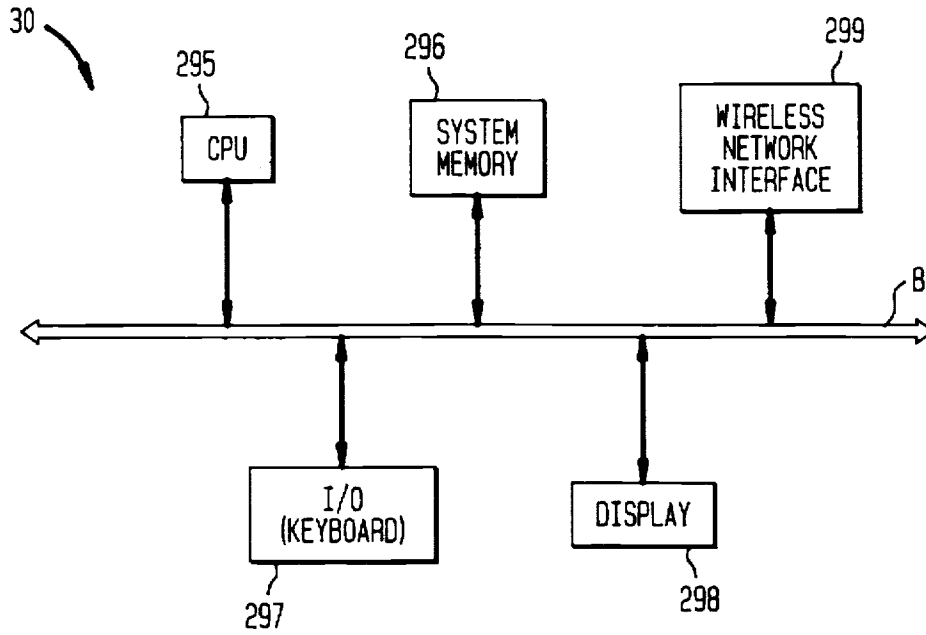


FIG. 13

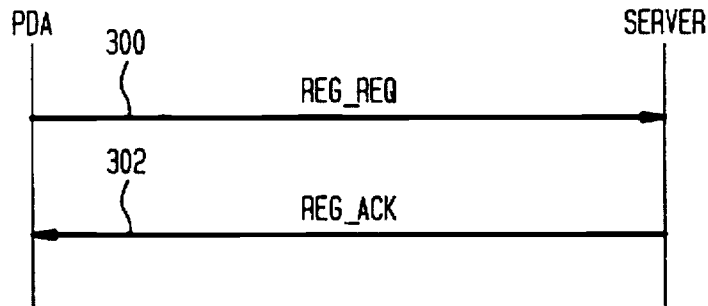


FIG. 14

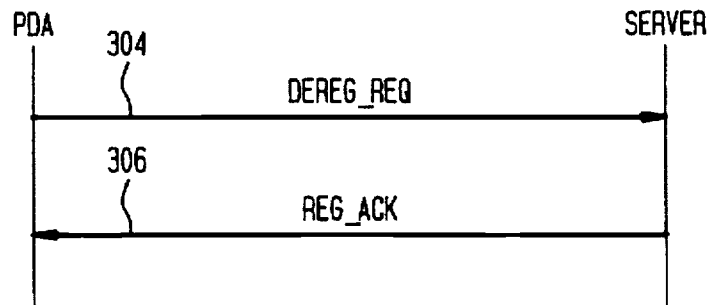


FIG. 15

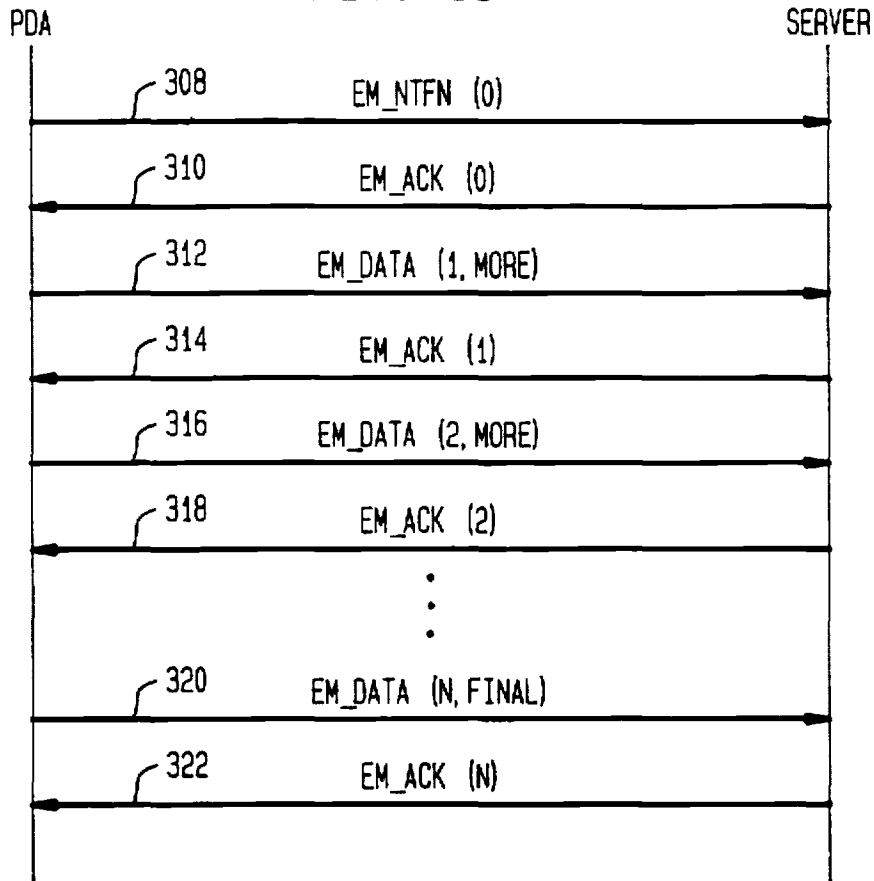


FIG. 16A

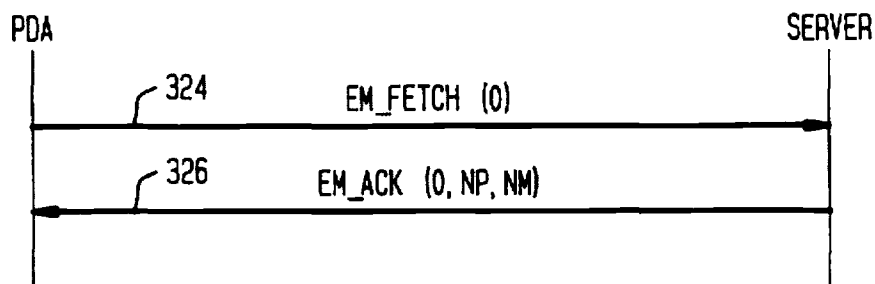


FIG. 16B

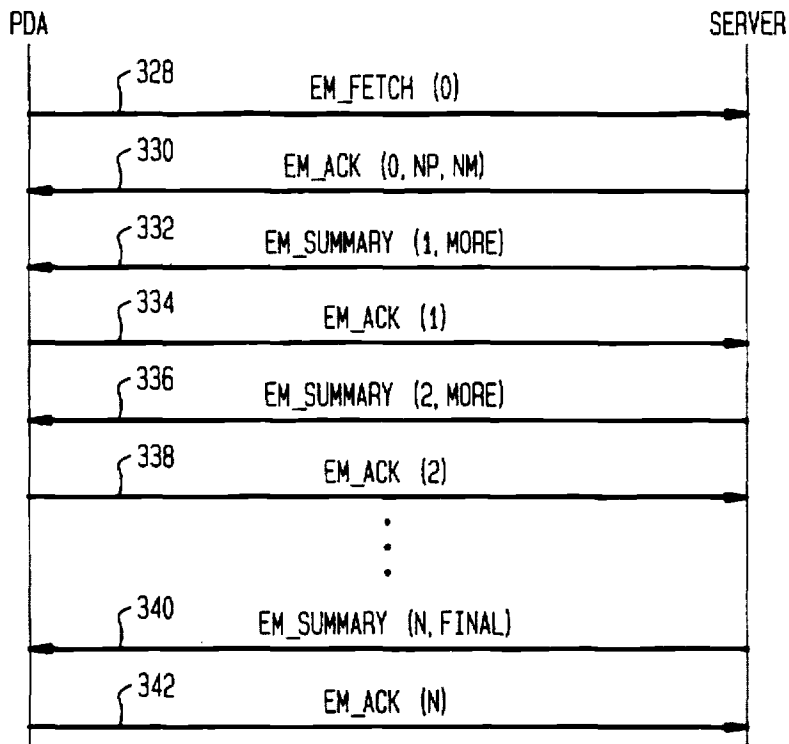


FIG. 17

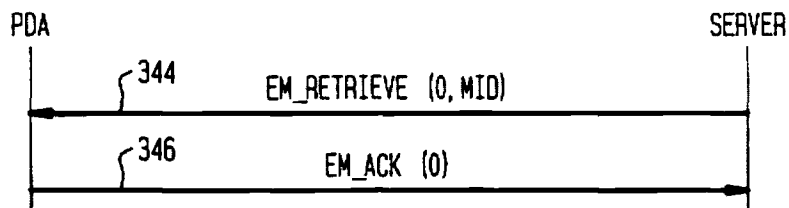


FIG. 18

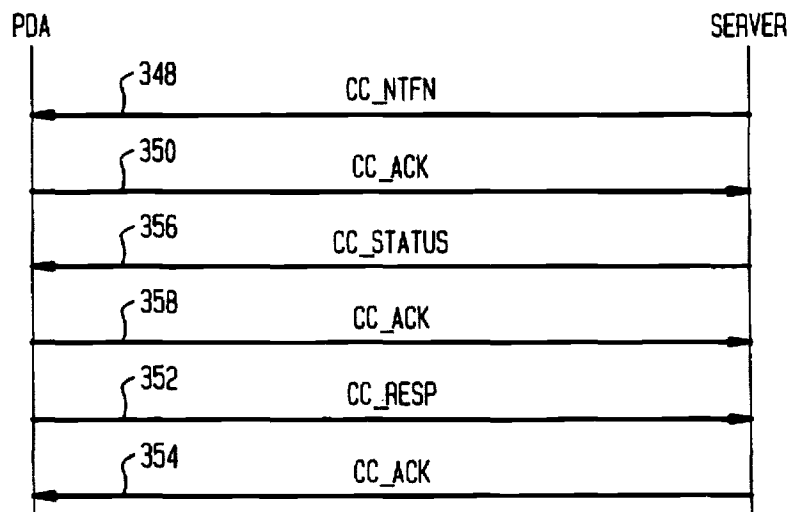


FIG. 19

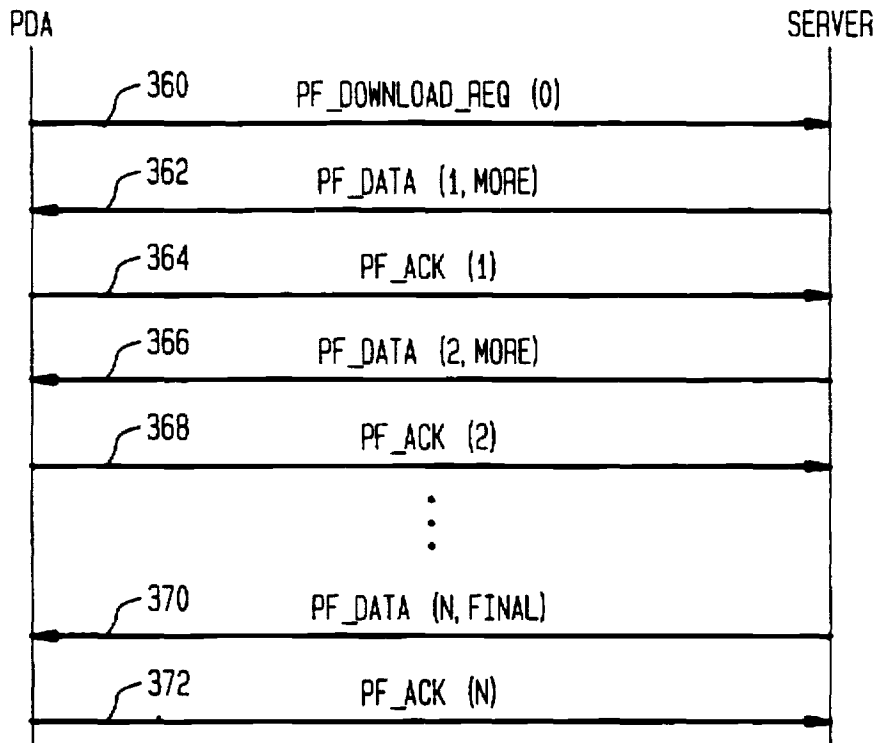


FIG. 20A

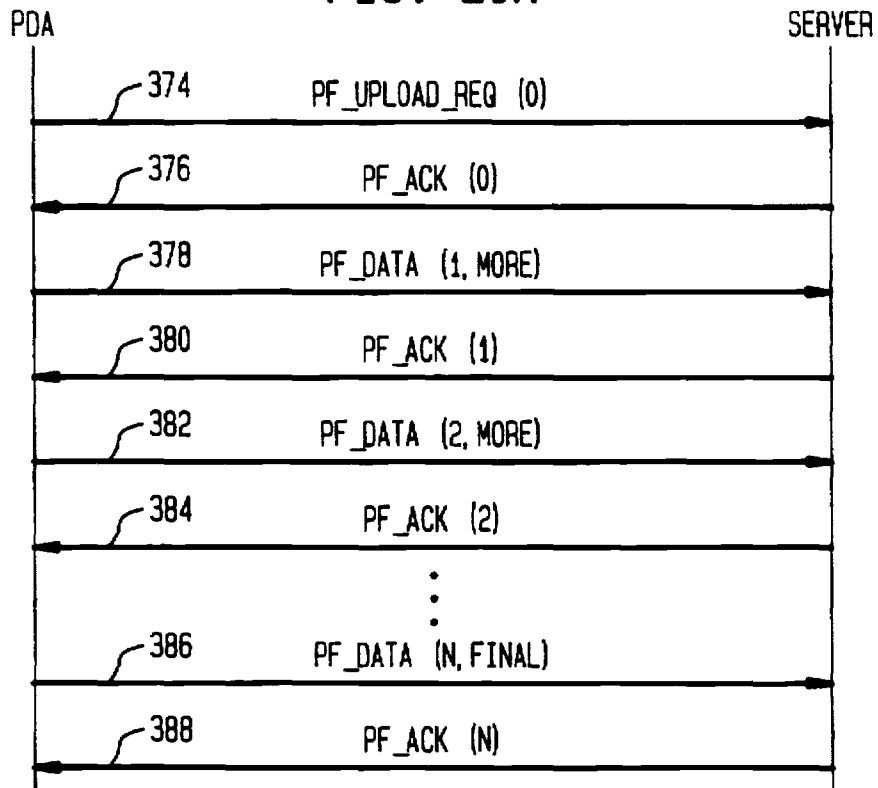


FIG. 20B

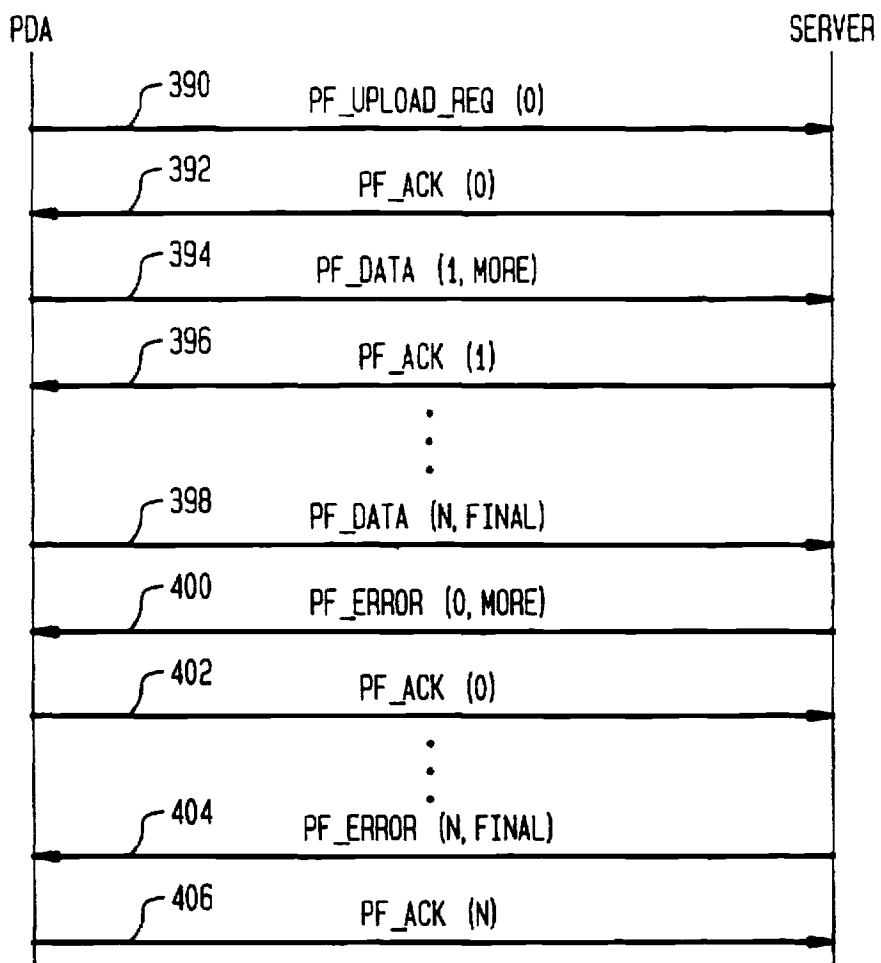


FIG. 21

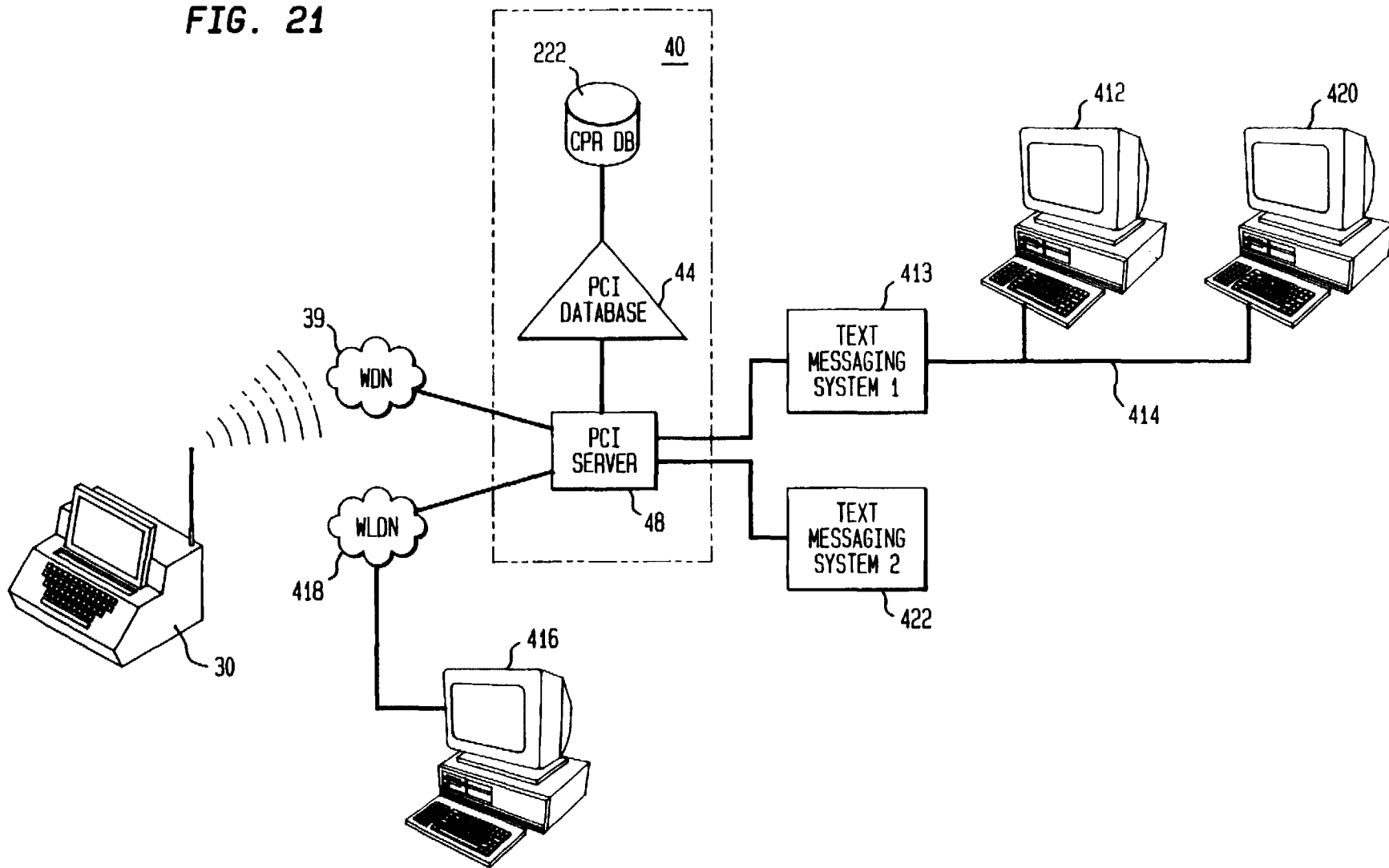


FIG. 22

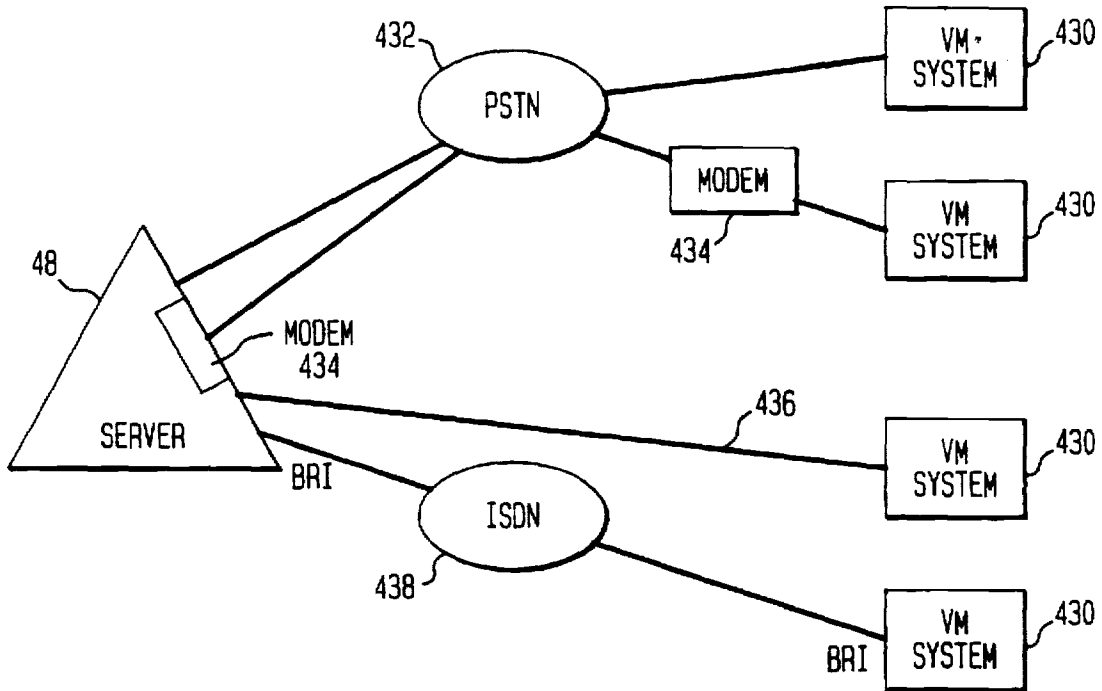
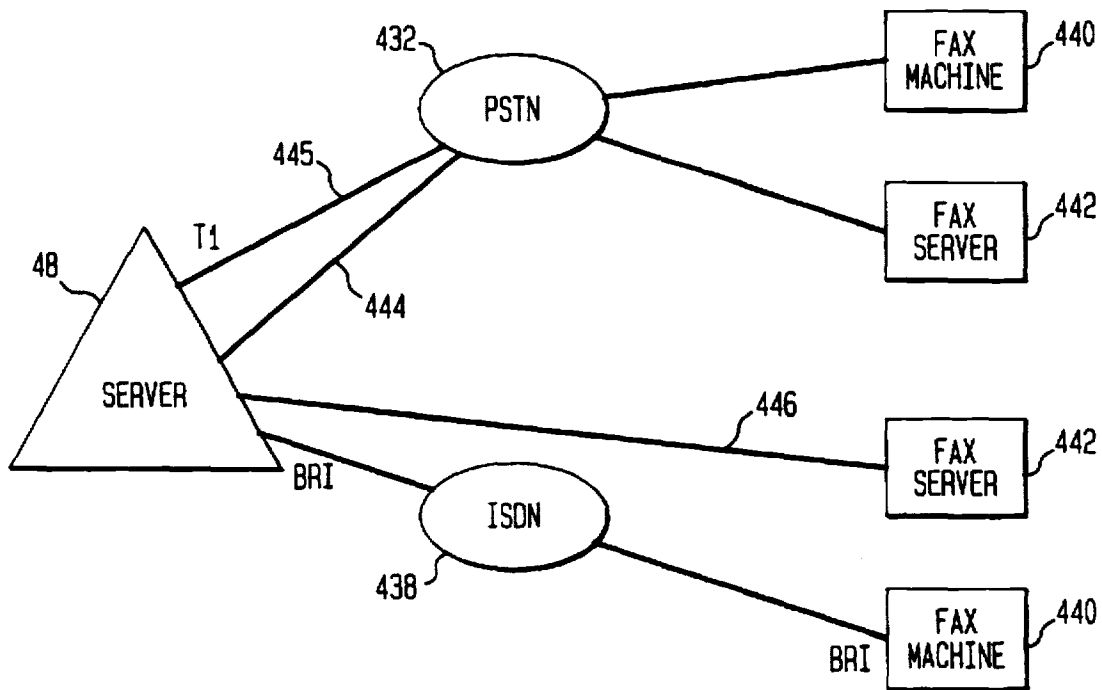


FIG. 23



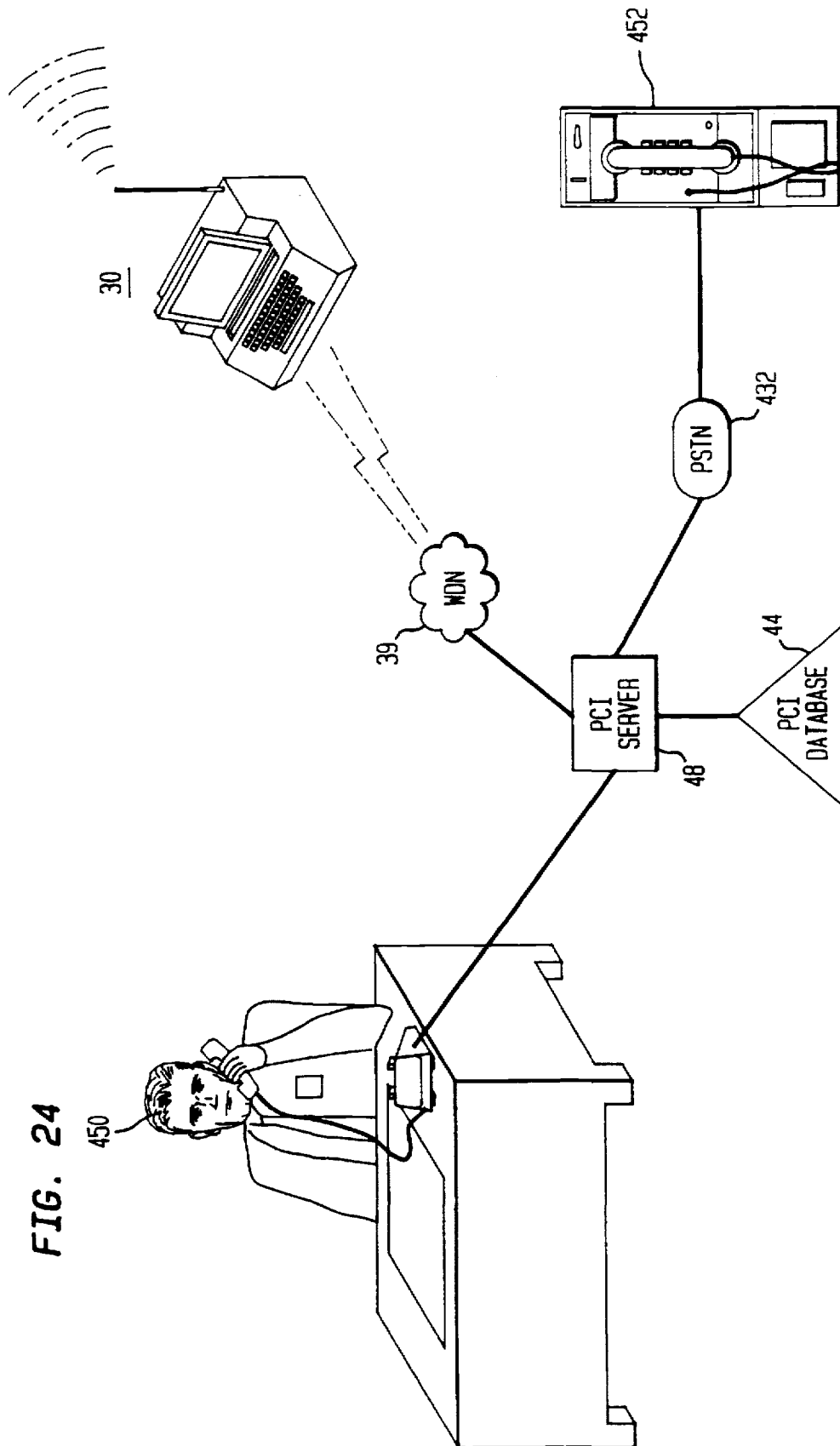
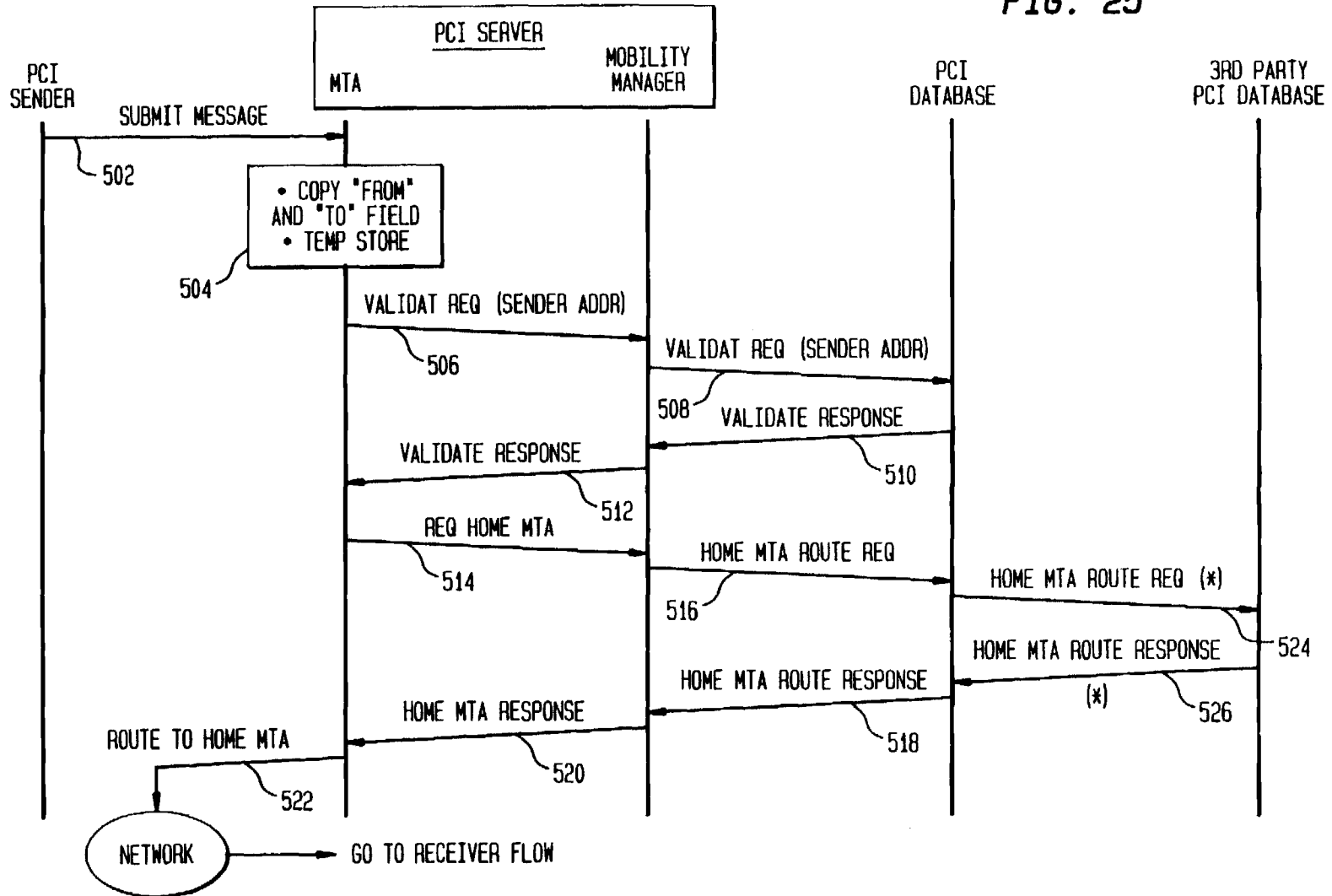


FIG. 24

FIG. 25



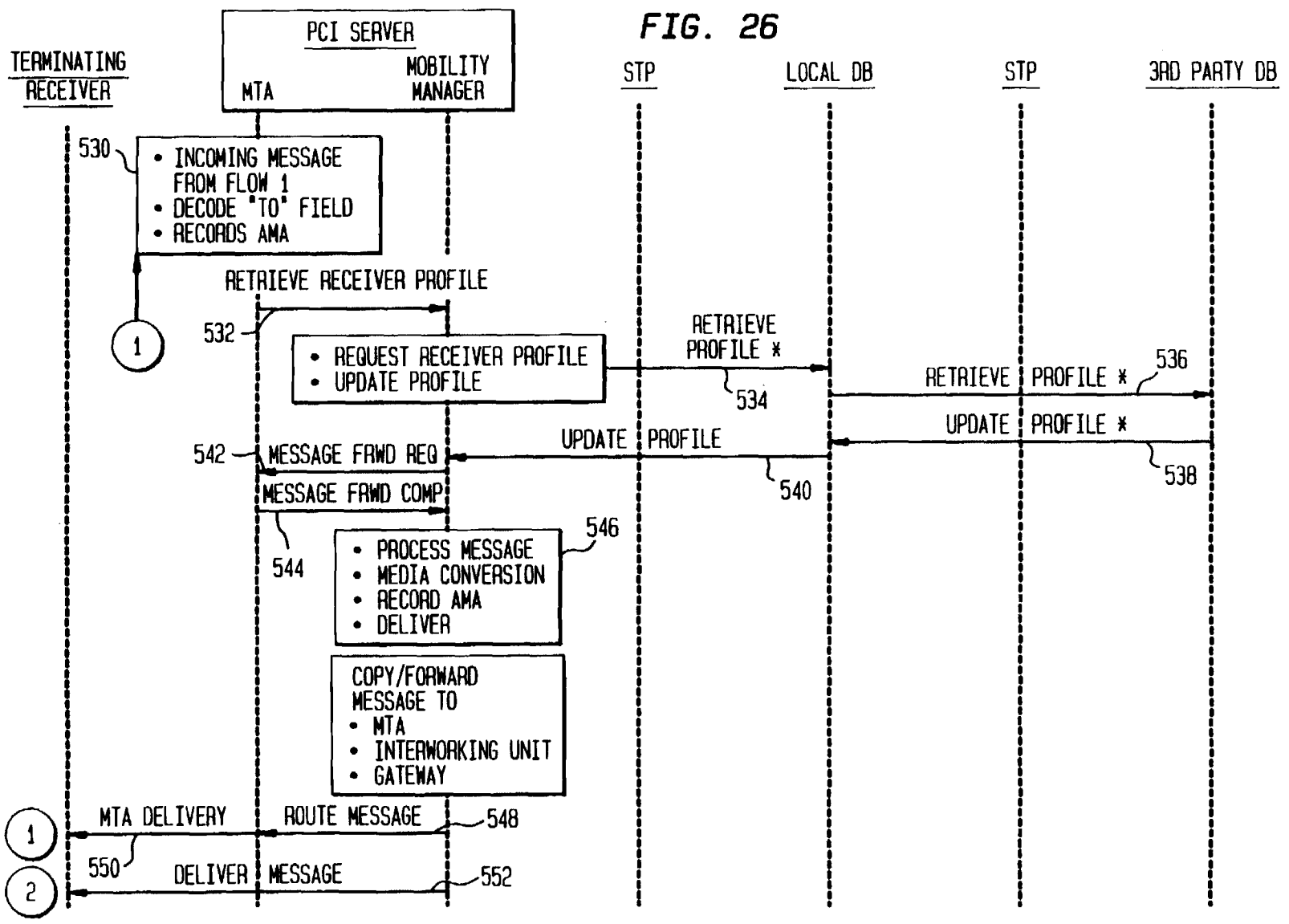


FIG. 27

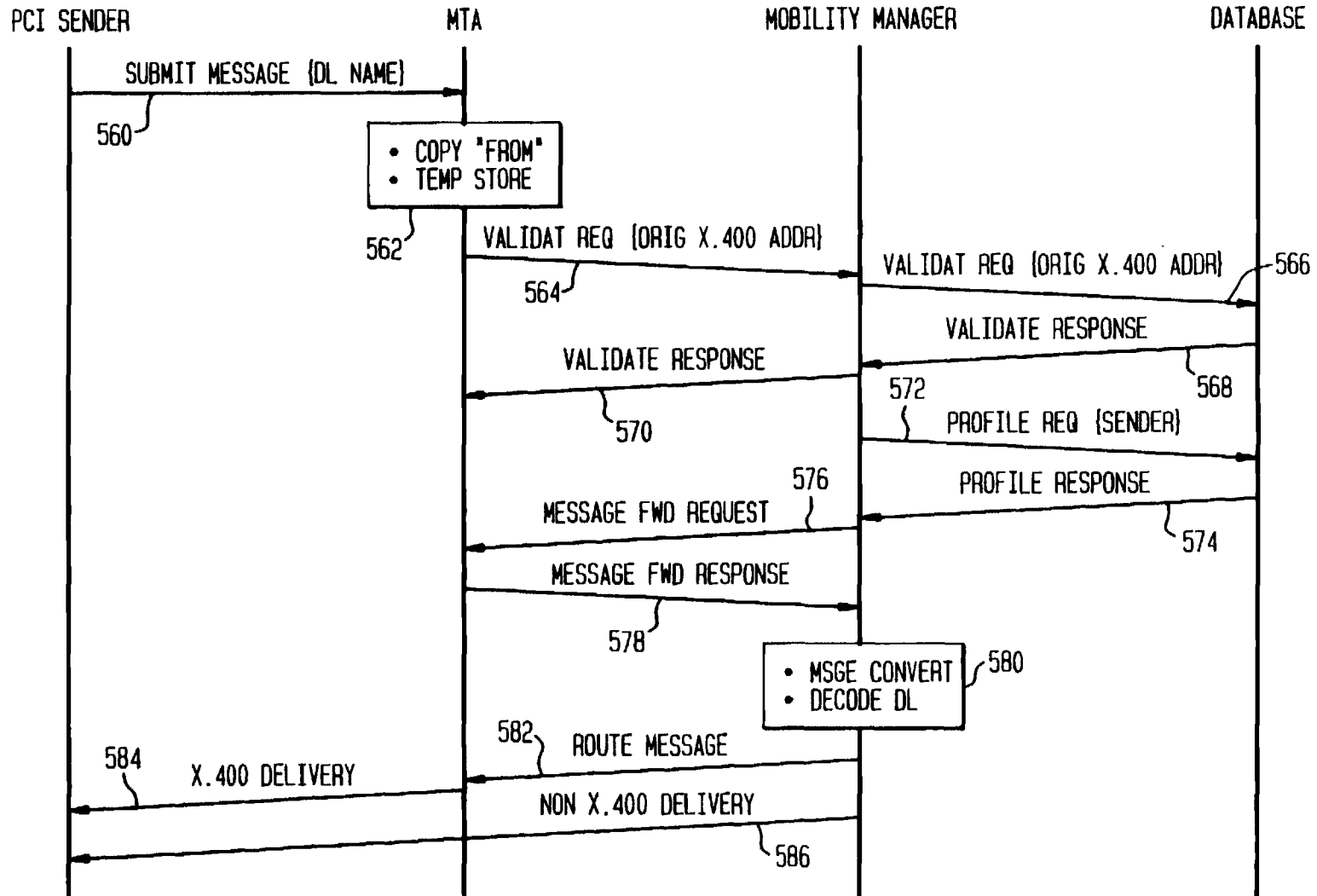


FIG. 28

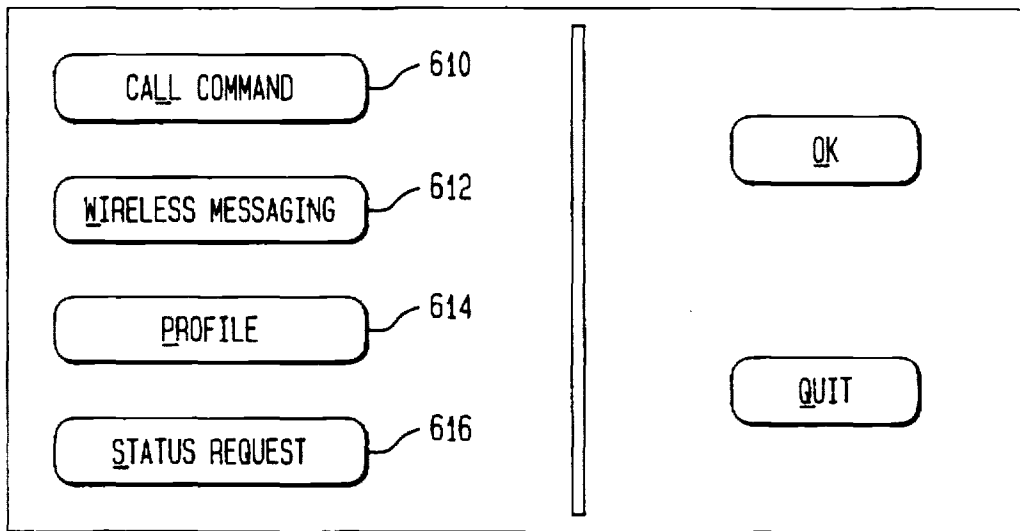


FIG. 29

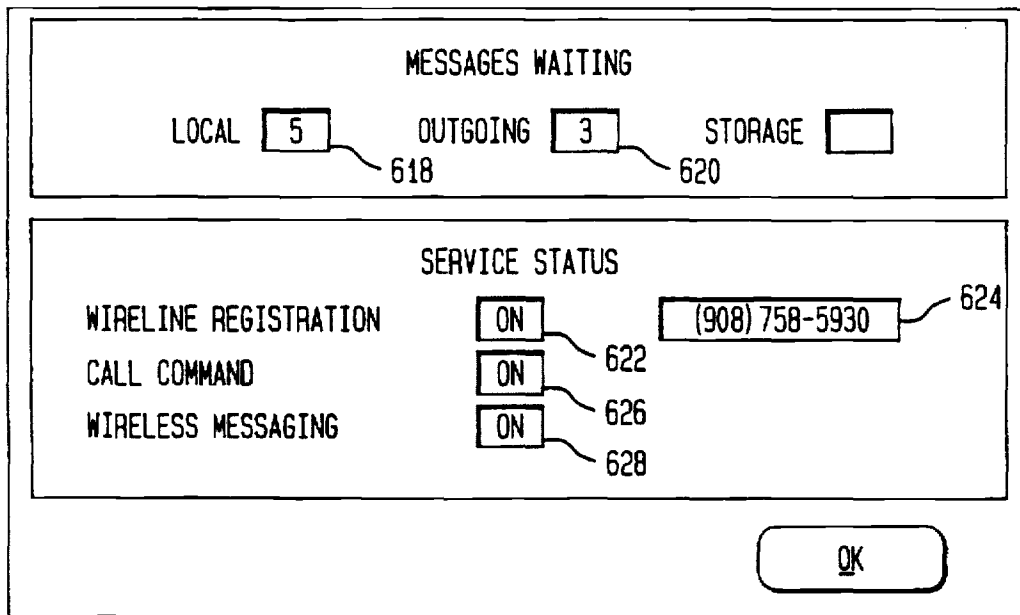


FIG. 30

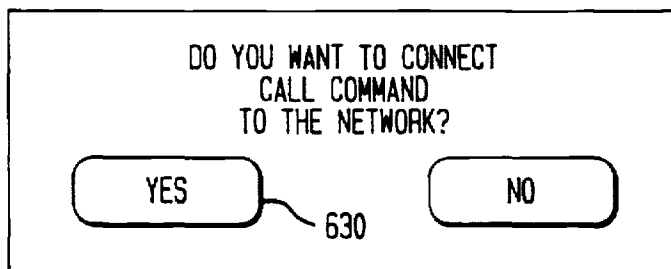


FIG. 31

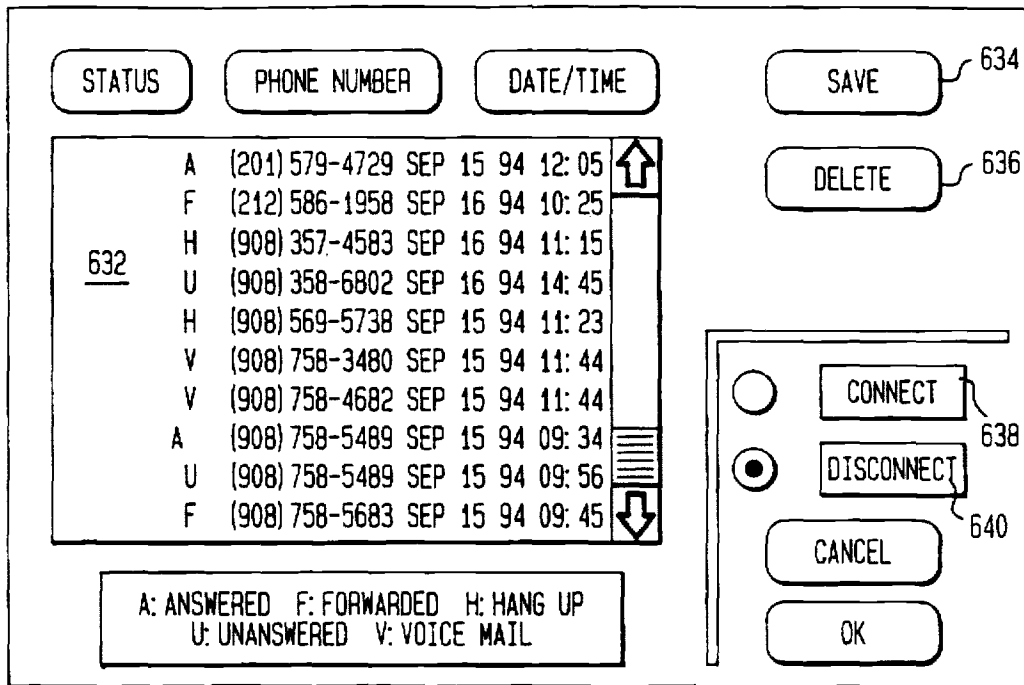


FIG. 33

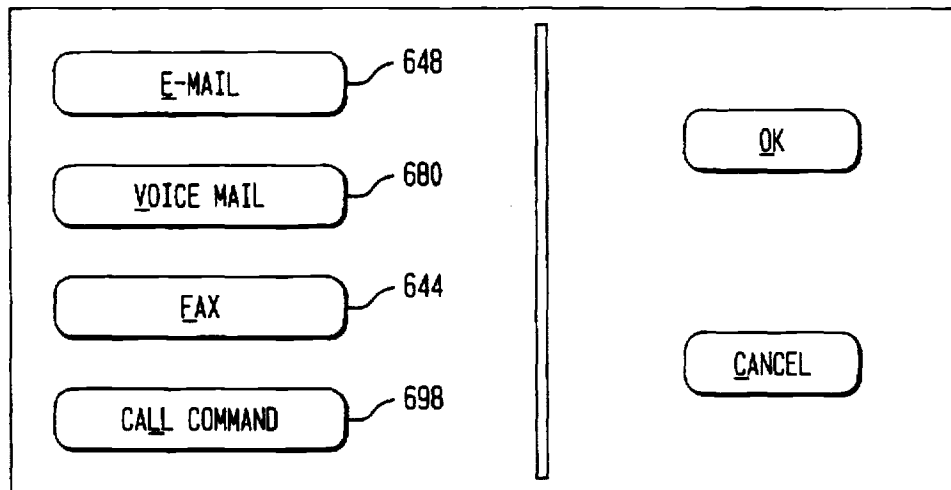


FIG. 32

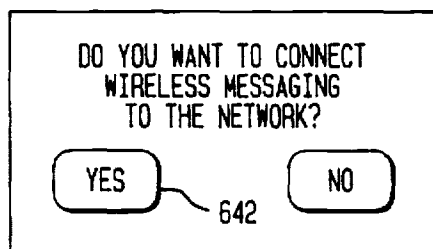


FIG. 34

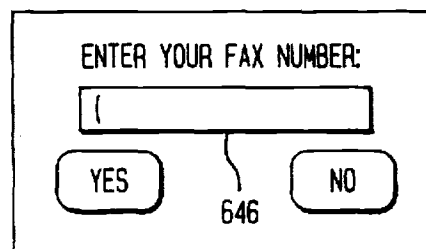


FIG. 35

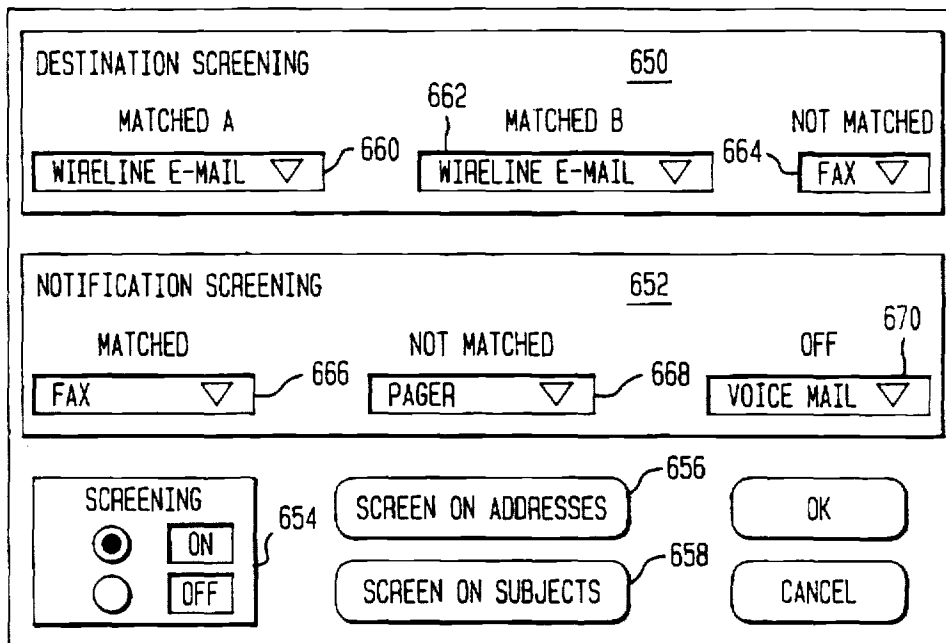


FIG. 36

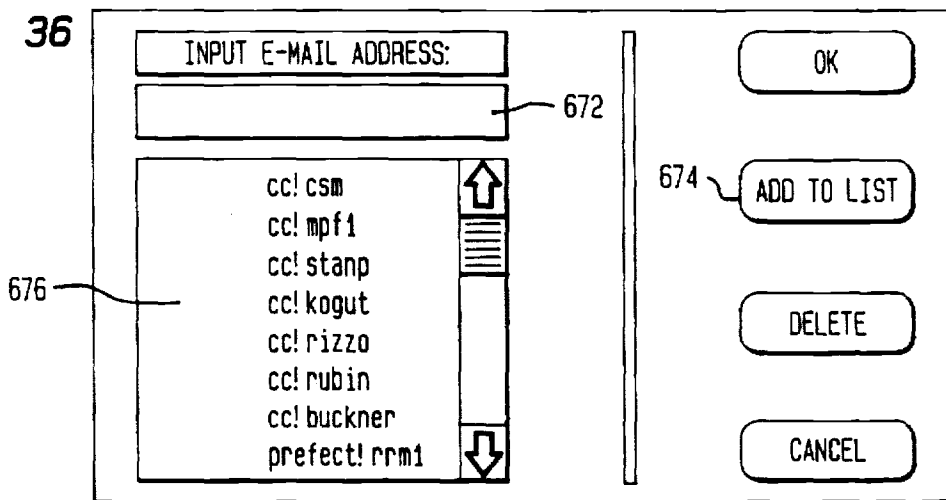


FIG. 37

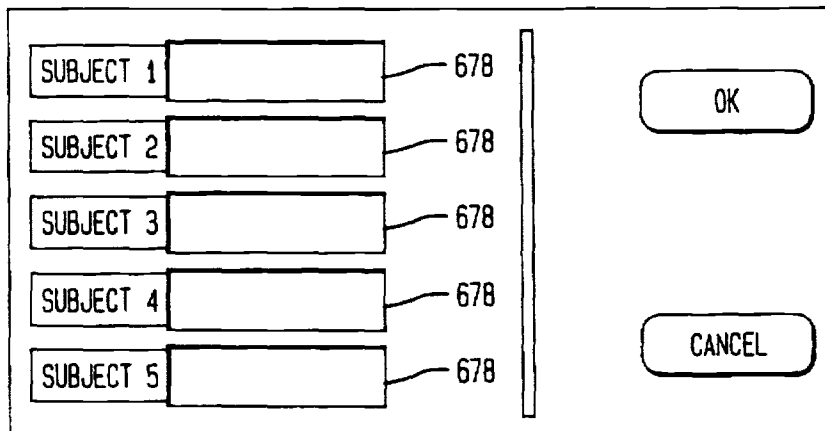


FIG. 38

DESTINATION (908) 758-2715 682

NOTIFICATION SCREENING 684

MATCHED 686 PDA

NOT MATCHED 688 NULL

OFF 690 NULL

SCREENING 692

ON OFF

SCREEN ON CALLER 694

OK

CANCEL

FIG. 39

FROM 1		696
FROM 2	(212) 589-5093	696
FROM 3		696
FROM 4		696
FROM 5	(212) 458-3849	696

OK

CANCEL

FIG. 40

WIRELINE REGISTRATION NUMBER:

(908) 487-9083 700

706 EDIT NUMBERS

702 EDIT MESSAGES

OK

CANCEL

FIG. 41

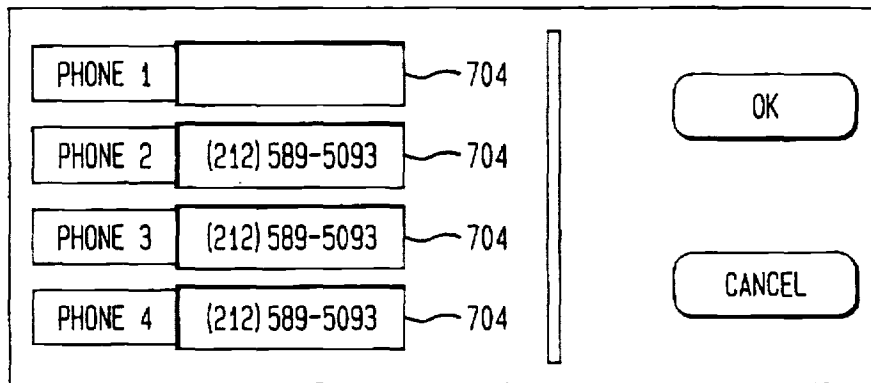


FIG. 42

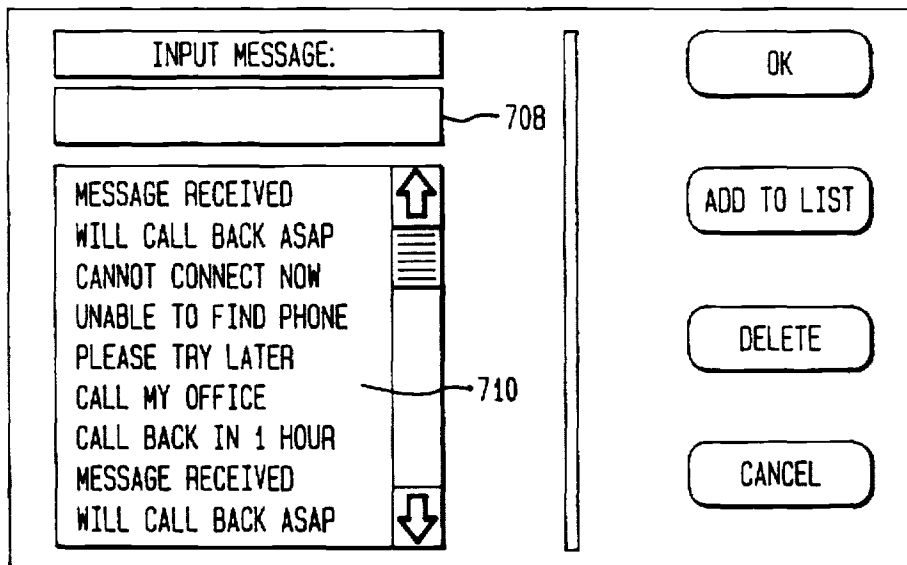


FIG. 43

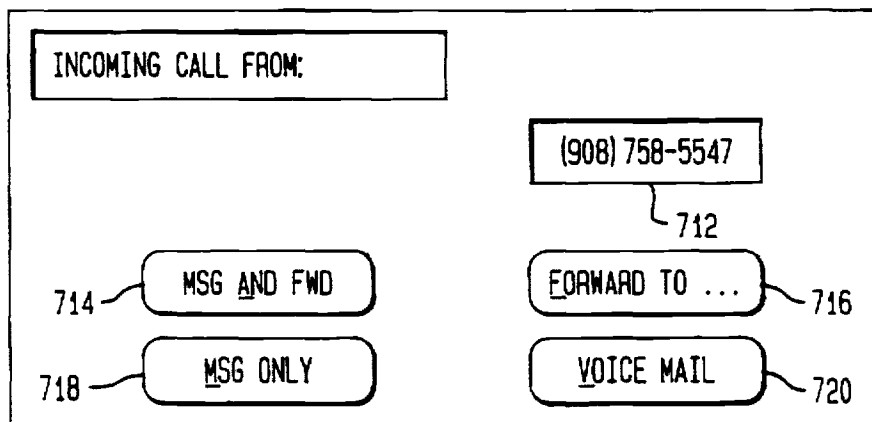


FIG. 44

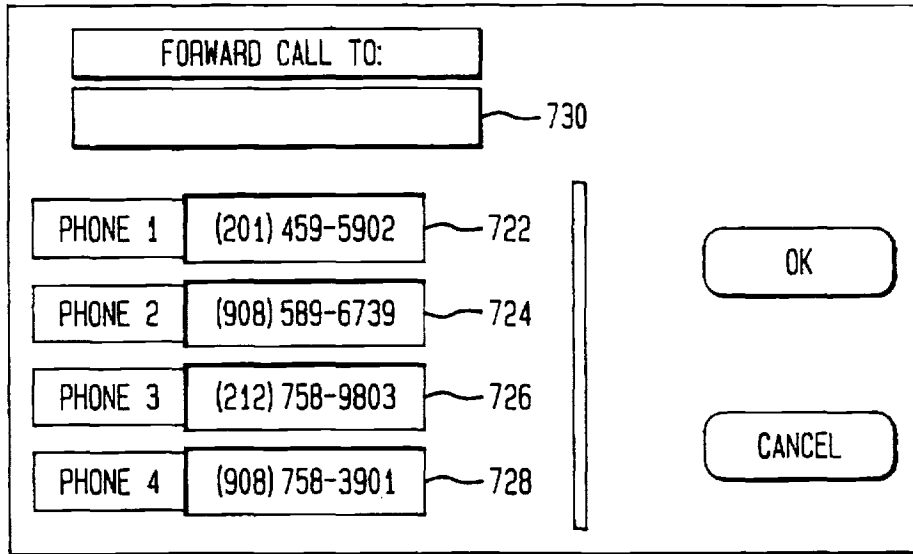
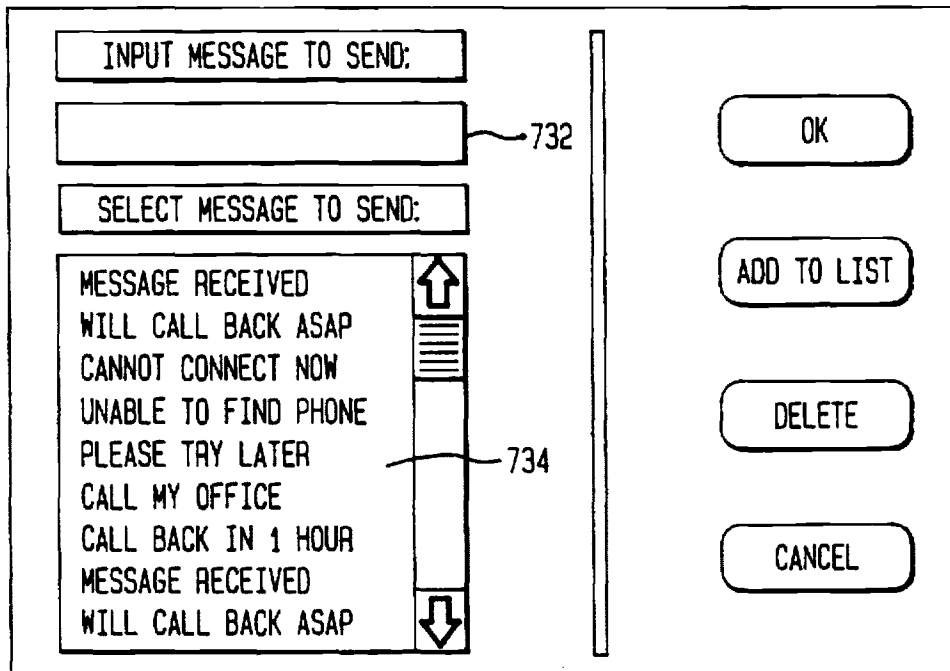


FIG. 45



PERSONAL COMMUNICATIONS INTERNETWORKING

FIELD OF THE INVENTION

The present invention is directed to an internetwork for personal communications and, more particularly, to a network which allows a mobile communications subscriber to remotely control personal communications delivery options.

BACKGROUND OF THE INVENTION

The use of messaging as a means of day-to-day communications continues to grow and evolve, particularly in a business context. Messaging includes electronic mail (e-mail), facsimile transmissions (fax), paging, voice mail, and telephone communications. The introduction of the cellular phone and other wireless communications facilitated the advent of the "mobile office". The mobile office allows an employee, for example, to work away from the office on a portable computer and be in constant touch with the office via a cellular phone.

The messaging options described above are available to businesses of all sizes, as well as individual users, from a variety of service providers. Many offices have some or all of the messaging options described above. The office may have certain messaging equipment (referred to as "consumer premises equipment" or "CPE") connected to one or more wireline networks. That is, the office may have telephones, fax servers, and voice mail systems connected to phone lines, and computers having modems for e-mail connected to packet networks which are connected via phone lines. The mobile employee may have certain wireless messaging equipment, such as a pager, a cellular telephone, or a personal digital assistant ("PDA"), which is typically a notebook computer connected to a wireless communication network.

One important goal of personal communication services is to allow users to communicate from anywhere to anywhere at any time. Such personal communication services generally involve multiple service providers including local and long distance telephone companies and cellular telephone companies. An example of a personal communication service is as follows:

A personal communication service provider (e.g., a cellular telephone company) enables traveling users to rent a wireless portable phone from a rental phone company (e.g., from an airline or car rental company). Using the rental phone, the user is provided with basic mobile phone service from the personal communication service provider. In addition, the user would like the following features:

- 1) The user wants calls directed to his/her office or home to be automatically forwarded to the rental portable phone, without informing anyone that he/she is traveling.
- 2) To avoid unimportant incoming calls (and corresponding incoming call charges), the user would like to restrict the number of people who can call the rented portable phone.
- 3) It is important to the user that the rental phone features be activated instantly, so that calls can be made immediately upon the user's arrival at the visiting location.

This kind of personal communication service involves a plurality of service providers. These providers are (a) the local telephone company at the home location, (b) a long distance telephone company, (c) the local telephone company at the visiting location, and (d) the personal communication service provider (i.e., the cellular telephone company) at the visiting location. All of these are referred to herein as "service providers".

To enable this kind of personal communication service, involving multiple service providers, interoperability problems among the different service providers must be resolved. The interoperability problems can be divided into two categories: (a) location tracking and (b) service management.

The interoperability problem for location tracking has been addressed by adopting signaling protocols used by the mobile phone industry. Location tracking functions are implemented using two location registers. One of the registers, maintained by the local telephone company of the user's home location, is called the Home Location Register (HLR). The other register, maintained by the local telephone company of the visiting location, is called the Visiting Location Register (VLR). The HLR stores customer profile data and the location of the VLR of the user. The customer profile data contains important information such as the user's name, address, preferred long distance carrier, service features (e.g., call forwarding and call restriction), billing, and other administrative related information. When the user travels to a new visiting location, a new VLR is created in the new location. A part of the profile data stored in the HLR is transmitted and loaded into the VLR such that the service provider at the visiting location can implement service features for the visiting user. When the user travels to a new visiting location the location of the VLR stored in the HLR is changed to the new VLR location, and the VLR in the previously visited location is deleted. The process of creating a new VLR, loading profile data to the VLR, and updating the visiting location of a user in the HLR is called "automatic roamer registration".

The interoperability problem for service management is much more complex than that for location tracking. Service management refers to a collection of functions required to enable a personal communication service user to subscribe to, modify, and activate service features anywhere and at any time. Examples of service management functions include phone number administration, customer profile data management, service activation, and security administration. The phone number administration function is important for maintaining the uniqueness of phone numbers. The customer profile data management function provides customer profile databases and user interfaces for creating, modifying, or transferring such databases. The service activation function extracts part of the data specifying service features from the profile data and loads this data into physical communication systems that process calls. The service activation function also controls the activation and deactivation of the service features. The security administration function prevents or detects unauthorized uses of services and service management functions.

Service management functions of this type are needed to provide personal communication services involving multiple service providers. Such service management functions generally require interactions between application software and various databases owned and operated by the different service providers. Consider an application which enables a nomadic user to subscribe to a personal communication service from any service provider at any location. An example of such a service is call forwarding to a temporarily rented portable phone. The application may, for example, need to perform the following database access operations at databases maintained by various different service providers:

check credit databases owned by credit card companies or phone companies to determine whether the user is able to pay for the service;

check the customer profile database in the user's HLR to determine whether the user is currently located in a place other than the visiting location currently stored in the HLR;

check the credit and network databases of long distance phone companies specified by the user to determine whether the user can use a particular long distance carrier in the visiting location;

load profile data into the VLR at the visiting location and update the HLR with the location of the VLR if necessary; and

load the profile data to the call processing systems and activate the service.

The user may need to send or receive messages from any or all of the messaging options described above at a visiting location. That is, the user may want to receive or receive notification of e-mail, faxes, phone calls, or voice mail at a visiting location or to send e-mail or faxes from a wireless terminal. The need to integrate these various types of messaging options and to interconnect the many service providers has, until now, been largely unaddressed.

It is also desirable for the mobile employee to be able to limit the messages sent to the wireless messaging equipment, so that only urgent messages are received when away from the office and unwanted in-coming calls are avoided. The mobile employee may also wish to route certain incoming wireless messages and phone calls to other destinations, such as an office fax machine or a colleague's telephone.

Therefore, it is an object of the present invention to provide a mobile service subscriber the ability to control and integrate a plurality of messaging options.

It is another object of the present invention to provide a mobile service subscriber with the ability to remotely control the addressability, routing, accessibility, and delivery of messaging options.

It is yet a further object of the present invention to provide an internetwork which interconnects messaging services with both wireless and wireline networks.

It is yet a further object of the present invention to provide a subscriber with real-time control of voice calls while using a wireless data terminal or PDA.

It is yet a further object of the invention to provide a control over the messages routed to wireless messaging options.

SUMMARY OF THE INVENTION

These objects are obtained by a personal communications internetwork providing a network subscriber with the ability to remotely control the receipt and delivery of wireless and wireline voice and text messages. The network operates as an interface between various wireless and wireline networks, and also performs media translation, where necessary. The subscriber's message receipt and delivery options are maintained in a database which the subscriber may access by wireless or wireline communications to update the options programmed in the database. The subscriber may be provided with CallCommand service which provides real-time control of voice calls while using a wireless data terminal or PDA.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and features of the invention will become apparent from the following drawings, wherein:

FIG. 1-3 are overviews of the PCI networks;

FIG. 4 is an overview of one node of the PCI network according to the present invention;

FIG. 5 is a block diagram of an exemplary PCI server according to the present invention;

FIG. 6 is a block diagram of an exemplary embodiment of a PCI database according to the present invention;

FIG. 7 is a block diagram of the logical connections between the PCI server and PCI database according to the present invention;

FIGS. 8-11 illustrate exemplary message flows between a server and a database according to the present invention;

FIG. 12 is a block diagram of a personal digital assistant according to the present invention;

FIGS. 13-20 illustrate exemplary message flows between a PDA and PCI server;

FIG. 21 is a block diagram of a text messaging portion of a PCI network;

FIG. 22 is a block diagram of a voice messaging portion of a PCI network;

FIG. 23 is a block diagram of a facsimile messaging portion of a PCI network;

FIG. 24 is a diagram illustrating an exemplary CallCommand service network;

FIGS. 25-27 illustrate exemplary message flows in the PCI network; and

FIGS. 28-45 illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.

DETAILED DESCRIPTIONS OF PREFERRED EMBODIMENTS

For clarity of presentation, the detailed description is set out in the following subsections:

I. PCI Overview

The overall network is illustrated in FIGS. 1-4. The network is an interface between a plurality of wireless and wireline networks, providing a subscriber with a variety of wireless and wireline message and voice delivery and receipt options.

II. The PCI Server

The PCI Server is illustrated in FIG. 5. The PCI server is a peripheral which performs messaging and call redirection functions and interfaces with the PCI database to update the subscriber profile.

III. The PCI Database

The PCI Database is illustrated in FIG. 6. The PCI database maintains the subscriber profile, controls CallCommand functions, and handles DTMF-based subscriber profile updates.

IV. The Server/Database Interface

The Server/Database interface is illustrated in FIGS. 7-11. The PCI server/PCI database interface provides for the transfer of information regarding the subscriber profile and the CallCommand services.

V. The PDA/PCI Interface

The PDA/PCI interface is illustrated in FIGS. 12-20. The PDA/PCI interface provides for the transfer of information between a remote wireless subscriber and the PCI.

VI. Services

A. E-Mail Messaging

E-Mail messaging in the PCI is illustrated in FIG. 21. The PCI network provides the subscriber with a variety of e-mail delivery, receipt, and notification options, including screening and selective destination delivery of incoming e-mail.

B. Voice Messaging

Voice messaging in the PCI is illustrated in FIG. 22. The PCI provides the subscriber with a variety of voice mail delivery, receipt, and notification options, including screening and selective destination delivery of incoming voice mail.

C. Facsimile Messaging

Facsimile messaging in the PCI is illustrated in FIG. 23. The PCI provides the subscriber with a variety of facsimile delivery, receipt, and notification options, including screening and selective destination delivery of incoming faxes.

D. CallCommand

The CallCommand service is illustrated in FIG. 24. CallCommand service provides real-time control of voice calls while using a wireless data terminal or PDA.

VII. Message Flows

Certain message flows for wireless messaging in the PCI are illustrated in FIGS. 25-27. The three message flows illustrated are sending a message from one subscriber to another, receiving a message regardless of whether the subscriber is using a wireless or wireline terminal, and sending a message to a non-subscriber.

VIII. The PDA Application

The application residing in the PDA is described in FIGS. 28-45, which illustrate exemplary screens displayed to a PCI subscriber using a wireless PDA.

IX. Billing

Billing procedures for a PCI network use is briefly described.

X. Conclusion

A glossary of acronyms used in this specification is attached as Appendix A.

I. PCI Overview

FIG. 1 is a simplified overview of a personal communications internetworking ("PCI") according to the present invention. A consumer, an office for example, has various messaging equipment, such as a voice mail system 20, an e-mail terminal 22, fax machines 24, and telephones 26. These are all connected to wireline networks 29. For example, the fax 24, phone 26, and voicemail system 20 may be connected to a Public Switched Telephone Network (PSTN), part of which belongs to a particular local phone service company, and part of which belongs to a particular long distance service provider. The e-mail terminal 22 may be connected to a data packet network, such as Internet, whose packets are carried over phone lines.

A mobile communications subscriber (for example an employee who works at the office described above and travels frequently) has various portable messaging equipment, such as a PDA 30, a cellular phone 32, and a pager 34. These are connected to wireless networks 39. These wireless messaging options may be provided by different service providers. That is, the cellular phone may be connected to a wireless network of a cellular phone service provider, the pager may be connected to a different wireless network maintained by a pager service provider, and the PDA may be connected to a third wireless communications network maintained by yet another service provider.

A Personal Communications Internetworking network ("PCI") 40 according to the present invention is connected between the wireless 39 and wireline networks 29. The PCI 40 permits the mobile communications subscriber to send and receive messages between disparate networks and messaging systems and a variety of service providers. The mobile communications subscriber can receive e-mail, fax, pages, and voice messages under a single phone number while using either a wireless or wireline network. The subscriber may also select the media format and serving network used to receive messages. The subscriber may also select cross-media notification of incoming messages. (i.e., the subscriber may receive notification from a pager message that a voice mail message was received).

The subscriber selects the wireline or wireless network and media format to be used for delivering messages or notification of message receipt. The PCI 40 will perform a media conversion to allow, for instance, an e-mail message to be delivered to a fax server. The PCI 40 may also include accessibility controls which allow the user to screen messages by selected criteria such as media type (e.g., e-mail, fax, etc.), message length (e.g., voice mail messages less than three minutes), or sender (e.g., only messages from the office and a certain client are to be forwarded).

For example, the subscriber may have notification of a voice mail or fax message receipt directed to a wireless PDA in the form of e-mail messages. If the subscriber's wireless PDA is not turned on or otherwise not operating, the notification may be routed to an alternate wireless or wireline network. Notification to the subscriber that a voice mail message was received may be, for example, rerouted to the subscriber's pager, and notification that a fax has been received may be rerouted to the wireline e-mail.

FIG. 2 is a simplified version of the interconnections between various messaging systems and a PCI. As shown in FIG. 2, a subscriber provides the network with message routing and delivery instructions. These instructions are received by a PCI database 44 and stored in a "subscriber profile" for that subscriber. This database controls the delivery of outgoing messages and the routing of incoming messages and message notification. (In FIG. 2, wireline communications are indicated with solid line connections and wireless communications are indicated with dashed line connections. The instructions to the PCI are shown with a solid line, but as will be explained in greater detail below, the instructions may be sent either by a wireline or wireless network.)

The PCI database 44 supports access to information authenticating the subscriber's identity and validating the types of services subscribed to, the subscriber's message delivery (incoming messages) options and origination (outgoing messages) options and voice (telephone call and voice mail) options. For origination, the subscriber may select message distribution lists with specific media delivery options. The database 44 also supports access to the portions of the subscriber profile that the subscriber may control.

The subscriber may use a personal telephone number to register at alternate wireline and wireless terminals while maintaining use of the message screening and delivery options selected and stored in a subscriber's profile. This is called "personal mobility". Information about the location of a wireless or wireline network location to which the subscriber's terminal is connected automatically registers and deregisters a subscriber's terminal. This is called "terminal mobility."

FIG. 3 shows the PCI 40. The CPE (voice mail 20, e-mail 22, fax 24, and phone 26) are connected to wireline networks 29. The mobile subscriber equipment (PDA 30, cellular phone 32, and pager 34) are connected to wireless networks 39. Both the wireline and wireless networks 29, 39 are connected to a PCI 40 at a service provider. The networks 29, 39 are connected to a local exchange carrier (LEC) 42 for the personal communications internetworking.

A PCI database 44 is a physical communication system which provides call processing functions for a collection of central office switches. The PCI database 44 includes the mobile subscriber's profile, including message sending, message receiving, and service control options. The PCI database 44 may be a service control point or a network adjunct. The PCI database may be connected via a service management system (SMS) interface to a service integrator

46. The service integrator 46 allows the service provider to update subscriber data and create and modify subscriber profiles.

The PCI database 44 preferably stores and updates the subscriber profiles. The profiles contain service related information for mapping services to subscribers (e.g., screening, routing, terminal selection by subscriber selected parameters, custom calling features, and the like); subscriber authentication data (e.g., password and user I.D.); user status (registered or not registered); generic service profile for non-call associated service, such as subscriber address or social security number; specific profile for a non-call service (based on subscriber selected parameters); wireless data providers identification (e.g., what cellular phone provider is used); and specific profile for call associated services (e.g., call forwarding), based on user selected parameters.

FIG. 4 is a more detailed depiction of the one node 43 of the PCI. The PCI has a plurality of nodes and is preferably built on the Advanced Intelligent Network (AIN) architecture. Other network architectures may be used, but for illustrative purposes, the description is directed to an AIN-based network.

A PCI server 48 is a peripheral which performs messaging and call redirection functions and interfaces with the PCI database 44 to update the subscriber profile. The PCI server may be an AIN Intelligent Peripheral, such as a Bellcore Intelligent Services Peripheral, or a network adjunct. The PCI server is connected to a switch 50. In the AIN architecture, this switch is a Service Switching Point Access Tandem (SSP AT), but may be any suitable switch, depending on the architecture. The SSP AT 50 connects wireline networks to the CPE. The SSP AT 50 also connects the PCI server 48 with a central office (CO) 52. The SSP AT 50 also may connect to a Service Control Point (SCP), not shown. The PCI database 44 and the PCI server 48 are directly connected. The LEC of FIG. 3 is part of a large network and includes the PCI database 44, the PCI server 48, and the SSP AT 50. The PCI database may be connected to an SMS interface to a system integrator 46, as described above.

The PCI server 48 is also connected to various wireless and wireline networks 49 via signaling connections in these networks to transmit and receive information for all of the messaging options. Illustratively, the PCI server provides access to Public Packet Switched Networks (PPSN), Public Switched Telephone Network, (PSTN), Integrated Signaling Digital Networks (ISDN), X.25 networks and TCP/IP networks and may include access to asynchronous transfer mode (ATM), Switched Multimegabit Digital Service (SMDS), and Frame Relay networks.

The mobile subscriber may access his or her subscriber profile to change message sending, message receiving, and service control options. These option changes are sent to the PCI database 44 to be stored in the subscriber profile. FIG. 4 shows, for example, a PDA 30 connected to the PCI server 48 by a wireless network 54, but the subscriber may also use wireline e-mail, or wireless or wireline telephones (using DTMF signals) to access the subscriber profile. The messages from the PDA, for example, are sent by a wireless network 54 to the PCI server 48 using, for example, an X.25 transport.

Delivering PCI service to a subscriber who may be present on a number of different systems requires storage, movement and caching of the service profile associated with that subscriber. A mobility controller 49, located in the PCI server 48, is a controller and data store, which dynamically maintains service control information for a Message Transfer Agent (MTA), described below, in the PCI server 48, which connects the PCI server 48 to wireless data networks.

Data storage functions are handled by two tiered entities. The subscriber profile is preferably located in the PCI database 44 and is the top of the hierarchy where permanent records such as service profile, authentication and validation information, and the like of the subscriber or device are maintained and performing status and location management and mapping are performed. A service profile cache 51 is preferably located in the PCI server 48 and is a local cache entity which stores on a "needs basis" information such as service profiles and validation status and maintains a local repository for the service recipient. It also administers information necessary to serve the wireless data network entity, as well as sending updates to the permanent storage entity PCI database. The service profile cache 51 maintains the personal data associated with the processing of the mobility controller 49. The mobility controller 49 interacts with the PCI database-based subscriber profile (or third party data base) on behalf of the cache to obtain service profiles and location information related to wireless terminals.

PCI may also provide directory services as a value-added component. The X.400 MTA can query a local directory serving agent in the PCI server 48 for addressing and routing information. If the information is not local, the PCI server 48 will need to get the addressing information from another PCI server 48 at another PCI node or an interconnected private directory serving agent which maintains a separate information base. By using the existing standard, the PCI network and mail PCI servers message handling can independently manage the networks without interfering with the PCI service.

II. The PCI Server

The PCI server 48 is a peripheral which performs messaging and call redirection functions and interfaces with the PCI Database to update the subscriber profile. The PCI server performs a variety of functions. For example, an illustrative PCI server:

- is an X.400 Gateway;
- routes messages using the X.400 messaging protocol;
- connects proprietary messaging protocols into X.400 protocol;
- interfaces with wireless data networks;
- interfaces with messaging systems;
- interfaces with the PCI database to access subscriber profiles information;
- processes messages as specified by the user in the service profile;
- provides media conversion such as text to fax or fax to text;
- provides access to an X.500 directory to determine addressing schemes for packet data;
- supports signaling between wireless data networks for management functions such as registration; and
- maintains a service profile cache.

FIG. 5 is a detailed illustration of a preferred embodiment of a PCI server 48 according to the present invention. The PCI server 48 includes three main elements: a call processor 110, a data messaging peripheral 112, and a shared disk memory 113.

The call processor 110 comprises a plurality of interconnected computers. The messaging peripheral 112 maybe implemented by a computer such as a DEC XAP system.

The call processor 110 includes a PCI applications server 114. The application server is the central decision making point of the wireless messaging service described below in Section VI. Thus, the server 114 controls message routing, screening, and notification for the wireless messaging service.

The application server 114 is connected to a PDA protocol handler 115. The protocol handler is the interface to the wireless network 54, for example the RAM wireless network. This handles messages to be sent to and from the subscribers PDA 30. A plurality of personal digital assistants (PDA) 30 are connected to the wireless network 54.

The application server 114 also manages a PCI database protocol handler 126. The protocol handler 126 is the interface between the call processor 110 and the PCI database 44. The application server 114 also manages a Service Profile Cache 51. The Service Profile Cache 51 is maintained in the memory of the application server 114. The cache 51 stores a subset of the data in the subscriber profile stored in the PCI database 44. This subset is subscriber profile information which currently needs to be accessed frequently by the PCI server 48.

The Service Profile Cache 51 stores and accesses data related to access systems such as wireless data providers and messaging services, and subscriber location. The Service Profile Cache 51 may store and update data related to the subscriber location such as routing address for subscribers specific wireless terminals; store and updates services related data for a particular terminal type (such as uni- or bi-direction); maintain a list of the subscribers wireless data provides and message services; track the subscribers terminal status (registered or not registered); provide a generic service profile for non-call messaging service; and provide a specific profile for a non-call associated service based on subscriber selected parameters.

The application server 114 also manages the registration status of each application on each PDA 30 and controls customer profile information via each PDA 30.

The call processor 110 also includes an IP Functions Server 130. The IP Function Server 130 manages CallCommand applications. This server is also connected to the PCI database protocol handler 126 for communication with the PCI database 44 and the PDA protocol handler 115 for communication with the wireless network 54. The PCI database protocol handler 126 handles both interfaces between the PCI database and the PCI server, as described below.

Thus, the two main application servers in the call processor 110 are the IP Function server 130 for CallCommand applications and the PCI applications server 114 for wireless messaging services.

The call processor 110 also includes a plurality of communication interfaces. The protocol handlers 115 and 126 have already been discussed. The alphanumeric paging server (APS) 132 gives the call processor 110 the ability to provide alphanumeric paging services. The APS 132 includes one or more modems to communicate with terminal equipment of a network 134 maintained by a paging service provider. The APS communicates with the paging service provider using, for example, the TAP protocol (Telocator Alphanumeric Protocol).

The call processor 110 also includes a plurality of control processes which control peripheral equipment external to the call processor 110. These controllers are as follows:

A message controller 136 controls the data messaging peripheral 112 and controls the sending of messages between the call processor 110 and the data peripheral 112.

The mobility controller 49 comprises the PCI database protocol handler 126, the IP function server 130, the service profile cache 51, and the PCI application server 114. The mobility manager provides control logic for user authentication, service request validation, location management, user access to service profile, access

registration, and communication management such as routing to user-specified destinations. The mobility controller 49 contains the service logic and handles service related processing for personal data and service access such as service feature analysis; access system mapping relationship information; identity management; subscriber validation and authentication; billing information based on the subscriber; wireless data specific routing information for message delivery and subscriber paging; subscriber service validation; and subscriber review and modification of the subscriber's profile.

A transaction controller 150 controls a switch controller 152 and a voice peripheral controller 154. The switch controller 152 controls the digital switch 156 which connects to the public switched telephone network 58. The voice peripheral controller 154 controls the voice peripherals 160, which are for example text-to-speech converters.

The switch 156 and the voice peripheral 160 are also connected by a T1 line 161. The digital switch 156 is connected to the public switched telephone network by a plurality of transmission media such as T1 lines 162, fax lines 163, and ADSI lines 164.

The data messaging peripheral 112, which is optional, is now discussed in greater detail. The data messaging peripheral is the gateway to the wireline electronic mail network, which network is designated 170. The data messaging peripheral has a message transfer agent 158 for transferring messages between the call processor 110 and the data networks 170, 54 either directly or through the PDA Protocol handler 115. The messaging peripheral 112 also includes a POP (post office protocol) server 190 and associated memory 192 for providing a message storing capability. The message directory 19 is used for storing a subset of service profile cache 51 relating to the routing of e-mail messages.

The messaging peripheral 112 includes the message gateway 140. The message gateway 140 has the following capabilities:

- 1) Notifying the PCI application server 114 in the call processor that e-mail has arrived from the wireline e-mail network 170 for a subscriber.

- 2) Accept a request from the PCI application server 114 to send an e-mail message to a wireline address.

- 3) Accept a request from the application server 114 to provide all unread messages stored in the server 190 which would have been sent to a primary destination if the subscriber had been registered.

- 4) Accept a request from the application processor 114 to rewrite to the message store server 190 or back to the sender.

Using the call processor 110 and its associated peripherals, a wide variety of services may be performed. These have been discussed above briefly and are described in detail in Section VI below. However, to understand how the call processor 110 operates to provide these services, some exemplary descriptions for certain services is provided.

For example, when a wireline e-mail message arrives at the PCI server's Data Messaging Peripheral 112, the messaging gateway 140 and messaging Controller 136 send notification to the PCI application server 114 of the e-mail arrival. The PCI application server 114 will query the profile cache 51, or if necessary, the PCI database 44. Driven by data in the subscriber's profile, the PCI application server 114 executes service logic to determine where to forward the e-mail (i.e., forward to PDA 30 or to POP server 190 depending on screening outcome), and what media, if any, to use to send notification of the e-mail arrival.

For another example, when a CallCommand call arrives at the PCI server 48, the procedure is as follows. The switch

controller 152 and transaction controller 150 forward the call to the IP Functions Server 130 based on the dialed number. The IP functions 130 sends a provide_instructions 1129+ message to the PCI database 44 to determine how to handle the call. The PCI database 44 and IP functions applications servers 130 begin a conversation of messages which perform a sequence of functions which play an announcement to the caller, send notification to the PDA, etc. When a response arrives from the PDA 30, the IP functions server 130 forwards the response to the PCI database 44. The PCI database 44 will then direct IP functions server 130 to forward the call to a routing number and/or play a synthesized message to the caller.

If a subscriber wishes to update the subscriber profile by DTMF, the procedure is as follows. A call arrives at the PCI server 48. The switch controller 152 and transaction controller 150 forward the call to the IP functions server 130 based on the dialed number. The IP functions server 130 sends a provide_instructions 1129+ message to the PCI database 44 to determine how to handle the call. The PCI database 44 sends a request to play an announcement and collect digits ("please enter PIN", collect PIN). The IP functions server 130 returns the result of this request to the PCI database 44. Again the PCI database 44 sends a request to the IP functions server 130 to play an announcement and collect digits ("voice menu", menu selection). The IP functions server 130 returns the result of this request to the PCI database 44.

This process repeats as users are guided through menus and change profile elements. The PCI database 44 interprets the collected DTMF tones and updates the subscriber's profile accordingly.

When a PDA 30 sends an e-mail message addressed to a wireline address the procedure is as follows. The PDA 30 sends a UDP send_mail message to the PCI application server 114. The PCI application server 114 detects the message is not destined for another PCI subscriber and forwards the request to the messaging controller 136, which forwards it to the messaging gateway 140 which is in the Data and Messaging Peripheral 112. The messaging gateway 140 interfaces with the MTA 158 to send the e-mail to the wireline network 170, using, for example, the Simple Messaging Transfer Protocol (SMTP).

The PCI server 48 may be based, for example, on either an X.400 MTA or an SMTP router and can convert between both protocols. The PCI server 48 may receive text messages from a variety of different text messaging systems such as Internet mail, third party messaging systems, or proprietary messaging systems. In the example where PCI routes messages using an X.400 MTA, these messages must be converted to conform with X.400 protocol before they can be routed. Thus, an exemplary messaging gateway is an X.400 gateway, which can be designed and built by a person of ordinary skill in the art.

II. The PCI Database

A PCI Database 44 maintains the subscriber profile, controls the Call Command functions, and handles DTMF-based subscriber profile updates.

The PCI database architecture shown in FIG. 6 comprises several application and support components. The application components include Multiple Services Application Platform (MSAP) 202; Service Provisioning and Creation Environment (SPACE) 204; and Data and Report Subsystem (DRS) 206.

The service components include the Maintenance and Operation Console (MOC) 208; the Intelligence Peripheral Interface (IPI) 210; the Generic Data Interface (GDI) 212;

the Service Network Interface (SNI) 214; and the Data and Report database (D&R) 218.

The service network interface (SNI) 214 provides a communication interface to external systems such as switch 50 and PCI server 48. These interfaces include the IPI 210 and GDI 212 which connect the PCI database to the PCI server via the TCP/IP network 213. The GDI 212 is used for uploading and downloading a subscriber profile to the PCI server 48. The IPI 210 is used for transmitting DTMF commands from a user via the PCI server 48. For redundancy, each intelligent peripheral interface (IPI) and generic data interface (GDI) processor preferably requires two logical connections to the PCI server.

The Multiple Services Application Platform (MSAP) 202 includes a call processor 220, a first call process request (CPR) database 222, an MSAP common 224, a shared memory 226, and a call contact database (CCDB) 228. The call processor 220 receives messages from and sends messages to a message distributor 219 in the SNI 214. The message distributor determines whether the message received from the call processor 220 is to be sent to the IPI 210 or the GDI 212. The call processor receives messages from the message distributor and sends them to the first CPR database, the CCDB 228, and/or the shared memory 226. The first CPR database 222 stores the subscriber profiles. The MSAP 224 connects the first CPR database 222 with the second CPR 230, which resides in SPACE 204. MSAP common 224 updates one of the CPR databases 222, 230 when changes have been made to the other CPR database. The CCDB 228 is a temporary, dynamic storage for storing subscriber profiles, and related data during profile update procedures. The shared memory 226 allows different processors to use the same data.

SPACE 204 is a service provider-operated module through which new PCI database applications are created and new subscriber profiles are initiated. SPACE 206 includes the second CPR database 230 which contains the identical information as the first CPR database 222 in MSAP 202. When a new subscriber profile is to be created, a service provider uses a display terminal 232 in SPACE to provision a new service profile including certain subscriber information. The subscriber profile is activated through MSAP when the user initially registers. Service provider changes made to the second CPR database 230 are transmitted to the first CPR database 222 in MSAP via the MSAP common 224. Changes made to the second CPR database 230 by a service provider are not transmitted to the service profile cache 51 in the PCI server 48 until a later time. That is, the PCI database 44 does not send data to the PCI server 48 unless requested by the server 48. The server profile cache 51 will be updated with this new information the next time the PCI server 48 requests a profile download, for instance when the subscriber next registers. SPACE 204 provides a function parallel to the Service Management System described above.

The Data and Report Subsystem (DRS) 206 collects data about the PCI database 44 usage which may be helpful to the service provider. For example, errors made by the subscriber when updating the user profile are noted. The types of alterations made, times such alterations are made, and the like are also stored for future use by the service provider.

MOC 208 is a network maintenance support system which monitors the status of the network and checks for system failures and the like.

When a subscriber wishes to update the subscriber profile using a PDA 30, the procedure is as follows. The PDA 30 communicates with the PCI server 48. The PCI server 48

sends a GetData message having a "Service Key", which is preferably a ten digit PCI subscriber number (e.g., a telephone number), to the PCI database 44 over the GDI 212. The GDI 212 translates the GetData message into a format understandable by the PCI database 44. The message is sent through the message distributor 219 and call processor 220 to the first CPR database 222 where the subscriber profile resides. The Service Key is used to obtain the correct subscriber profile and the profile is sent through the call processor 220 to the message distributor 219. The message distributor determines that this message is to be sent to the PCI server 48 via the GDI 212. (The reason for this is discussed below.) The GDI 212 translates the data into a format suitable for the TCP/IP network and is transmitted to the PCI server 48. The requested changes are performed in the PCI server 48 and the updated profile is sent back to the PCI database 44 through the TCP/IP network, the GDI 212, message distributor 219, call processor 220 and to the first CPR database 222. The call processor 220 also sends a message through the GDI 212 to the PCI server 48 which will send a wireless transmission to the PDA 30 acknowledging the subscriber profile update. The changes are also sent to the MSAP common 224 where they are sent to the second CPR database 230 in SPACE 204.

During this process, information may be temporarily stored in the Call Contact Database (CCDB) 228. The CCDB database 228 provides temporary storage for subscriber profile updates that are suspended because they are waiting for action by a subscriber or waiting for data from an external system, such as the PCI server 48. During the time intervals between action by the user or delays in receiving data from an external system, the call processor 220 stores the information in the CCDB database 228 and processes other calls.

When a subscriber desires to update his or her subscriber profile using a touch tone phone, the procedure is as follows. The subscriber calls, for example, a service number provided by the service provider. The call is routed to the PCI server 48. The PCI server 48 sends a message to the PCI database 44 via the IPI 210 that the DTMF commands are present. The message is sent through the message distributor 219 to the call processor 220. The appropriate subscriber profile is retrieved from the first CPR database 222 in the MSAP 202.

The call processor 220 instructs the PCI server 48 to play a voice announcement instructing the caller to enter the subscriber ID and password, by pressing the appropriate digits on the touch-tone phone. The information is entered by the caller, and the PCI database 44 validates this information. If the validation determines that the caller is an authorized subscriber, the PCI database 44 instructs the PCI server 48 to ask the subscriber to select which subscriber profile information is to be modified. Only two fields are modifiable using DTMF messaging: changing a wireline registration or recording a personalized greeting. The subscriber selects either registering at a wireline phone or recording a personalized greeting. If wireline registration is selected, the PCI database 44 instructs the PCI server 48 to prompt a ten digit telephone number to which all incoming calls will be routed. If the subscriber selects to record a personalized greeting, the PCI database 44 instructs the PCI server 48 to prompt the subscriber for a new greeting.

If invalid information is entered at any time, the PCI server 48 plays an error message to the subscriber and the subscriber retries the modification. If the retry fails, the call is terminated. Otherwise, the subscriber's profile is updated according to the modification, data synchronizing the mes-

sages are sent to the PCI server 48 and the call processor 220 instructs the PCI server 48 to inform the subscriber that the PCI service profile was updated.

The call processor 220 also sends a message through the message distributor 219 to the GDI 212 and to the PCI server 48 which updates the service profile cache 51 in the PCI server 48. The changes stored back in the first CPR database 220 are sent to the MSAP common 224 where they are sent to the second CPR database 230. Note that DTMF function signals, which use the 1129+ protocol, are routed through the IPI 210 and that the subscriber profile data, which uses the GDI protocol, are routed through the GDI 212.

IV. The PCI Server/Database Interface

The interface between the PCI server 48 and the PCI database 44 is based on two protocols. The first protocol is 1129+. This protocol will be used to support the PCI Call Command feature and for subscriber initiated profile manipulation using DTMF. The second protocol is Generic Data Interface. The GDI is used for subscriber profile management, specifically downloading a subscriber profile from the PCI database 44 to the PCI server 48 and for applying updates to the profile stored in the PCI database 44.

FIG. 7 shows the logical links from the PCI database 44 to the PCI server 48. The PCI database 44 consists of a mated pair of PCI databases 44a, 44b, each containing three call processors 220 which each share the load. The links 250 are TCP/IP links between Intelligent Peripheral Interface (IPI) 210 and the Generic Data Interface (GDI) 212 processors on the PCI database 44 to the PCI server call processor. Two logical connections are made from each IPI 210 and GDI 212 processors to the PCI server for redundancy. Thus, a full SCP configuration supporting PCI would preferably require 24 logical links, as shown in FIG. 7. The PCI database initiates the opening of the logical links.

In this illustrative embodiment, the CallCommand feature employs the 1129+ protocol. For the wireless messaging feature, PCI uses the GDI protocol. The GDI tag IDs assigned for the PCI subscriber profile elements are provided in Appendix B.

Appendix B also shows the PCI profile data, including the profile elements, their data types, maximum lengths, and GDI tag IDs. An * indicates elements which were shortened to 32 bytes because of GDI byte limitations. The description of the types and lengths of these elements is as follows:

dN BCD-encoded digits. The number N represents the maximum number of BCD digits, not octets.

cN Up to N ASCII characters.

cN Binary integer N bytes in length, in network byte order (highest order bit transmitted first).

Because the portion of the PCI subscriber profile downloaded to the PCI server is large (preferably approximately 1,000 bytes), and a maximum Transaction Capable Application Program (TCAP) message size is 256 bytes, the profile must be managed in segments. The service profile is divided into six segments as shown in Table 1. Each segment is assigned a unique numeric identifier.

PCI Profile Segment	Segment ID (decimal)
Personal data	1
CC service profile	2
E-mail routing	3
E-mail subject screening	4
E-mail from screening	5
Voice mail profile	6

Certain data in a subscriber profile provides a subscriber's preferred media for messages delivery and notification. The

encoding for these types are given in Table 2.

Media Type	Code
Alphanumeric Pager	A
E-mail message store	S
Fax	F
PDA	P
Voice mail	V
Wireline e-mail	E
Null	Z

For example, if the subscriber prefers to receive e-mail which passes screening via the PDA 30, then the "primary destination one" profile element will contain a "P".

FIG. 8 illustrates a message flow for profile retrieval using the GDI protocol. A subscriber attempts to register with the PCI server either explicitly or implicitly (registration is discussed in detail below). The PCI server 48 send a GDI GetData query to the PCI database 44 over one of the GDI links (line 260). The PCI server 48 may send one GetData data query for each PCI profile segment. Each query will be processed by the PCI database 44 as an independent transaction with a unique TCAP transaction ID. Each GetData query sent by the PCI server 48 will include a "Service Key" parameter which is a ten-digit PCI subscriber number (e.g., a telephone number). This key should be used by the PCI database 44 to identify the subscriber. In each GetData is a list of tag IDs listed in the profile elements to be retrieved. The PCI database 44 responds to the GetData data query with a GetData response (line 262). The response contains a return code and data for each element requested in the GetData data query.

FIG. 9 provides a message flow between the PCI server 48 and the PCI database 44 for a profile update originating from a wireless PDA 30. This wireless profile update uses the GDI protocol. A subscriber performs a profile manipulation activity, and the PDA 30 sends a profile data message to the PCI server 48. The PCI server 48 sends a GDI SendData query to the PCI database 44 over one of the GDI links (line 264). The PCI server 48 may send one SendData query for each PCI profile segment for which a profile element was updated. Each query will be processed by the PCI database 44 as an independent transaction with a unique TCAP transaction ID.

Each Send Data query sent by the PCI server 48 will include a "Service Key" parameter which is the ten digit PCI subscriber number. This key should be used by the PCI database 44 to identify the subscriber. Each SendData query contains a list of tag IDs provided in Appendix B and data for the profile elements to be updated. Not all tags in this segment may be included in the SendData query; only those profile elements which are actually updated by the subscriber will be sent. The PCI database 44 should not update data for which no tag was included in the SendData query.

The PCI database 44 responds to the SendData query with a Send Data response (line 266). The response contains a return code for each element requested in the SendData query.

FIG. 10 is an illustrative example of one possible CallCommand message flow between the PCI server 48 and the PCI database 44. (CallCommand is discussed in more detail in section VI D.) The exact call flow for CallCommand depends upon the implementation of the service logic by the service designer and upon options selected by the CallCommand subscriber. The CallCommand functions illustratively use the 1129+ protocol and the IPI 210 (see FIGS. 6 and 7).

As illustrated in FIG. 10, a CallCommand call arrives in the PCI server 48. The PCI server 48 sends a provide_ instructions query to the PCI database over one of the 1129+ links (line 268). A TCAP transaction ID is generated for the query. The dialed number digits parameter contains the personal numbers of the PCI subscriber (i.e., Service Key). The ANI digits contain the automatic number identification, if any, of the caller (ANI is a telephone network capability). The PCI database sends a 1129+ send_to_resource command to the PCI server 48 to play an announcement and collect digits (line 270). The PCI server 48 plays the announcement, collects the digits, and sends a response containing a return code and the digits collected (line 272).

PCI database 44 sends a 1129+ play_application command to the PCI server 48 to notify the PDA 40 of the incoming call (line 274). The PCI server 48 responds with a return code and a destination number (entered by the subscriber at the PDA 30) to which the call is routed (line 276). The PCI database 44 sends a 1129+ switch_to_resource command to the PCI server 48 instructing the PCI server 48 to route the call to a destination number (line 278). The PCI server responds with the return code executing that request (line 280).

FIG. 11 is an illustrative example of one possible message flow between the PCI server 48 and the PCI database 44 for a DTMF profile manipulation message. The DTMF profile manipulator uses the 1129+ protocol through the IPI 210. The exact call flow for DTMF profile manipulation depends upon the implementation of service logic by the service designer and upon options selected by the PCI subscriber.

As shown in this illustrative example, when a call arrives at the PCI server, the PCI server sends an 1129+ provide_ instructions query to the PCI database (line 282). The called number contains a dialed number (i.e., the service number for a DTMF updates), while the ANI field contains the ANI, if any. The PCI DTMF profile manipulations Call Process Request CPR is triggered by the dialed service number. The CPR 222 instructs the PCI server to play announcements and collect digits, guiding the subscriber through voice menus and prompts lines 284, 288. The PCI server responds to each request with digits collected (lines 286, 290, 294). The CPR updates subscriber's profile with data collected via DTMF. V. PDA/PCI Interface

Communication between the PDA and PCI use, for example, an X.25 transport using the UDP IP protocol. A brief discussion of the PDA structure is provided. The PDA 30 is preferably a notebook or palm top computer having a wireless network interface. The PDA may be, for example a Hewlett Packard Omnibook 300 notebook computer running a PCI application. FIG. 12 illustrates an exemplary PDA. The PDA 30 has a central processing unit 294 connected to a bus B. The central processing unit ("CPU") 296 performs most of the computing and logic functions of the PDA 30. A memory 296 is connected to the bus B, which stores information to be provided to the CPU 295 or otherwise used by the PDA 30. An input/output device 297, such as a keyboard, is also connected to the bus B which allows a user to input data for storage in memory 296 or for use by CPU 295. A display 298 is connected to the bus B. The PDA 30 also has a wireless communication interface 299 for communication with a wireless communication network.

The PDA/PCI interface involves six types of message flow. These messages are: (1) registration/deregistration; (2) wireless messaging; (3) retrieving E-Mail; (4) cross-media notification; (5) CallCommand; and (6) profile management.

There are two types of registration and deregistration: explicit and implicit. Explicit registration occurs when a PCI

subscriber starts the PCI application software on the PDA 30 (this is called start-up registration) or when the subscriber clicks a status check button or one of the service registration request buttons on the PDA 30 either for the CallCommand or wireless messaging service. Once successfully registered, if the subscriber's profile is not already present in the service profile cache 51 maintained by the PCI server 48, the PCI server 48 will request a download of the subscriber's profile from the PCI database 44 to the service profile cache 51. The PCI server 48 sets the subscriber's registration status in the cache 51 to match those requested by the subscriber for the wireless messaging service for the call command service.

FIG. 13 illustrates one example of the message flow between the PDA 30 and PCI server 48 during explicit registration. This flow is also used by a subscriber to check registration of CallCommand or wireless messaging services. A subscriber starts the PCI application software on the PDA or clicks the service status check, CallCommand registration, or wireless messaging registration buttons on the PDA. The PDA sends a registration request to the PCI server 48 with the subscriber's validation information (subscriber ID and password) (line 300). The PDA 30 also starts a timer during which the PDA 30 will wait for a response from the PCI server 48. The PCI server 48 server receives the registration request and checks if the subscriber is provisioned and if the subscriber ID and password are correct. The PCI server then sends a registration acknowledgement (line 302). If the subscriber is not provisioned, no service profile exists and the acknowledgement includes an "unrecognized subscriber" response. If the subscriber ID and password are invalid, the acknowledgement includes an "incorrect password/PIN" response. Otherwise, the PCI server acknowledgement includes a "success" response. If the PDA 30 does not receive an acknowledgement from the PCI server within a predetermined time, it aborts the registration attempt and tells the subscriber to try again later.

Implicit registration automatically registers a subscriber for the wireless messaging service when the subscriber is currently not registered and wishes to send or fetch E-Mail from or to a PDA 30. Implicit registration is done as follows. The PCI server receives a fetch or send request from a subscriber who is not registered for the wireless messaging service. The PCI server 48 retrieves a copy of the subscriber's service profile from the PCI database 44, if necessary, and validates the subscriber's ID and password. The PCI server 48 validates the profile contents to make sure that subscriber may use the wireless messaging service. If wireless messaging is permitted, the PCI server 48 processes the request. Otherwise, it sends an acknowledgement indicating the reason why the subscriber is not permitted to use the wireless messaging service. The message flow is the same as illustrated in FIG. 13.

Once the subscriber is registered for either the CallCommand service or the wireless messaging service, the subscriber remains registered until the subscriber explicitly deregisters by either quitting the application or clicking the deregistration button on the PDA 30. The subscriber can also be implicitly deregistered for the wireless messaging service by the PCI server 48 provided the PCI did not detect any wireless messaging activities to or from that subscriber for a given duration of time. Although the subscriber is deregistered, the subscriber's service profile will remain in the service profile cache 51. The profile remains in the cache as long as the PCI server has some activity for the subscriber, such as incoming e-mail messages within a predetermined time, such as four hours.

No PDA-to-PCI server messages may be sent by the subscriber to implicitly register for CallCommand, thus, a

subscriber should not be implicitly deregistered from this service. Implicit registration and deregistration occurs only for the wireless messaging service and not for CallCommand. A subscriber remains registered for CallCommand as long as he or she is running the CallCommand software application on the PDA.

Explicit deregistration occurs when a subscriber quits the PCI application software on the PDA (this is called exit deregistration) or when the subscriber clicks one of the service deregistration request buttons on the PDA for the CallCommand or wireless messaging services. FIG. 14 is an illustrative embodiment of a message flow between the PDA 30 and PCI server 48 for explicit deregistration. A subscriber quits the PCI application software on the PDA or clicks a deregistration button on the PDA. The PDA 30 sends a deregistration request to the PCI server 48 with the subscriber's validation information (the subscriber ID and password) (line 304). The PDA 30 also starts a timer during which the PDA will wait for a response from the PCI server 48. The PCI server 48 sends an acknowledgement (line 306). The PCI server 48 receives the deregistration request and checks if the subscriber ID and password are correct. If the subscriber ID and password are not correct, the acknowledgement includes an "incorrect password/PIN" response. Otherwise, the acknowledgement includes a "success" response. If the PDA 30 does not receive an acknowledgement from the PCI server 48 after a predetermined time, the PDA 30 assumes that it is out of radio coverage and informs the subscriber to retry later.

Implicit deregistration occurs when the PCI does not detect any wireless messaging activity from or to the subscriber for a given duration of time, for example four hours. The PCI will also try to implicitly deregister a subscriber from the wireless messaging service in the middle of the night in the event that the subscriber inadvertently left the PDA 30 turned on. The PCI server 48 keeps a time-stamp of the most recent wireless messaging activity for each registered subscriber in the subscriber's service profile maintained in the service profile cache 51. Whenever the PCI server 48 detects any wireless messaging activities to or from a particular subscriber, the time-stamp is updated to the current time. The stored time-stamp of a registered subscriber is periodically compared to the current time. When a predetermined time elapses, the PCI server 48 assumes that the subscriber is out of radio coverage or has quit the PCI application.

For implicit (or automatic) deregistration, the message flow is the same as illustrated in FIG. 14. The PCI server 48 sends to the PDA 30 a deregistration request containing registration information about the subscriber. The PCI server 48 also sets a timer during which it will wait for a response from the PDA 30. When the PDA 30 receives the deregistration request, it responds with registration acknowledgement which contains the registration information currently known to PDA. When the PCI server 48 receives the registration acknowledgement, it updates the subscriber's registration status based on information in the acknowledgement. The PCI server 48 also updates the wireless messaging time-stamp associated with the subscriber to the current time. If the PCI server 48 does not receive an acknowledgement within a predetermined time as described above, the PCI server 48 assumes that the subscriber is no longer registered and removes all references to the subscriber from the service profile cache 51.

Sending and receiving e-mail wireless messages involves two types of message flows: sending messages from the PDA 30 to the PCI server 48 and from the PCI server 48 to the PDA 30.

FIG. 15 is an illustrative example of a message flow sending an E-mail from a PDA 30 to an PCI server 48. When a subscriber sends an E-Mail notification from the PDA 30, the PDA 30 forwards the E-Mail notification to the PCI server 48. The body of the E-mail contains, for example, "to;from;subject;cc" information (line 308). The PCI server acknowledges this notification (line 310). If the E-mail is longer than can be transmitted in a single message, the PDA 30 segments the E-mail into multiple, sequentially numbered messages and sends them to the PCI server (lines 312, 316, 320). Each message sent from the PDA is responded to with an acknowledgement containing the reception status of the message and the sequence number it is acknowledging (lines 314, 318, 322). The PDA 30 and PCI server 38 use the sequence number to maintain a sequential flow of packets. Out of sequence messages are discarded. Once all of the packets are received, the PCI server 48 puts them into their original order using the sequence number and forwards the now assembled E-mail to a message transfer agent, which then forwards the E-mail to its intended destination.

The PDA 30 starts a timer each time it sends out an E-mail. If the PDA 30 does not receive an acknowledgement after a predetermined time (for example ten seconds), the send operation is aborted and the E-mail is stored in a local outbound queue for redelivery in the future.

When an E-mail is being delivered from an PCI server 48 to a PDA 30, a similar message flow is used. The only difference is that the PCI server 48 initiates the flow and sends the initial messages instead of the PDA 30.

Retrieving E-mail involves two types of message flows: retrieving undelivered E-mail addressed to the PDA 30 and retrieving E-mail delivered to a messaging system, such as a wireline e-mail system. When a subscriber is out of radio coverage or is not registered with PCI, the PCI sends E-mails addressed to be delivered to the PDA (PDA-bound E-mail) to an external mail storage system. The PCI server will also send certain E-mail directly to an external mail storage system (MS-bound E-mail), such as the subscriber's wireline E-mail connected to his or her personal computer, according to the subscriber profile stored in the PCI database 44.

A registered subscriber can retrieve PDA 30 bound E-mail at any time by starting "FETCH" operation. The PCI will send the PDA bound mail from the external mail storage and will also summarize MS-bound E-mail.

An illustrative example of the message flow between the PDA and the PCI server for retrieving undelivered PDA bound E-mail is shown in FIGS. 16(a) and (b). If there are no MS-bound messages, an illustrative message flow is shown in FIG. 16(a). The PDA 30 sends a fetch request to the PCI server 48 (line 324) and starts a timer, which waits for an acknowledgement. If no acknowledgement is received within a predetermined time, for example twelve seconds, the PDA 30 assumes it is out of radio coverage and informs the subscriber to try again later. In response to the request, the PCI server 48 logs into an external mail storage system specified in the subscriber's profile. If any PDA-bound E-mail is stored in the external storage system, the PCI server 48 will (a) move the PDA bound E-mail from the external mail storage system into a pending area in the PCI server; (b) send an acknowledgement to the PDA indicating the number of PDA bound E-mail now residing in the pending area; and (c) initiate delivery of these PDA bound E-mail from the pending area to the PDA (line 326).

If there are MS-bound E-mail messages, an illustrative message flow is shown in FIG. 16(b). The PDA sends a fetch request (line 328) and starts a timer. Whenever the PCI

server sends a summary message, it starts a timer. If the PCI server 48 does not receive an acknowledgement within a certain predetermined time, for example ten seconds, it will assume that the PDA 30 is out of radio coverage, abort the send operation and discard the summary information. In response to the request, the PCI server 48 will (a) send an acknowledgement to the PDA indicating the number of MS-bound E-mail present (line 330); (b) extract summary information from those messages; and (c) send the summary to the subscriber's PDA (line 332). When the PDA receives an acknowledgement from the PCI server, it informs the subscriber based on the contents.

Summary information for the MS-bound E-mail is formatted into one ASCII text per E-mail and sent to the PDA. If the summary information, or the number of summarized E-mail require more than one message, the PCI server 48 splits the summary information into multiple sequentially numbered segments and sends each segment in a separate message (lines 336, 340). Each message from the PCI server 48 is responded to by the PCI server with an acknowledgement containing the reception status of the message and the sequence number it is acknowledging (lines 334, 338, 342). Out of sequence messages are discarded. Once all of the packets are received, the PDA 30 puts them into their original order using the sequence number.

Once the summary information describing the MS-bound E-mail messages is reviewed, the subscriber may start a FETCH operation to retrieve these MS-bound E-mail messages. FIG. 17 is an illustrative example of a message flow between the PDA 30 and the PCI server 48 retrieving MS-bound E-mail. The subscriber selects an MS-bound E-mail message to be received. The PDA 30 sends a retrieve request to the PCI server 48 containing the message selected by the subscriber (line 344). The PCI server 48 responds with an acknowledgement (line 346). The PCI server 48 logs into the external message storing system specified in the subscriber's service profile and moves the MS-bound E-mail specified in the request out of the storage system into a pending area in the PCI server 48. The PCI server 48 initiates a send operation which delivers the E-mail in the same manner as discussed above.

Cross media notification (e.g., PDA notification of voice mail message receipt) is sent to the PDA 30 using the same delivery as a wireless E-mail message to the subscriber. The PCI server 48 originates the notification E-mail and the e-mail subject is "message notification". The body of the notification E-mail contains the message sender's address (i.e., the phone number for a voice mail), the date and time the message arrived at the PCI; the type of media, (i.e., voice mail, FAX, E-mail or other); whether the message is marked urgent (if detectable); the length of the message (for example, in minutes for a voice mail message); and, if appropriate, the subject of the message.

CallCommand allows a PCI subscriber to reroute or direct calls in real time. The subscriber may receive notification on the PDA 30 that a call is waiting. Using the PDA 30, the subscriber may instruct the PCI to route the call to specified destination number or have the PCI server play a message entered by the subscriber using synthesized speech.

When a call is made to a CallCommand subscriber's number, it is routed to an PCI server 48. The PCI server 48 queries the PCI database 44 to determine how the subscriber's profile has directed the call to be processed. If the subscriber is registered at a known telephone number, the PCI database 44 instructs the PCI server 48 to route the incoming call to the given telephone number (assuming that the call meets any screening requirements). If the subscriber

is not registered at a known telephone number, the PCI database 44 will provide a default routing number and a timer value instructs the PCI to play an announcement customized by the subscriber to the caller and start collecting DTMF digits within that time period. The PCI plays the announcement and starts the timer provided by the PCI database 44 and then begins collecting DTMF digits entered by the caller. If no digits are collected within a predetermined time period, the PCI routes the call to a default number indicated by the subscriber's profile in the PCI database 44. If DTMF digits are collected, the PCI puts the caller on hold, determines if the caller meets the screening requirement, and handles the call accordingly. If the call is to be directed to the subscriber, the PCI attempts to contact the subscriber.

FIG. 18 is an illustrative example of the message flow between the PDA 30 and PCI server 48 for a CallCommand call. The PCI server 48 sends a notification message to the subscriber's PDA 30 to notify the subscriber that a call is waiting (line 348). The message contains the DTMF digits entered by the caller. The PCI server 48 starts two timers, which are the time interval the PCI server 48 expects to receive an acknowledgement from the PDA 30 and the time interval the PCI server 48 expects to receive a response from the PDA 30, respectively. The typical values for these timers are ten and forty seconds, respectively. The time to receive an acknowledgement should be less than the time for the response.

After receiving a notification message, the PDA sends an acknowledgement to the PCI (line 350). This informs the PCI server 48 that the PDA 30 is within radio coverage and that the subscriber has been notified about the incoming call. Once the acknowledgement is received, it cancels the acknowledgement timer, but leaves the response timer ticking, waiting for a response to come from the PDA 30. If the PCI server 48 does not receive an acknowledgement within the predetermined time, it assumes that the PDA is either out of radio range or is turned off and cancels the response timer and routes the call to a default number programmed into the user profile in the PCI database 44. The subscriber is notified of the incoming call by the CallCommand interface on the PDA 30. The DTMF digits entered by the caller provide the subscriber with the name and/or telephone number of the incoming caller.

The subscriber can decide to route the call to directory number or voicemail, enter a text message to be played to the caller, or both. The PDA will send a response to the PCI server 48, which carries the number to which the call should be routed, a short text message to be played to the caller through synthesized voice, or both (line 352). When the PCI server receives the response, it cancels the response timer and executes the subscriber's decision in the response and sends an acknowledgement which contains how the subscriber's decision is to be carried out (line 354).

If the response timer expires before the PCI server 48 receives a response, the PCI server 48 routes the call to a default number obtained from the PCI database 44 and send a status message to the PDA 30 to inform the subscriber that the caller is no longer waiting (line 356). Also, if the caller decided not to wait any longer (that is hangs up or presses "*", which allows the caller to go to the default number) the PCI sends a status message providing this information. The PDA acknowledges the status message (line 358).

Profile management allows the subscriber to modify wireless messaging and Call Command services by updating certain elements in the subscriber's service profile stored in the PCI database 44 and the service profile cache 51 in the

PCI server 48. Profile information is not stored locally on a PDA 30. Updating the subscriber's profile using a PDA 30 always requires the subscriber to the PCI.

Profile management involves two types of message flows, profile download and profile upload. FIG. 19 is an illustrative example of the message flow between the PDA 30 and the PCI server 48 for a profile download. As indicated above, any profile change requires a profile download because the profile is never stored in the PDA 30. A subscriber starts a profile management application on a PDA 30 and requests a profile download. The PDA 30 sends a download request to the PCI server and requests a copy of the subscriber's modifiable profile elements to be downloaded to the PDA 30 (line 360). The PCI validates the identity of the subscriber through its subscriber ID and password. If the subscriber's identity is not validated, the PCI sends an acknowledgement and an error code and terminates the profile update session. If the subscriber's identity is validated, the PCI downloads the subscriber's modifiable profile elements (lines 362, 366, 370). Attached as Appendix C is a list of tags for modifiable profile elements. The PDA 30 acknowledges the received data (lines 364, 368, 372). The PDA starts a timer after sending the download request. If the PDA does not receive an acknowledgement or data from the PCI server within a predetermined amount of time, for example, ten seconds, it assumes that it is out of radio coverage and informs the subscriber to try again later. The PCI server 48 starts a timer each time it sends out data to the PDA 30. If the PCI server 48 does not receive an acknowledgement from the PDA 30 within a predetermined time, for example ten seconds, it will abort the profile download operation.

Once the subscriber finishes editing the profile on the PDA, a profile upload request is issued. An illustrative example of the message flow between the PDA 30 and the PCI server 48 for a profile upload is shown in FIGS. 20(a) and (b). After the subscriber issues a profile upload request, the PDA 30 sends an upload request to the PCI server 48 requesting permission to send the updated profile elements (step 374). The PCI server 48 validates the identity of the subscriber, for example by checking the subscriber ID and password, and checks if there is an associated download request issued by the same subscriber. The check for an associated previous download request is necessary so that the PCI server 48 is sure that the profile the subscriber wants to change is the profile that the PCI server 48 has just sent. If the subscriber's identity is not validated, or there is no associated download request packet, the PCI server sends an error code to the PDA 30 and terminates the profile update session. If the subscriber's identity is validated and there is an associated download request, the PCI server 48 honors the request by sending an acknowledgement and a status code of "OK" to the PDA 30 (line 376). When the PDA 30 receives the OK, it formats the updated profile elements and sends them to the PCI server 48 in the same way the profile was sent to the PDA 30 during the download phase (lines 378-386). If no error is detected, the PCI server 48 sends the updated profile elements to the PCI database 44 to commit the change. After a confirmation is received from the PCI database 44, the PCI server 48 sends an acknowledgement with status code of "OK" to the PDA to confirm and conclude the profile update session (line 388), as shown in FIG. 20(a).

FIG. 20(b) is an illustrative message flow when the PCI server 48 detects errors in an uploaded profile. The upload proceeds as above (lines 390-398). If the PCI server 48 detects errors in the updated profile elements it responds with an error message to notify the subscriber about the

invalid profile element (line 400). The PDA acknowledges receipt of the error message (line 402). The PCI server 48 sends the invalid profile elements in a similar way as the profile was sent to the PDA 30 during the download phase (lines 404, 406).

The PDA 30 starts a timer when it sends out an upload request or sends out data. If the PDA 30 does not receive an acknowledgement from the PCI server 48 within a certain predetermined time, it will abort the profile upload operation and inform the subscriber to retry at a later time.

VI. Services

A. Wireless E-mail Messaging

PCI includes several wireless text message sending, receiving, and service control features. PCI's wireless text messaging services are based on three network-based capabilities:

- message integration combining voice message notification, voice mail, telephone calls, e-mail, and fax;
- message routing and delivery, i.e., the PCI is a wireless and wireline network gateway;

- database access, i.e., subscriber profile, authentication, and validation.

The PCI uses personal communications service-integration capabilities to integrate the wireless service capabilities available to the subscriber. This is accomplished by providing the subscriber with control over the message routing and delivery by the subscriber accessible "subscriber profile" stored in the PCI. The subscriber profile contains subscriber programmed instructions on message receipt, origination, and notification. Thus, PCI operates as a messaging gateway for providing access to multiple wireline and wireless networks, while using subscriber profile information to control sending and receiving options. PCI allows wireless service providers to integrate the voice messaging, e-mail, and fax message services for one subscriber through a single telephone number. Thus, one phone number may provide a single link between the service provider and the subscriber's voice and data communications lines.

The message sending features include communications across disparate networks and broadcast communications. A subscriber may send voice mail, e-mail, and fax messages between different service providers and networks. A subscriber may also send broadcast e-mail and fax messages, which broadcasts may mix e-mail and fax messages within a single distribution list. For example, the subscriber may type a message on a PDA and send it to a distribution list over a wireless network. The distribution list may direct the PCI to deliver the message to the office as an e-mail and to a client as a fax.

The message receiving features include personal number addressing, selection of message receipt media format, selection of cross-media message notification, and selection of message screening and delivery options. A subscriber may receive voice (e.g., phone), voice mail notification, e-mail, and fax communications under a single personal telephone number. A subscriber may direct e-mail and fax delivery based on selected parameters, such as time-of-day, day-of-week, etc. A subscriber's media message notification, voice mail notification of e-mail or fax messages, e-mail notification of voice mail or fax messages, and fax notification of e-mail or voice mail messages may be delivered to the subscriber based on selected options and parameters.

Alternatively, if the subscriber's wireless terminal is not activated, e-mail messages may be automatically routed to alternate destinations as defined by the subscriber's profile. For example, the subscriber may not want to receive all telephone calls at a visiting location to avoid unnecessary

interruptions and unwanted incoming call charges. The subscriber directs the PCI to send notification of phone calls to the pager and to route the call to voice mail. Once notified, the user can determine from the phone number included in the pager notification whether to call the person directly, check voice mail, or ignore the call until a later time. The subscriber may also direct which messages are to be routed to the subscriber's current serving network, which are to be sent to another network, and what media is to be used to receive certain messages. The subscriber may also designate, for example, that if the wireless terminal is off, all text messages are to be sent to e-mail and all voice messages are to be sent to voice mail.

The PCI service control features include supporting subscriber profile management, supporting personal mobility across wireless and wireline networks, and supporting wireless terminal mobility. A subscriber's profile may be updated by sending text messages from a PDA over a wireless network or DTMF (touch-tone) messages from either a wireline or wireless terminal. The subscriber may program the profile to select media for receiving and sending information; select cross media for message notification; select message screening and delivery options; select single voice mailbox storage (for subscriber's with more than one voice mailbox); and select a PCI service password. All of these options may be maintained over wireless or wireline terminals. The subscriber may automatically register and deregister a wireless terminal thus updating the subscriber's profile to receive or reroute messages as preprogrammed in the profile.

The wireless data network provides data transport between the PCI server 48 and the subscriber using a wireless data terminal, such as a PDA 30. The wireless data network may connect to the PCI server in a variety of ways, using a variety of protocols. For example, the wireless data network may connect to the PCI using a leased line and run a proprietary protocol to connect the PCI server via standardized protocols such as TCP/IP.

Text messaging systems may be connected to the PCI server through, for example, Frame Relay, SMDS, ISDN, leased line interface, or other transport mechanism effective for supporting data communications may be used. An inter-message handling system protocol, such as X.400 (in which case X.400 gateway conversion is needed), or Internet SMTP or other protocols supported by an interworking unit terminating the data transport interface, may be used to forward messages between the PCI server 48 and the system accessing the PCI.

The PCI server will preferably support sending and receiving faxes in the T.434 format. The PCI server may also preferably support sending and receiving faxes using the simple mail transfer protocol (SMTP) supported by the TCP/IP transport protocol.

FIG. 21 shows an illustrative embodiment of a PCI service supporting text messaging systems. In this example, a subscriber has a personal computer 420 at the office connected to a local area network (LAN) 414 and an enterprise text messaging system (for example, a local network e-mail) 413, a personal computer at home 416, and a wireless terminal, such as PDA 30 that may send and receive messages. All of these devices are connected to the PCI. For example, the subscriber's home personal computer 416 may be connected to the PCI 40 via a modem and a wireline data network 418 over either a PSTN or ISDN.

Persons connected to the LAN may send text messages to the subscriber by using the local text messaging system without using the PCI. That is, the user of computer 420 can

send an e-mail to the subscriber's office computer 412 without entering the PCI node 40. Because the enterprise text messaging system 413 is connected to PCI, all enterprise messaging users may send messages to and receive messages from all PCI subscribers (including those not connected to the local text messaging system 413) by using an appropriate PCI address.

A person connected to a different enterprise messaging system, such as text message handling system 2 422, can send messages to the subscriber on message handling system 1 413 by routing the message through the PCI Server 48.

PCI subscribers are assigned a single personal telephone for both voice and data communication. For example, an E.164 address (i.e., a telephone number) may be assigned to a PCI subscriber to use as the single PCI address. These phone numbers may be geographically based according to current PSTN architecture, but it is also possible to use portable universal numbers. Fifteen digit number formats may be desirable to permit sub-addressing. For example, a message destined for a PCI subscriber may be addressed to the subscriber's telephone number, e.g., 201-555-5555. If an originating mail system such as a LAN mail system or third party message handling system requires a domain identifier, the originator may have to specify 201-555-5555 @ PCI or on the Internet 201-555-5555 @ pci.net. When the PCI server 48 receives the message, it will look at the subscriber's profile stored in call process request database 222 stored in a PCI database 44 to determine how to handle the incoming message. An example of a few of the options that PCI may provide for the subscriber are to:

- send the message to the subscriber's wireless PDA;
- send the message to the subscriber's wireline computer at home;
- send the message to the destination text messaging system at the office;
- send a notification of an incoming message to the wireless data terminal and the actual message to the text messaging system.
- send the message to any or all of the above;

The subscriber may send text messages over the wireless data network or wireline data network to the PCI server 48. The PCI server 48 consults with the subscriber's profile at the PCI database 44 and forwards the message to the appropriate destination, depending on the routing destination found in the profile. Text messaging systems not connected to the PCI 40 may send text messages to PCI subscribers by using another network connected between the sender's text messaging system and the PCI subscriber's text messaging system, for example, the non-connected text message may be connected to a PCI over the Internet.

The flow for wireless messaging is now described.

The flow for a PCI subscriber receiving an e-mail message to a wireless PDA 30, for example, is as follows. An e-mail message is sent from a wireline or wireless sender to a PCI subscriber and arrives at the PCI server 48. The incoming e-mail contains a recipient address in the format of "201-555-5555 @ pci.net" where 201-555-5555 is the subscriber's ten-digit personal number and pci.net is the PCI server's domain name in the Internet.

The PCI server 48 checks the subscriber's service profile, either from the profile service cache 51 in the PCI server or by downloading the subscriber profile from the PCI database 44 into the cache 51 to determine how to process the e-mail message. The profile contains screening and routing information and cross media notification information. The PCI server 48 uses this information to send incoming e-mail to an actual destination address that can be a wireless, wireline,

or paging address using, for instance, the UDP/IP protocol over a wireless data network; the Internet SMTP protocol over the Internet wireline network; or the Telocator Alpha Numeric Protocol (TAP), respectively. In this case, the subscriber has programmed into the subscriber profile to have the e-mail sent to a PDA 30. The PCI server 48 receives the e-mail message and forwards it to the wireless data network programmed into the profile. The e-mail is transmitted over a wireless data network 39 for receipt by the PDA 30.

If the e-mail cannot be delivered, the PCI server returns the e-mail to the original sender with a short description of why the delivery was unsuccessful, using the SMTP protocol.

If an e-mail message is to be delivered to an alphanumeric paging address, the PCI server translates the e-mail message into a paging message and sends the paging message to the paging network specified in the subscriber profile. The protocol between the PCI server and the paging network is the Telocator Alpha Numeric (TAP). The PCI server formats the paging message into a maximum page limit with a maximum number of characters per page. For example, the page limit may be two pages and a maximum of 256 characters per page. The PCI server does not verify whether a paging message is actually delivered by the paging service provider. It will, however, verify that the message was successfully sent to the paging service provider. Because the PCI server does not provide this verification, it is under the assumption that messages sent to a pager arrive successfully at the pager.

If the subscriber profile contains an option for voice message notification of e-mail messages, the PCI server generates and sends a digitized prerecorded voice announcement to the address specified in the subscriber service profile. The protocol used to deliver the voice message notification is the AMIS-Analog Protocol.

In this illustrative embodiment, a preferred PCI server node functions as an X.400 message transport agent or SMTP router and routes messages destined for PCI subscribers and to those destined for users connected on other systems. In the case of an X.400 message transfer agent (MTA), X.400 addresses are used to internally represent subscriber addresses. The translation from the "user friendly" subscriber addresses such as E.164 numbering to the X.400 address would be done via a look-up table (ROM or other memory device) at the PCI access module or the X.400 gateway. Destination or source addresses from users on other networks are not converted to X.400 addresses, but are left in the native address format of the sending or receiving system. An X.400 gateway address may be added to the message header, however, to allow PCI to route the message to an appropriate gateway.

The PCI server 48 is responsible for delivering a message to the subscriber listed in the destination field of the message. In a simple case, the subscriber has an X.400 or Internet mailbox accessible to the PCI via one of its access connections. Alternatively, the subscriber profile may contain forwarding addresses which route the message for delivery to unusual destinations. For example, the subscriber's mailbox may reside on another message handling system, a wireless data network, wireline data network, or PSTN destination associated with a fax machine. The delivery of such a message to a final destination is handled by an interworking unit which is responsible for doing address translation and, if necessary, format translation as defined by the subscriber profile entry.

For subject e-mail screening, the subject field is analyzed to determine if a match exists before comparing the address

field. If the subject field matches an entry on the screening list, the treatment for a matched entry will occur. That means, in this illustrative embodiment, that subject screening takes precedence over address sender screening. That is, if e-mail originated from an address that is excluded from the e-mail screening address list, the e-mail will still be delivered according to the screening criteria.

If the PDA 30 is not registered for the wireless messaging service or if the PDA 30 is out of radio coverage at the time the message arrives at the PCI server 48, the message will be sent to the subscriber's external message storage system, such as the text message system 413.

B. Voice Messaging

FIG. 22 shows an illustrative embodiment of a PCI service for voice mail system. The voice mail systems 430 may use the public telephone network 432 and Audio Messaging Interface Specification (AMIS)—Analog Protocol to connect analog voice messages to the PCI. Alternatively, the voice mail system may use a modem 434, a private line 436, or an ISDN BRI AMIS—Digital Protocol 438 to connect digital voice mail signals to the PCI.

Voice messaging systems on the PCI must be able to send a message to the PCI server 48 providing notification that the subscriber has received a voice message. The voice mail system may send this text message by using, for example, asynchronous interfaces with a modem; X.25; ISDN BRI, or TCP/IP interfaces. Preferably, the PCI server 48 supports the AMIS Analog and Digital interfaces.

The PCI voice messaging call flow is as follows. Using the AMIS-Analog Protocol the system originating the voice message sends message information to the PCI server 48 specifying the type of message to be delivered, the message length (in minutes), the originator's mailbox number, and the recipient's mailbox number. When the message arrives at the PCI server 48, the originator's mailbox is extracted from AMIS-Analog Protocol and is compared to the subscriber's voice mailbox number stored in the subscriber profile. If the two values match, the voice message is already in the mailbox designated by the subscriber. In this case, the PCI server 48 sends a bogus error code to the originating voice messaging system using the AMIS-Analog protocol so that the voice message is rejected and is not forwarded to the PCI server 48. The PCI server 48, however, has header information needed to send a notification message to the subscriber, if such notification is required by the subscriber profile.

If the originator's mailbox does not match the subscriber's voice mailbox number, the PCI server 48 analyzes the message length parameter. If this parameter exceeds a certain predetermined length, for example three minutes, the PCI server 48 sends a response message to the originating voice messaging system with an error code specifying that the message is too long. No further processing of the voice message occurs. If the message length is not longer than the predetermined time, the PCI server 48 sends a response message to the originating voice messaging system accepting the message. The originating voice messaging system will then forward the voice message to the PCI server.

When the voice message arrives at the PCI server 48, the PCI server 48 attempts to route the voice message according to the screening, registration, and routing options contained in the subscriber profile. Using AMIS-Analog Protocol, the PCI server 48 sends message information to the subscriber's destination voice messaging system, specifying the type of message to be delivered, length of the message in minutes, the originator's mailbox number, and the recipient's mailbox number.

For voice messages that cannot be delivered to the destination, for example if the mailbox is full, the destination system sends a non-delivery notification message to the PCI server 48 specifying the reason why the message is undeliverable. The PCI server 48 retries delivering for up to a system defined time period. If all of the retries fail, the PCI server 48 uses the AMIS-Analog Protocol to return the voice message to the originating voice messaging system with an appropriate non-delivery notification. A pre-recorded non-delivery announcement is sent to notify the message originator that the message was undeliverable. No further processing occurs. If the destination system accepts the message, the PCI server 48 forwards the voice message to the destination system.

If the subscriber chooses e-mail notification of incoming voice messages, the notification is sent via wireless or wireline network to the subscriber as specified in the subscriber profile. If the subscriber selected page notification, the notification will be sent through the paging network according to the profile. Either notification contains the mailbox number that originated the voice message, the date and time the message was received, and the length of the voice message in minutes.

In another example, a user having a digital voice mail system creates a voice mail message and addresses it to a user of analog voice mail system. The destination telephone number indicates that the message must be routed to the PCI server 48. The PCI server 48 checks the recipient's user profile and determines that the destination recipient has an analog voice mail system. The message is then passed into the analog voice mail system via the AMIS-Analog Protocol.

The subscriber will receive all of the voice mail messages at the voice mail system, if that is what is selected in the subscriber's profile. The subscriber may also set up the profile to receive at a wireless data terminal a text message that provides a notification of a voice mail message and envelope information of the message. Alternatively, a recipient voice mail system may send a text message containing a notification and envelope information of the message.

One feature of the AMIS-Digital Protocol is that if the original voice message is marked urgent by the sender, the AMIS-Digital Protocol includes priority status information in the message sent from the voice messaging system to the PCI server. Using this information, the PCI can screen priority messages.

The voice messaging gateway converts vendor proprietary voicemail format to the X.400 format and vice versa, thus bridging different messaging formats. It is responsible for voice transcoding from proprietary to or from X.400 form. It also maps options to or from the X.400 protocol as specified in AMIS.

C. Facsimile Messaging

FIG. 23 illustrates a PCI service for fax messaging. The PCI server 48 is connected to public switched telephone networks 432 via analog lines 444 or a T1 trunk 445. Fax machines 440 and fax servers 442 are connected to the PSTN 432. The PCI server 48 may also be connected to fax machines 440 and fax servers 442 by private lines 446 or an ISDN 438. For a subscriber to receive faxes, the fax machine telephone number must be supplied to the subscriber profile. The PCI will send a fax to the designated number and may send a text notification message or take other action as the user has selected in the profile. If the user has specified a wireless data terminal to receive the fax, the PCI server 48 will perform the necessary wireless adaptation and send a fax through a wireless data terminal.

A fax may be sent to a PCI subscriber by routing the fax to the PCI node but, the user must dial the telephone number of the PCI server 48 to send the fax to the subscriber. The PCI server 48 will send the fax to the subscriber's telephone number. The PCI server will check the subscriber's user profile to determine how the fax should be delivered. In this example, the fax message is sent to a fax machine at a designated telephone number.

Fax users having existing fax machines 440 must place a call over the PSTN network in order to access the PCI. This is because existing fax machines 420, unlike fax servers 422, are designed for point-to-point communication, not fax network communication. Users of an the existing fax machine 420 can access the PCI in two ways. One way is by two stage dialing. The sender first dials the PCI server 48 and then dials the recipient's number after receiving a prompt from the PCI server. Alternatively, the user can dial *FX+destination address. The fax machine user can directly dial from the fax terminal the recipient telephone number preceded by *FX, which signals the switch to automatically forward the fax call through the PCI server.

Fax servers that support X.400 messaging will include the personal number in the X.400 address field and there is no reason for the PCI server to prompt the user for the personal number.

D. CallCommand

PCI CallCommand (CC) service provides subscribers real-time control of voice calls while using a wireless data terminal or PDA. CC is designed to enhance personal number services (i.e., HLR), by providing real time call management capabilities to nomadic users.

CC provides the subscriber with four call management options:

- location independence (supplementing personal number/HLR applications);
- real-time call screening (using ANI and/or prompting the caller to enter a number);
- real-time call redirection (routing calls to any telephone number based on the calling party); and
- real-time short messaging (inputting or selecting a short message to be played to the caller).

When a caller dials a PCI subscriber's telephone number, the caller's telephone number is entered for screening. After the caller's number is entered, the PDA 30 can map the calling number to a name and alert the subscriber of an incoming call. The PDA 30 visually displays the name and/or number of the caller. The subscriber can then use the PDA 30 to accept the call by entering the telephone number of a nearby telephone to which the call will be routed. The subscriber can alternatively have the call forwarded to another number, such as a colleague's phone or a voice mailbox. If the subscriber decides not to respond to the caller, the caller is played an announcement and forwarded to a pre-determined default telephone number, such as a voice mail box or secretary.

CC allows the subscriber to send a brief message to the caller. Upon being alerted to an incoming call, the subscriber can select from a pre-defined list of messages, or type a new message, on the PDA 30. The message is transmitted to the PCI server 48 which converts the text message into speech and plays the message to the waiting caller. The caller receives the message and can leave voice mail for the subscriber, or be forwarded by the subscriber to an alternate telephone number.

Call command enables nomadic subscribers to manage, in real time, incoming calls using screening, rerouting and messaging to the caller. Call command subscribers having a

PDA 30 are visually informed of the name and/or number of the caller. The subscriber can elect to either accept the call, routing it to a specified number, such as the number of a nearby telephone; route the call to an alternate number, such as a voice mailbox, colleague phone number or secretary phone number; or respond to the caller with a brief keyed in message, which is played back to the caller in synthesized speech. The service also provides a number of non-real time call management features including predetermined screening lists, day of week/time of day routing schedules; and location sequencing. Call command allows mobile subscribers to manage and receive telephone calls using a personal digital assistant.

Call command users pre-subscribe to a wireless data service such as Ardis or RAM mobile data for E-mail, call management, and other wireless data applications. The wireless data provider provides a radio interface to the subscriber's PDA 30. A local exchange carrier interfaces with the wireless data provider over a PCI interface. When a caller enters his or her number the local exchange carrier forwards a data message containing the caller party information. The wireless data provider locates the subscriber and forwards the calling party information to the subscriber's PDA 30 where the subscriber is alerted of the call. The subscriber then forwards the data packet containing a routing number to the PCI. The PCI reroutes the call accordingly.

FIG. 24 is an illustrative example of a CallCommand service network. A caller, Joe 450, wishes to speak with Mary. Mary, who is away from the office, is a PCI subscriber having the CallCommand service. She has a PDA 30, which is turned on and registered at a visiting location. Joe dials Mary's office phone number. This phone number connects Joe's call to the PCI server 48. The PCI server 48 network instructs Joe to type in his telephone number. The PCI server 48 puts Joe on hold and plays back a message using synthesized speech informing Joe that the network is trying to locate Mary. The network recognizes that Mary is registered at a visiting location and sends a phone notification over a wireless data network 39. Mary is notified on a PDA 30 that a phone call is coming from a particular phone number. If Mary has already programmed a name corresponding to that phone number in a directory on her PDA 30, that name will also appear. Therefore, she is aware that she has a phone call from Joe Smith. Mary has several options. She may type or select a preselected message to be sent from the PDA 30 to the PCI network which converts the message into synthesized speech and play it back to Joe; she may forward the call to a nearby telephone, such as a cellular phone or a nearby pay phone 452 or forward the call to her secretary or colleagues's phone number; she may send a message and forward the call; or she may direct the call to her voice mail. In this illustration, Mary selects that the call be routed to a local public pay telephone 452. The call is routed over public switched telephone networks 432 to the selected telephone and Mary and Joe speak.

CallCommand has several advantageous features. Call command includes real time call screening which allows the subscriber to direct calls in a predetermined fashion based on the caller, the time or date, etc. Call command also has real time call rerouting which allows the subscriber to reroute calls to any phone number on a per call basis. That is, when a call is received, the subscriber may enter a phone number to which she wishes the call to be routed. For example, it may be a phone in an office she is visiting, a rented cellular phone, or a public telephone. In the event that a subscriber cannot respond to a caller because PDA is out

of range, the subscriber is preoccupied, the PDA is turned off, etc., the subscriber may select a default routing number. Such a default number could be a voice mailbox, secretary, colleague, or other phone number.

Call command also has a call messaging option. This allows the subscriber to send a brief message to a calling party. The message is typed on the PDA 30 and sent by wireless means to the PCI. The PCI converts the signal into synthesized speech and plays it to the caller. For example, a subscriber may be on an important customer call when his supervisor calls, expecting a response. The call command subscriber can send a message to the manager ("Talking to customer, call you back"), while still communicating with the customer.

The call messaging feature has two aspects. The first is the wireless messaging from the PDA 30 to the PCI. The second is the text to speech translation. The subscriber may type in a message on the PDA 30. The message originates as a data message from the wireless data provider network and is forwarded to a local exchange carrier network over the PCI interface. The PCI server 48 translates the wireless text message into speech and plays it back to the caller.

Call command also has a predetermined call management option. This feature allows a subscriber to have unanswered calls sent to predetermined default telephone numbers. For example, in the event a call cannot be answered, it is first routed to, for example, a service hotline; if the service hotline does not answer, it is forwarded to a secretary; and if the secretary does not answer, then it is forwarded to voice mail. Each time the call is forwarded to the next number a message is played back to the caller. The routing numbers and sequence order may be altered by updating the subscriber profile in the PCI database.

This feature also allows the subscriber to predetermine the management of certain numbers. For an example, a subscriber may want to be notified in real time only if a calling party number matches that of an immediate family member, supervisor, or important client. In other cases, the subscriber may wish to have calls automatically rerouted to a default number, such as a voice mailbox or secretary. For a company which does business over a large geographic area, the subscriber may wish to have the phone call routed to different places based on the geographic origin of the call. For example, calls originating from New York or New Jersey may be routed to a sales representative for that area and calls originating from California are routed to a sales representative for that geographic area.

The call management feature allows the subscriber to predetermine call routing based on the time of day. For example, a subscriber may wish to have calls forwarded to a customer service staff during business hours and be personally notified of calls during non-business hours.

Wireless technologies make subscribers constantly available, therefore it is important to give them the ability to accept or decline communication attempts at their discretion. While delivering the calling number to the PDA 30 allows a subscriber to locally screen each attempt as they occur, the subscriber may be in an environment where distractions are unacceptable such as an important meeting. Therefore, the subscriber is able to create lists against which callers are screened by the network delivering the service. These network resident lists reduce the number of call attempts to the subscriber's remote wireless device. The CallCommand service allows subscribers to turn screening on and off and add or remove numbers and names from these lists.

Like the wireless data services, CallCommand service profile management allows subscribers to modify or update

their subscriber profiles which preferably reside in a PCI database 44. Profiles are created and deleted by the service integrator controlled by the service provider. A subscriber may modify the profile by either wireless or wireline messaging using DTMF tones or data.

The subscriber profile can be updated by a wireless device such as a PDA 30. A subscriber profile may be modified by wireline communications as well. A subscriber may use a telephone or wireline data terminal to contact an PCI database 44. The PCI server 48 acts as a mediation device between wireless terminals and an PCI database 44 for DTMF profile updates. It is preferable that the wireline network be supported by a service management operating system capable of prompting subscribers using a DTMF telephone for a profile update that is completed when the service management operating system makes the appropriate changes in the subscriber's profile in the PCI database 44. When a service management operations system is used to modify the profile in the PCI database 44, the changes should also be reported to PCI server 48 so that the service profile cache 51 may be modified accordingly.

Call command has its locus of control in service logic in the PCI database 44. The PCI database 44 service logic provides (1) service status maintenance, which maintains the status of the subscriber as registered or deregistered; (2) call screening, which provides network based screening of incoming calls; (3) call routing, which provides routing destinations for each call; this information is based on information received from the subscriber in real time via the PCI server 48 or by preprogrammed instructions in the subscriber profile in the PCI database 44; (4) profile management support, which is service logic in the PCI database which permits "downloading" of the subscriber's profile to the PCI server 48 for presentation to an update by the subscriber through the PDA 30; (5) security, wherein subscriber authentication and validation must be supported to safeguard the subscriber's personal information and status such as location; and (6) accounting management wherein, the PCI database 44 collects accounting parameters to support service provider billing.

The subscriber profile in the PCI database 44 must contain certain information. This type of information includes a subscriber identifier; subscriber authentication information; wireless data provider parameters; registration status; service mode (default, override, or command); screening lists; and routing tables (including day of week and time of day parameters).

The application supporting the CallCommand server in the PCI server 48 includes a mobility management function. The mobility management function provides status location information to a database in the PCI database 44 and is responsible for delivering a Temporary Location Destination number on request from the PCI database 44. To do this, the PCI server 48 is responsible for (1) location registration, the PCI server 48 updating the PCI database 44 with the subscriber's PDA 30 status (for example, registered on a wireless data network or registered on a wired telephone); (2) play announcements and digit collection for caller information and presentation to the subscriber; (3) remote alerting, such as formatting and sending call information through a wireless data network to the PDA 30 for presentation to the subscriber; (4) profile management support (the PCI server 48 must support the "downloading" of the subscriber's profile and packaging for presentation to update by the subscriber through the PDA 30); (5) security (the subscriber authentication invalidation information must be supported to safeguard the subscriber's personal information

and status such as location); and (6) account management (the PCI server should collect accounting parameters for presentation to the service provider for billing).

VII. Message Flows

PCI wireless messaging involves three types of message flow. The first is sending a message from one subscriber to another, the second is receiving a message regardless of whether the subscriber is using a wireless or wireline terminal, and the third is sending a message to a non-subscriber.

FIG. 25 is an illustrative example of the message flow of a PCI wireless subscriber sending a message. The PCI user submits a message 502. The message is received by a message transfer agent in the PCI server. The MTA copies and temporarily stores the originating and destination addresses 504. The MTA sends to the mobility manager function in the PCI server a request to validate the sending user as a PCI subscriber 506. The mobility manager sends this validation request to the PCI database and waits for a response 508. Upon receipt of an affirmative validation from the PCI database, the mobility manager sends the validation response to the MTA 510, 512. The MTA then sends the mobility manager a request for the address of the user's home MTA 514. The mobility manager routes this request to the PCI database 516. Upon receipt of a response from the PCI database, the mobility manager routes the home MTA address to the MTA 518, 520. The MTA then routes the message to the home MTA 522. If a third party PCI database must be consulted, the home MTA request will be directed from the PCI database to a third party PCI database 524, 526.

FIG. 26 illustrates an example of the message flow of a wireless PCI user receiving a message. When the PCI server receives a message from a subscriber, the MTA in the PCI server copies and temporarily stores the destination address and the message 530. The MTA sends to the mobility manager function in the PCI server a request for the PCI subscriber's user profile 532. The mobility manager will retrieve this profile request from the PCI database 534 (If third party PCI database is involved, the local PCI database contacts the third party PCI database through a switch transfer point 536, 538.) Upon receipt of the subscriber's profile from the PCI database 540, the mobility manager requests the message from the MTA using a "message forward request" message 542. When the mobility manager receives the message from the MTA 544, the mobility manager processes the message as indicated by the subscriber's profile, which may involve media conversion or screening 546. After processing the message, the mobility manager sends the message to the MTA for delivery 548, 550. Alternatively, the PCI server mobility manager function may directly deliver the message to the termination receiver 552.

FIG. 27 illustrates an example of a message flow from a PCI wireless subscriber to a non-subscriber. When the MTA receives a message from a PCI subscriber 560, the MTA copies and temporarily stores the originating addresses and the message 562. The MTA sends the mobility manager a request to validate the originating address as a PCI subscriber 564. The mobility manager will send this validation request to the PCI database and wait for a response 566. When the mobility manager receives an affirmative validation response from the PCI database 568, the mobility manager sends the validation response to the MTA 570. Next, the mobility manager sends to the PCI database a request for the PCI subscriber's profile 572. Upon receipt of the subscriber's profile from the PCI database 574, the mobility manager requests the message from the MTA using

a "message forward request" 576. Upon receipt of the message from the MTA 578, the mobility manager processes the message as indicated by the user's profile, which may require media conversion or obtaining the addresses for the distribution list for the message 580. After processing the message, the mobility manager sends the message to the MTA for delivery 582, 584. Alternatively, the MTA may directly deliver the message 586.

VIII. The PDA Application

To better understand the capabilities of PCI and PDA/PCI server interface, a discussion of the PDA user interface is helpful. The user interface is application software residing in the PDA. This software is described by describing the screens displayed on a PCI subscriber's PDA screen. The following discussion is for an illustrative embodiment of the PDA user interface. A person skilled in the art recognizes that the interface may be implemented in a myriad of ways.

FIG. 28 is an illustrative example of a PDA user interface main menu. The menu allows the user to enter the CallCommand or wireless messaging services, update the user profile, or check the status of the system by clicking on buttons 610, 612, 614, 616, respectively.

FIG. 29 shows a computer screen after "status request" 616 is selected. The status request screen shows that there are five local originating messages (waiting to be sent by the PDA) and three outgoing messages (waiting to be retrieved) in boxes 618, 620, respectively. The various services' status is also displayed. As seen in FIG. 29, this subscriber's wireline registration is on, as seen in box 622. This registers the subscriber on a particular wireline telephone, seen in box 624. This registration will direct calls to this phone number. The status request also advises this subscriber about the status of the CallCommand and wireless messaging features, as seen in boxes 626, 628.

FIG. 30 illustrates an exemplary screen if the subscriber clicks "Call Command" 610 on the main menu (FIG. 28). If the subscriber clicks on "YES" 630, a screen such as FIG. 31 appears. The screen includes a window 632 which shows the status of various received telephone calls. The status indicates whether an incoming call was answered, forwarded to another number, was hung up before being answered; unanswered; or forwarded to voice mail. The phone number and receipt time and date of each call are displayed. The subscriber may save or delete any entry the subscriber by clicking box 634 or 636, respectively. The subscriber may also connect or disconnect the CallCommand service by clicking box 638, 640, respectively.

FIG. 32 is an illustrative example of a screen if the subscriber selected "Wireless Messaging" 512 on the main menu (FIG. 28). The subscriber will be connected to the wireless messaging service if "YES" 642 is clicked.

FIG. 33 is an example of a screen which may appear if the subscriber selected "Profile" 614 from the main menu (FIG. 28). If the subscriber selects "Fax" 644 from this screen, a screen such as that shown in FIG. 34 may appear, which allows the subscriber to enter a phone number into box 646 to which faxes will be directed. Turning on e-mail screening activates both the subject and address screening. Subject screening takes priority over address screening parameters.

If the subscriber selected "e-mail" 648 on the screen FIG. 33, a screen such seen in FIG. 35 appears. The subscriber can select where e-mail messages should be delivered (destination screening) 650, where notification of e-mail receipt should be delivered (notification screening) 652, whether messages should be screened at all 654 and, if so, how they should be screened 656, 658.

The destination 650 allows the subscriber to select destinations for incoming e-mail. Messages that satisfy the

screening requirement may be sent to two destinations (match A, match B). As shown in this illustrative example, e-mail received which match the subscriber's preprogrammed screening criteria are to be delivered only to a wireline e-mail, such as the subscriber's personal computer at the office, because match A 660 and match B 662 designate the same destination. All received e-mail messages which do not meet either criteria ("not matched") are sent to a selected fax machine 664, for example, the fax machine at the subscriber's office.

The subscriber also indicates where notification of a received e-mail should be sent 652. Notification for all e-mail messages meeting the screening requirement should be sent to a selected fax machine 666. The PCI network will select information about the e-mail origination such as the author, recipient, and subject matter and convert it to a facsimile format and send the message to a fax machine. Notification of all e-mail that does not meet the screening criteria are sent to a pager 668. The PCI network will take the originating message information and turn it into alphanumeric information according to the TAP protocol and send it to the subscriber's pager. If the screening option is turned off, notification of all incoming e-mail is sent to voicemail 670. The PCI network will convert the origination information from text to synthesized speech and send the information to a selected voice mailbox.

The user may also select whether to screen incoming e-mail messages at all 654. If the screening is on, the user may screen e-mail based on the originating address 656 or subject matter 658.

FIG. 36 is an illustrative screen which the subscriber may use to edit e-mail screening according to address by clicking box 656 (FIG. 35). The subscriber may input new e-mail addressees into box 672 and add them to a list by clicking a box 674 or select addresses already entered to be included in a screening criteria as seen in box 676. For example, the user may want e-mail messages originating from the following addresses to be routed according to the screening criteria: cc:stanp, cc:lizzo, and cc:rupin. E-mail messages originating from these addresses will be routed and notified according to the criteria selected on the screen illustrated in FIG. 35.

If the user selected to edit the "subject" a screening criteria based on "subjects" by clicking box 658 (FIG. 35), a screen such as that illustrated in FIG. 37 is presented. The user may type in to boxes 678 particular subjects which should be routed according to a screening criteria. The subject will search the incoming e-mail origination information to determine the subject of the e-mail. Subjects may include "urgent", "personal", the name of a client or project, etc.

If the subscriber viewing the "profile menu" (FIG. 33) clicked "voice mail" 680, a screen such as that illustrated in FIG. 38 is presented. The subscriber can type into a box 682 in the destination voice mail system phone number. The subscriber may also select notification based on certain screening criteria 684. If the incoming voice mail message matches the screening criteria, the subscriber has selected to be notified by a message sent to the PDA 686. If the voice mail message does not match a screening parameter, the subscriber has selected to not be notified 688. If the screening option is turned off, the subscriber has decided to not be notified of any voice mail messages 690.

The user has the option of turning the screening on or off 692. If the screening is on, the messages are screened by caller 694. If the user decides to screen by caller by clicking box 694, a screen such as illustrated in FIG. 39 is displayed.

The user may type into boxes 696 certain incoming phone number which meet the screening parameters.

If the subscriber viewing the "profile menu" (FIG. 33) clicked "Call Command", 698 a screen such as illustrated in FIG. 40 is displayed. The subscriber may type in a box 700 a wireline registration telephone number, which is a number to which incoming calls may be forwarded. The subscriber has the option to edit screening criteria phone numbers or to edit reply messages to be sent to the caller.

If the subscriber wishes to edit forwarding call numbers box 702 is clicked and a screen such as illustrated in FIG. 41 is displayed. The user may type into boxes 704 or select certain phone numbers which are to be forwarded to a preselected phone number if screening is on.

If the subscriber viewing the "Call Command" screen (FIG. 40) clicked "edit messages" 706, a screen such as illustrated in FIG. 42 is displayed. The user may compose a unique message in box 708 or edit one already on a list shown in box 710.

If the subscriber has connected the Call Command and an incoming call is received, a screen such as that illustrated in FIG. 43 is displayed. This screen displays in a box 712 the number from which the incoming call originates. The user has the option of sending a message and forwarding the call by clicking box 714, forwarding the call without a message by clicking box 716, sending a message and not forwarding the call by clicking box 718, or routing the call to voice mail by clicking box 720.

If either the "message and forward" or "forward" 716 option is selected, a screen such as that illustrated in FIG. 44 is displayed. This allows the subscriber to select one of several the preselected phone numbers 722-728 to forward, or select another phone number, such as a nearby telephone to which the call is to be forwarded. This phone number may be typed into a box 730.

If the user selected the "message and forward" 714 or "message only" 718 selections, a screen such as that shown in FIG. 45 is displayed. This allows the subscriber to type in a message into a box 732 or select a predetermined message shown in box 4134 to be sent to the incoming caller. This message is sent by wireless communications to the PCI network where the ISP converts the message into synthesized speech and plays it for the caller. For example, if the subscriber desires to call back the incoming caller as soon as possible, the message "will call back ASAP" is selected. This message is transmitted from the PDA by wireless communications to the PCI network. The ISP will receive the message and convert it to synthesize speech and send the synthesize speech message to the incoming caller.

IX. Billing

Billing operations is supported by an Automatic Message Accounting Network Function. The automatic network accounting measures, collects, formats and outputs network usage information to upstream billing and other operation application and service purposes. Preferably, automatic message accounting data is collected at various stages of service flows across network equipment and services.

X. Conclusion

A system has been described which enables a wireless PDA user to remotely control a large number of messaging and call handling options.

While the invention has been described by the reference to specific embodiments, this was for purposes of illustration only and should not be construed to limit the spirit or the scope of the invention.

APPENDIX A

Glossary of Acronyms	
AIN	advanced intelligent network
ANI	automatic number identification
APS	alphanumeric paging server
ATM	asynchronous transfer mode
BRI	basic rate interface
CC	Call Command
CCDB	call contact database
CO	central office
CPE	consumer premises equipment
CPR	call process request
D&R	data and report database
DRS	data and report subdivision
DTMF	dual tone multiple frequency
GDI	generic data interface
HLR	home location register
IP	intelligent peripheral
IPI	intelligent peripheral interface
ISDN	integrated signaling digital networks
ISP	intelligent services peripheral
LEC	local exchange carrier
MOC	maintenance and operation console
MS	mail storage system
MSAP	multiple services application platform
MTA	message transfer agent
PCI	personal communications internetwork
PDA	personal digital assistant
POP	post office protocol
PPSN	public packet switched network
PSTN	public switched telephone network
SCP	service control point
SMDS	switched multimegabit digital service
SMS	service management system
SMTP	simple messaging transfer protocol
SNI	service network interface
SPACE ®	service provisioning and creation environment
SPC	service profile cache
SSP AT	service switching point access-tandem
TAP	telocator alphanumeric protocol
TCAP	transaction capable application program
TCP	transaction capable processing
VLR	visiting location register

APPENDIX B

PCI Profile Element	GDI Tag ID	Type and Max Length
<u>Personal Data (1)</u>		
Subscriber ID Number	1	d10
Password	2	c8
E-mail Address	3	c32*
V-Mail System Phone Number	4	d10
V-Mail System Mailbox Number	5	d10
Paging Terminal Phone Number	6	d10
Paging PIN	7	c8
Mail Storage Account ID	8	c32*
Mail Storage Password	9	c8
Wireless Provider Subscriber ID	10	c10
Wireless Voice Phone Number	11	d10
Fax Number	12	d10
Profile Version Number	13	n4
<u>Call Command Service Profile (2)</u>		
Call Command Registration Status	21	c1
Wireline Registration Number	22	d10
<u>E-Mail Routing (3)</u>		
Primary Destination 1	31	c1
Primary Destination 2	32	c1
Primary Notification 1	33	c1
Secondary Destination	34	c1
Secondary Notification	35	c1
Default Destination	36	c1

APPENDIX B-continued

PCI Profile Element	GDI Tag ID	Type and Max Length
5	Default Notification	37 c1
	<u>E-Mail Subject Screening (4)</u>	
	E-Mail Screening Status	41 c1
	Subject1	42 c1
10	Subject2	43 c1
	Subject3	44 c1
	Subject4	45 c1
	Subject5	46 c1
	<u>E-Mail From Screening (5)</u>	
15	E-Mail Screening Status	41 c1
	From1	52 c12
	From2	53 c12
	From3	54 c12
	From4	55 c12
	From5	56 c12
20	From6	57 c12
	From7	58 c12
	From8	59 c12
	From9	60 c12
	From10	61 c12
	From11	62 c12
	From12	63 c12
25	From13	64 c12
	From14	65 c12
	From15	66 c12
	<u>Voice Mail Profile (6)</u>	
	V-Mail Screening Status	71 c1
30	From1	72 c12
	From2	73 c12
	From3	74 c12
	From4	75 c12
	From5	76 c12
	Primary Destination	77 c1
35	Primary Notification 1	78 c1
	Secondary Destination	79 c1
	Secondary Notification	80 c1
	Default Destination	81 c1
	Default Notification	82 c1

APPENDIX C

Tag	Description
45	001 Password for subscriber registration
	002 Password for retrieval of messages from message store
	003 FAX Machine Number
	004 Call Command Status flag (1 = ON and 0 = OFF)
	005 Wireline Registration Number for remote call forwarding
	006 E-mail screening status flag (1 = ON and 0 = OFF)
50	007-021 E-mail "From" screening 1 through 15
	022-026 E-mail "Subject" screening 1 through 5
	027 E-mail Destination A - Screening Criteria Match
	028 E-mail Destination B - Screening Criteria Match
	029 E-mail Notification - Screening Criteria Match
	030 E-mail Notification - Screening Criteria No Match
	031 E-mail Notification - Screening Criteria Not Match
55	032 E-mail Notification - Screening OFF
	033 Voice-mail Screening Status Flag (1 = ON and 0 = OFF)
	034-038 Voice-mail "From" Screening 1 through 5
	039 Voice-mail "Urgent" Flag (1 = ON and 0 = OFF)
	040 Voice-mail Notification - Screening Criteria Match
	041 Voice-mail Notification - Screening Criteria Not Match
60	042 Voice-mail Notification - Screening OFF

We claim:

1. A personal communication internetwork for sending and receiving wireless and wireline messages, said internetwork comprising

(1) a server, including:

- (a) a message transfer agent interfaced with at least one wireline data network;
 - (b) a wireless data network protocol handler connected to the message transfer agent and interfacing with at least one wireless data network;
 - (c) a mobility controller, including
 - i. a subscriber profile cache;
 - ii. a message router responsive to message routing parameters in the subscriber profile;
 - iii. an interface connected to exchange message routing parameters between the subscriber profile and the at least one wireless network;
 - iv. an interface connected to exchange message routing parameters between the subscriber profile and a personal communication control point; and
 - v. an interface with at least one of a telephone network, an alphanumeric pager network, and a voice peripheral; and
- a personal communication control point connected to the server, including:
- (a) a first interface connected to exchange message routing parameter signals with the server;
 - (b) a second interface connected to exchange generic data message routing parameter signals with the server;
 - (c) a subscriber profile connected to receive and maintain message routing parameters; and
 - (d) a call processor connected between the subscriber profile and the first and second interfaces.

2. The personal communication internetwork of claim 1, wherein the internetworking is built on an Advanced Intelligent Network architecture, the server is an Intelligent Peripheral, and the control point is a Service Control Point.

3. The personal communication internetwork of claim 1, further including a personal digital assistant having a wireless data network interface connected to exchange message routing parameters and an application designed to communicate with the interface to receive, update, and transmit the message routing parameters.

4. The personal communication internetwork of claim 1, wherein the server further comprises:

a message converter connected to receive from an interface a message in a first format and output to another interface the message in a second format.

5. A method for providing personal communication services to a called subscriber who can receive any of an electronic mail, facsimile, and a voice mail message under a single address regardless of the format of the message from a calling subscriber who can send messages in more than one format and on either a wireless or a wireline network, said method comprising the steps of:

storing in a service provider database common to a plurality of subscribers and connected to both the wireless and wireline networks and responsive to inputs from the subscribers a called subscriber profile for each of said subscribers, said profile containing message routing commands for each called subscriber depending on the format of the message;

receiving any of an electronic mail, a facsimile, and a voice mail message addressed to a particular called subscriber at said particular called subscriber's single address from a calling subscriber on either of the wireless and wireline networks;

determining from the stored called subscriber profile the message routing commands for routing the received message to the particular called subscriber dependent on the format of the message;

responsive to a message routing command, converting the received message from the received format to a different format; and

routing the received message in said different format to any of a wireless or a wireline network according to the message routing commands in the called subscriber profile.

6. A personal communication internetwork for sending and receiving wireless and wireline messages between subscribers in different formats, each subscriber having a single address to which all incoming messages are addressed regardless of the format of the message, said incoming messages including at least a plurality of telephone, pager, facsimile, voice mail, and electronic text communications, said internetwork including:

means connected to receive and transmit messages in more than one format from a calling party over wireless and wireline communication networks;

means common to the subscribers and connected to said wireless and wireline networks for storing for each subscriber a profile responsive to inputs received from each of the subscribers and configured to store routing commands including communication forwarding options for said each subscriber depending on the format of the message from the calling party; and

a communication router connected to receive the received messages from the wireless and wireline networks and being responsive to the profile in said storing means for transmitting the received messages over the wireless and wireline networks according to the stored forwarding options, said communication router including a media format translation device configured to translate a received communication into a different communication medium for transmission.

7. The personal communications internetwork of claim 6 further including a server connected to said means for storing a profile for each subscriber, said server including a processor and said processor including an interface with at least a plurality of said means for storing a profile, a wireless data network, an alphanumeric paging network, a telephone network switch, and a text-to-speech voice peripheral.

8. The personal communications internetwork of claim 6 wherein said communication router further comprises an audio messaging interface specification analog protocol connected to at least one of a modem, a private line, and an integrated signaling digital network basic rate interface.

9. A method for personal communications comprising the steps of:

storing a subscriber profile containing message routing commands for a subscriber;

receiving any of an electronic mail, a facsimile, and a voice mail message addressed to the subscriber from either of a wireless and a wireline network;

consulting the subscriber file for instructions for routing the received message; and

routing the received message to any of a wireless or wireline network according to the instructions in the subscriber profile; and wherein said step of receiving a voice mail message addressed to the subscriber further includes the steps of:

receiving from an originating voice mail system an incoming voice mail message call at a network, said voice mail message call including identification information;

extracting the identification information from the message to determine the origin of the voice mail message;

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consulting a profile contained in the network to determine routing instructions, said routing instructions including one of:

- (i) routing the incoming call to a preselected telephone number; and
- (ii) sending a notification to the subscriber of the incoming call via a medium other than a telephone call;

routing the received voice mail message according to the routing instructions in the profile;

said step of consulting further comprising determining if the identification of the originator indicates that the originator is also the subscriber;

if the originator is the subscriber, said step of routing further comprises the steps of:

- (i) not forwarding the voice mail message; and

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(ii) extracting header information from the identification information and transmitting a notification to the subscriber containing the header information; and

if the originator is not the subscriber, said step of routing further comprises the steps of:

- (i) if the message exceeds predetermined length, rejecting the message; and
- (ii) if the message is less than or equal to the predetermined length, accepting and routing the message.

10 **10.** The method of claim 9 further comprising before the step of routing, the step of translating the voice mail message from analog format into a digital format.

15 **11.** The method of claim 9 further comprising before the step of routing, the step of translating the voice mail message from a digital format into an analog format.

* * * * *

Exhibit 1009



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(54) **TOUCHSCREEN USER INTERFACE:
BLUETOOTH[00d6] STYLUS FOR
PERFORMING RIGHT MOUSE CLICKS**

Publication Classification

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(52) **U.S. Cl. 345/179**

(75) **Inventors: Dwip Banerjee, Austin, TX (US);
Rabindranath Dutta, Austin, TX (US);
Robert J. Kamper, Round Rock, TX
(US)**

(57) **ABSTRACT**

A method, program and system for enabling alternate input commands by means of a stylus associated with a personal digital assistant (PDA) are provided. The method comprises applying pressure to a pressure sensor on the stylus, which invokes an application on the PDA that interprets stylus input as equivalent to a right mouse click on a computer. In response to the stylus being touched to an object displayed by the PDA, the application opens a menu associated with that object, wherein the menu allows a user to initiate specified object functions and to change specified properties of the object. Invoking the application on the PDA is accomplished via a Bluetooth™ signal between the stylus and PDA.

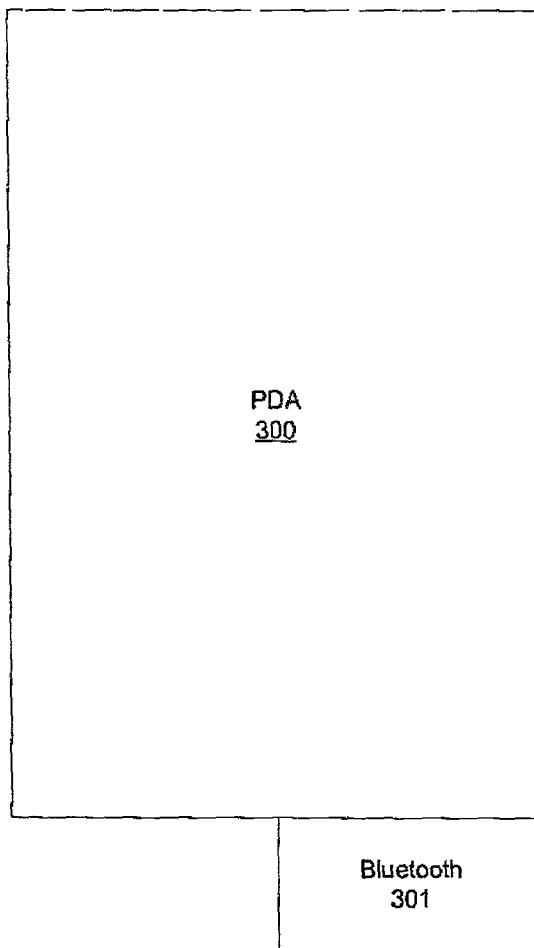
Correspondence Address:

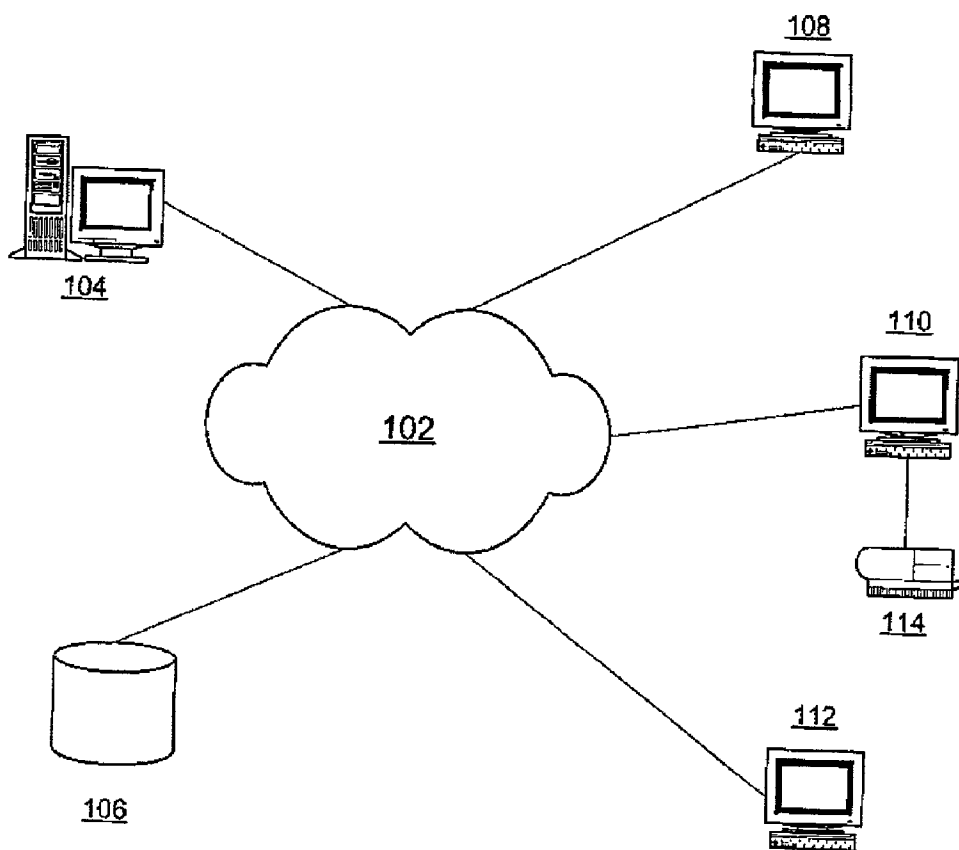
**Duke W. Yee
Carstens, Yee & Cahoon, LLP
P.O. Box 802334
Dallas, TX 75380 (US)**

(73) **Assignee: International Business Machines Corporation, Armonk, NY (US)**

(21) **Appl. No.: 10/042,048**

(22) **Filed: Jan. 8, 2002**





100
Network

Figure 1

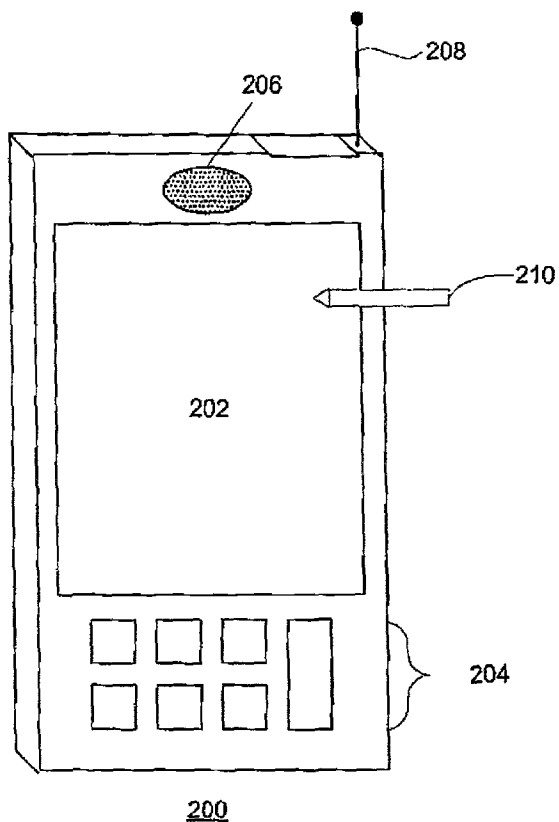
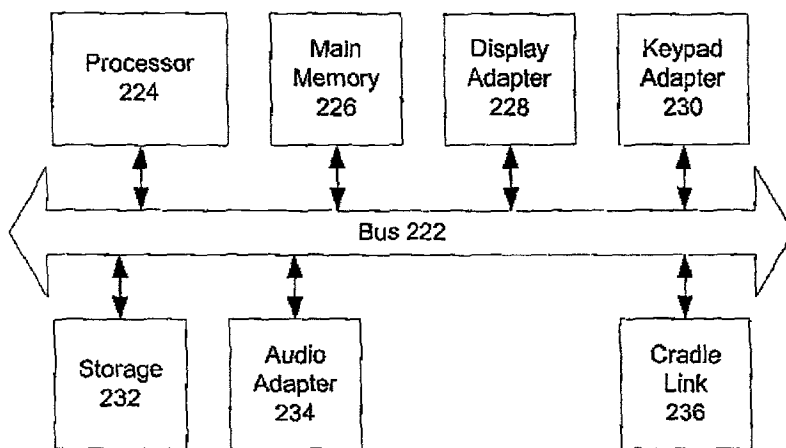


Figure 2A



200
Figure 2B

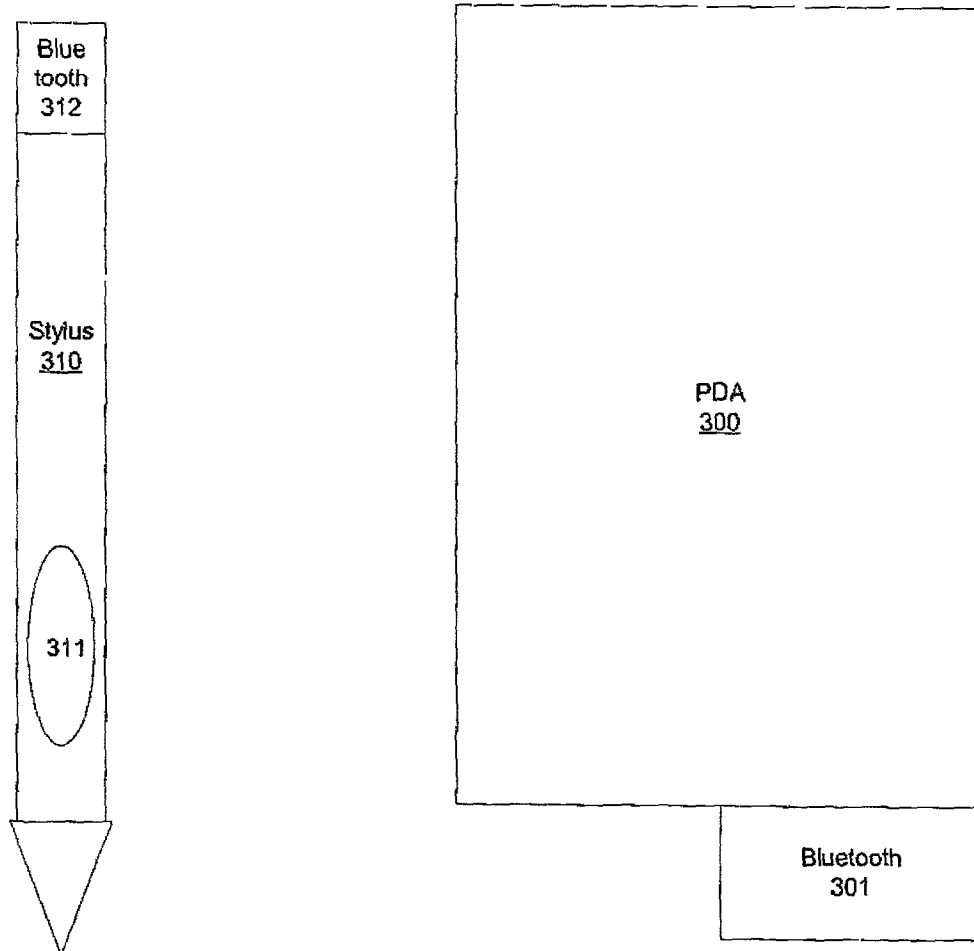


Figure 3

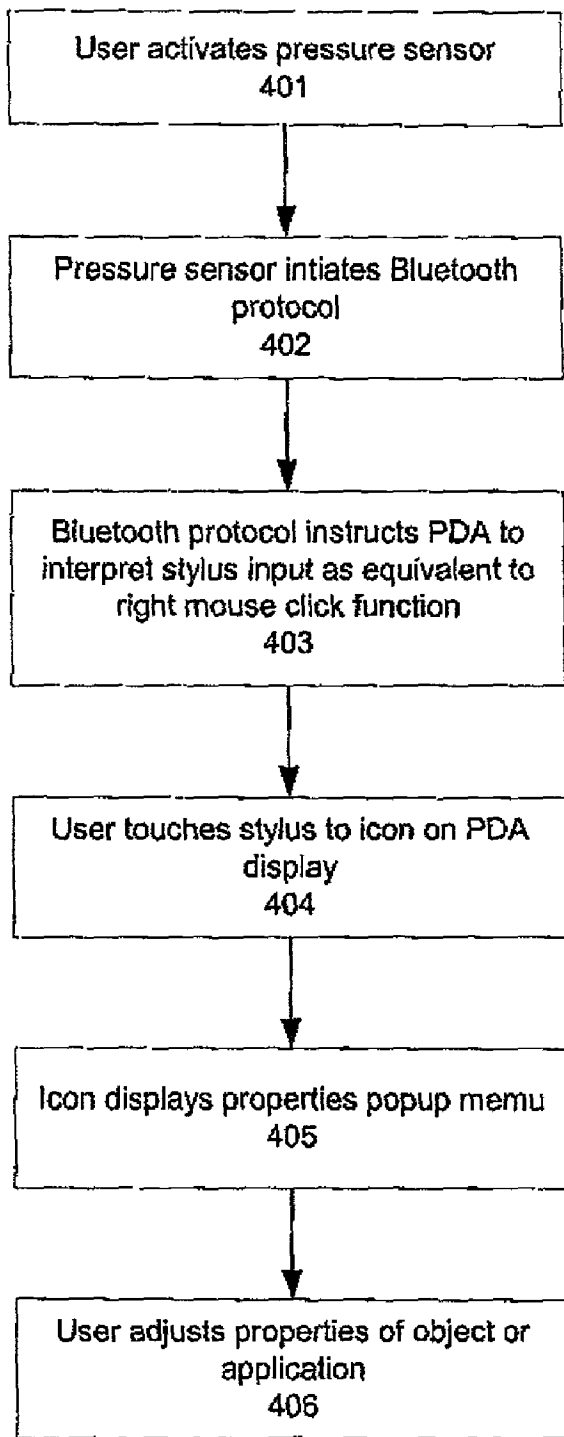


Figure 4

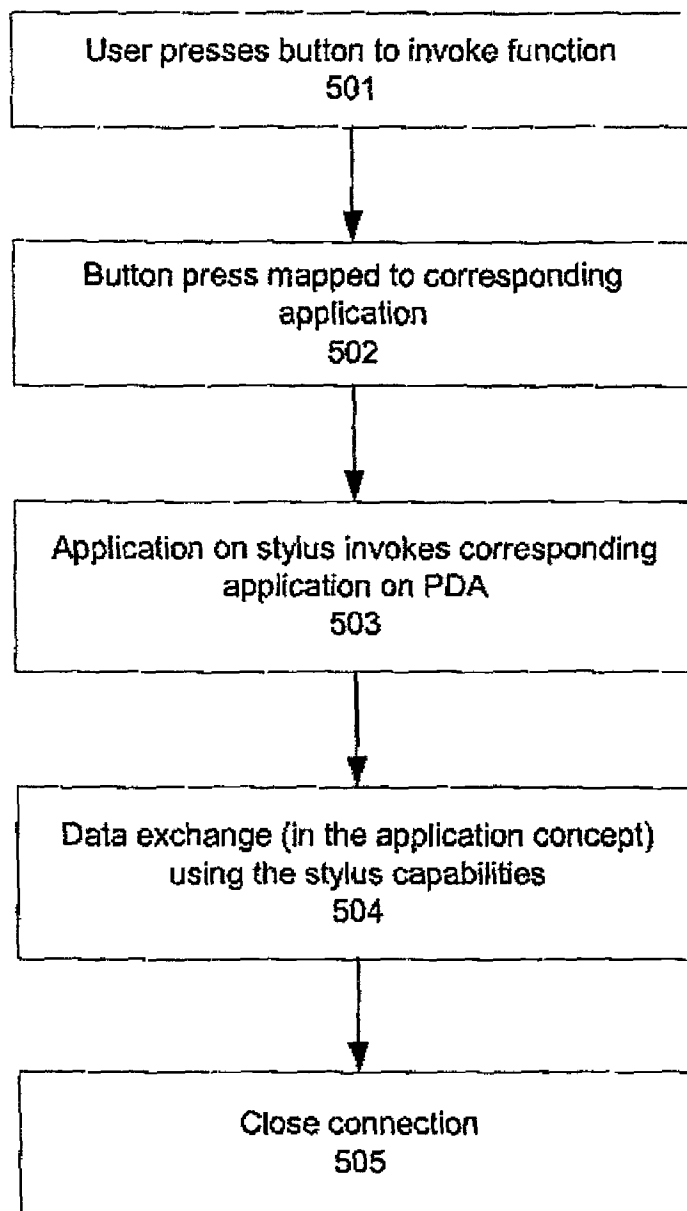


Figure 5

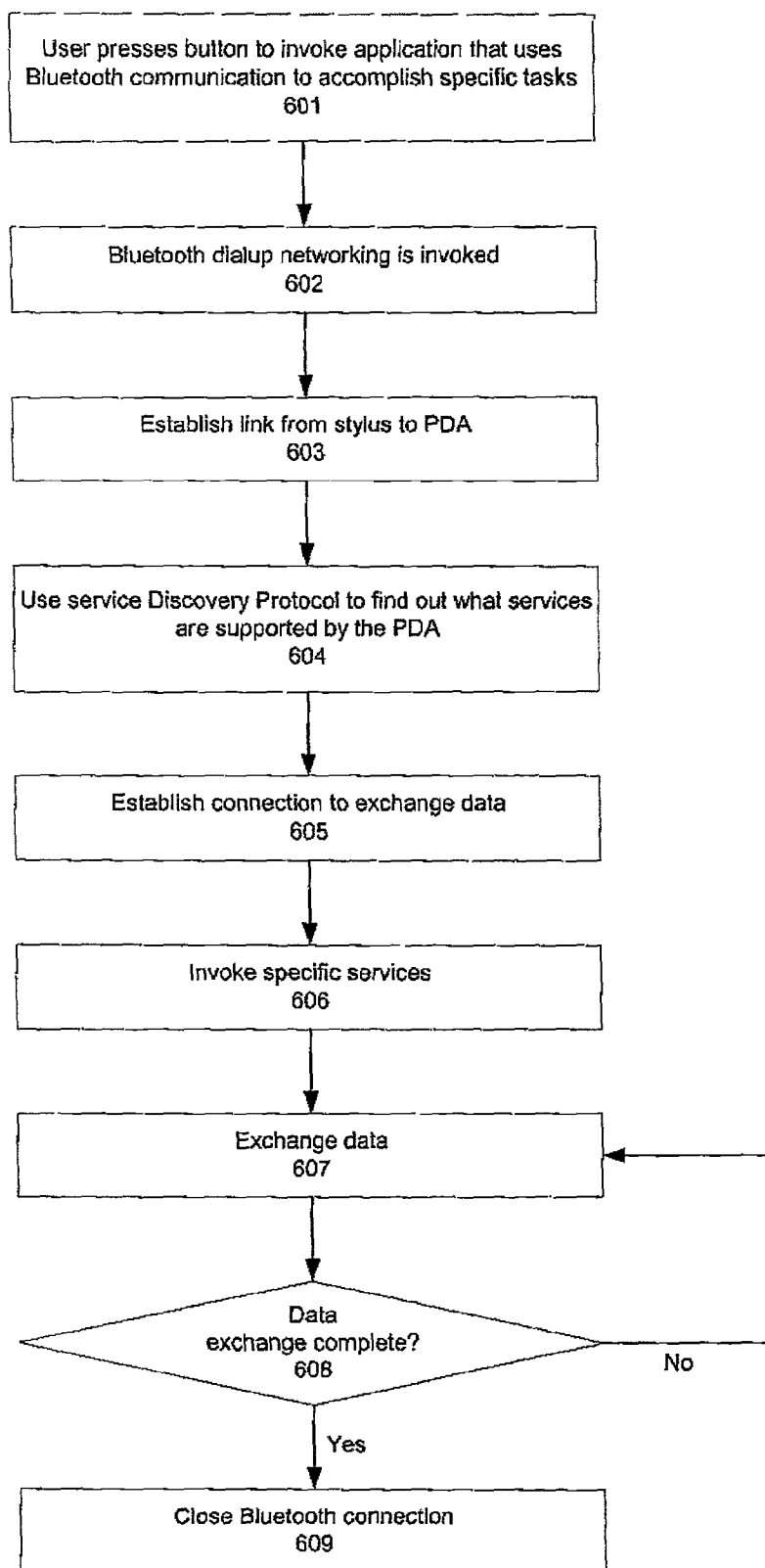


Figure 6

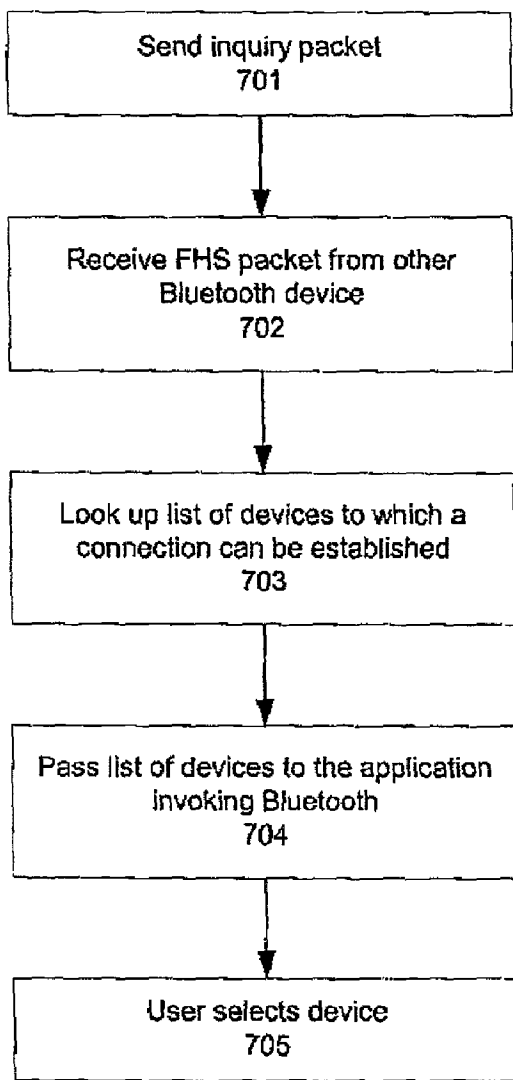


Figure 7

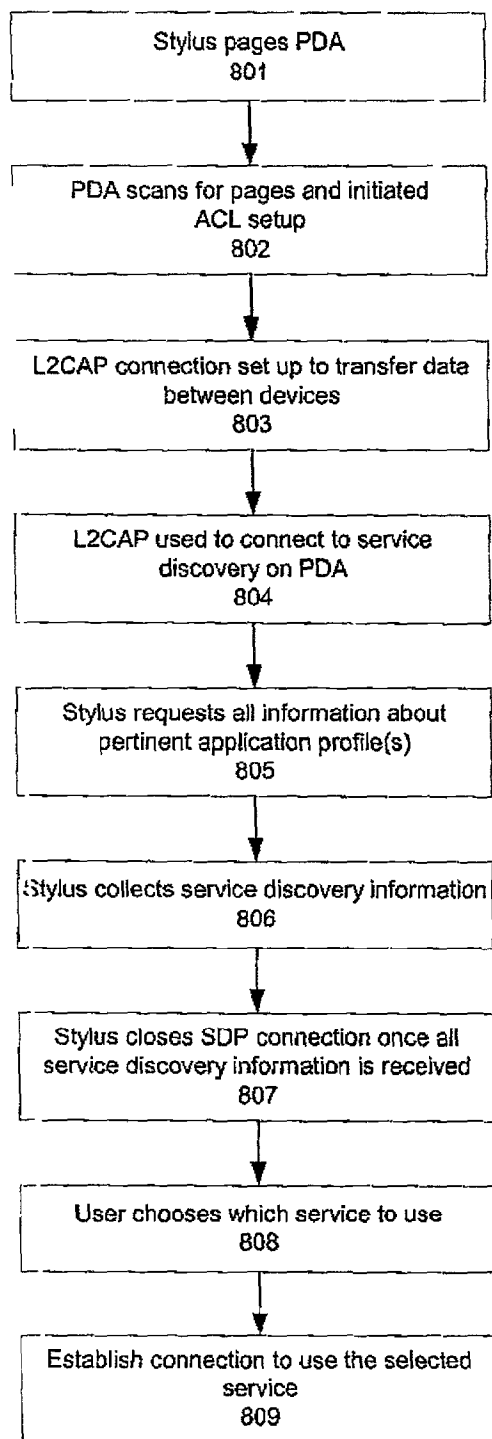


Figure 8

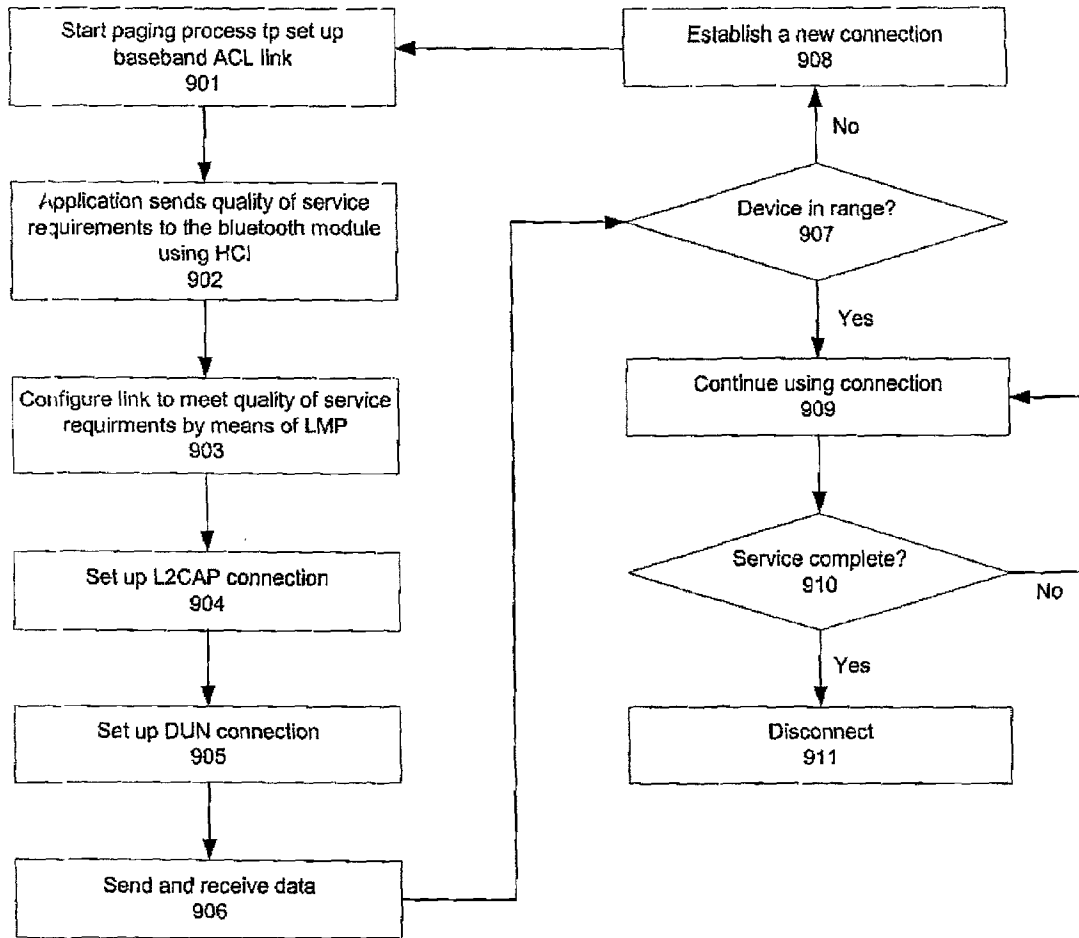


Figure 9

**TOUCHSCREEN USER INTERFACE:
BLUETOOTH[00D6] STYLUS FOR PERFORMING
RIGHT MOUSE CLICKS**

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates generally to portable computing devices and more specifically to data input.

[0003] 2. Description of Related Art

[0004] Personal Digital Assistants (PDAs) often rely on a stylus to allow the user to select objects and icons displayed on the PDA touchscreen. In traditional desktop and laptop computers employing a mouse or mouse equivalent (for laptops), selection of icons and objects may be performed with either type of mouse click. Traditionally, a left mouse click opens or initiates an underlying object or application represented by an icon. Right mouse clicks are used to display property menus associated with an icon, which allow the user to make adjustments to the function of the applications in question.

[0005] Current stylus-based systems of writing on touchscreens use the stylus as the equivalent of a single-click mouse (usually equivalent to a traditional left mouse click). However, many applications are better if designed to accommodate two mouse click functions (i.e. left and right click).

[0006] Therefore, it would be desirable to have a method for enabling the equivalent of two mouse click functions with a single writing stylus.

SUMMARY OF THE INVENTION

[0007] The present invention provides a method, program and system for enabling alternate input commands by means of a stylus associated with a personal digital assistant (PDA). The method comprises applying pressure to a pressure sensor on the stylus, which invokes an application on the PDA that interprets stylus input as equivalent to a right mouse click on a computer. In response to the stylus being touched to an object displayed by the PDA, the application opens a menu associated with that object, wherein the menu allows a user to initiate specified object functions and to change specified properties of the object. Invoking the application on the PDA is accomplished via a Bluetooth™ signal between the stylus and PDA.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

[0009] **FIG. 1** depicts a pictorial representation of a network of data processing systems in which the present invention may be implemented;

[0010] **FIG. 2A** depicts a diagram of a client in the form of a personal digital assistant (PDA) in accordance with a preferred embodiment of the present invention;

[0011] **FIG. 2B** depicts a block diagram illustrating the hardware configuration of a PDA in accordance with a preferred embodiment of the present invention;

[0012] **FIG. 3** depicts a schematic diagram illustrating the incorporation of Bluetooth technology into a PDA/stylus design in accordance with the present invention;

[0013] **FIG. 4** depicts a flowchart illustrating the process of simulating a mouse right click with a stylus in accordance with the present invention;

[0014] **FIG. 5** depicts a flowchart illustrating the general algorithm for invoking the Bluetooth to carry out the desired function in accordance with the present invention;

[0015] **FIG. 6** depicts a flowchart illustrating the process of Bluetooth service discovery during connection setup in accordance with the present invention;

[0016] **FIG. 7** depicts a flowchart illustrating the process of establishing a link to other Bluetooth devices in accordance with the present invention;

[0017] **FIG. 8** depicts a diagram illustrating the process of determining what services are supported by a Bluetooth device in accordance with the present invention; and

[0018] **FIG. 9** depicts a flowchart illustrating the process of establishing a Bluetooth connection to a service in accordance with the present invention.

**DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENT**

[0019] With reference now to the figures, **FIG. 1** depicts a pictorial representation of a network of data processing systems in which the present invention may be implemented. Network data processing system **100** is a network of computers in which the present invention may be implemented. Network data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communication links, or fiber optic cables.

[0020] In the depicted example, a server **104** is connected to network **102** along with storage unit **106**. In addition, clients **108**, **110**, and **112** also are connected to network **102**. These clients **108**, **110**, and **112** may be, for example, personal computers or network computers. In the depicted example, server **104** provides data, such as boot files, operating system images, and applications to clients **108-112**. Clients **108**, **110**, and **112** are clients to server **104**. Network data processing system **100** may include additional servers, clients, and other devices not shown.

[0021] In the depicted example, network data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational and other computer systems that route data and messages. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area

network (LAN), a wide area network (WAN), or a wireless network. FIG. 1 is intended as an example, and not as an architectural limitation for the present invention.

[0022] With reference now to FIG. 2A, a diagram of a client in the form of a personal digital assistant (PDA) is depicted in accordance with a preferred embodiment of the present invention. PDA 200 includes a display 202 for presenting textual and graphical information. Display 202 may be a known display device, such as a liquid crystal display (LCD) device. The display may be used to present a map or directions, calendar information, a telephone directory, or an electronic mail message. In these examples, screen 202 may receive user input using an input device such as, for example, stylus 210. The present invention relates specifically to improving and expanding input options via stylus, such as stylus 210.

[0023] PDA 200 may also include keypad 204, speaker 206, and antenna 208. Keypad 204 may be used to receive user input in addition to using screen 202. Speaker 206 provides a mechanism for audio output, such as presentation of an audio file. Antenna 208 provides a mechanism used in establishing a wireless communications link between PDA 200 and a network, such as network 100 in FIG. 1.

[0024] PDA 200 also preferably includes a graphical user interface that may be implemented by means of systems software residing in computer readable media in operation within PDA 200.

[0025] Turning now to FIG. 2B, a block diagram illustrating the hardware configuration of PDA 200 is shown in accordance with a preferred embodiment of the present invention. PDA 200 is an example of a PDA in which code or instructions implementing the processes of the present invention may be located. PDA 200 includes a bus 222 to which processor 224 and main memory 226 are connected. Display adapter 228, keypad adapter 230, storage 232, and audio adapter 234 also are connected to bus 222. Cradle link 236 provides a mechanism to connect PDA 200 to a cradle used in synchronizing data in PDA 200 with another data processing system. Further, display adapter 228 also includes a mechanism to receive user input from a stylus when a touch screen display is employed.

[0026] An operating system runs on processor 224 and is used to coordinate and provide control of various components within PDA 200 in FIG. 2B. The operating system may be, for example, a commercially available operating system such as Windows CE, which is available from Microsoft Corporation. Instructions for the operating system and applications or programs are located on storage devices, such as storage 232, and may be loaded into main memory 226 for execution by processor 224.

[0027] Those of ordinary skill in the art will appreciate that the hardware in FIG. 2B may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in FIG. 2B.

[0028] With current stylus-based systems for writing on touchscreens, as in PalmOS or PocketPC, the stylus acts essentially as a single-click mouse with one button. However, many applications are better designed with two mouse clicks (i.e. left and right clicking). The present invention

addresses the problem of how to arrange for two mouse click functions (the equivalent of left and right clicking) with a single stylus, such as stylus 210 in FIG. 2. This is accomplished by means of Bluetooth technology.

[0029] Bluetooth is a wireless personal area network (PAN) technology. It is an open protocol for short-range transmission of digital data between mobile devices (e.g. PDA and mobile phones) and desktop devices. Bluetooth-enabled mobile devices can communicate among themselves without cables. Bluetooth supports both point-to-point and multipoint applications. Bluetooth can provide up to 720 Kbps of data transfer within 10 meters (and up to 100 meter with a power boost). Bluetooth does not require line of sight, but instead uses omnidirectional radio waves, and employs a frequency hopping spread spectrum technique that changes the signal 1600 times per second. In case of interference from other devices, transmission speed is downgraded, but the transmission does not stop. New chips and cards for laptop computers, as well as new PDAs, are being equipped with Bluetooth technology for communication with LANs, cell phones, and other network technologies.

[0030] Referring to FIG. 3, a schematic diagram illustrating the incorporation of Bluetooth technology into a PDA/stylus design is depicted in accordance with the present invention. PDA 300 and stylus 310 both incorporate Bluetooth elements 301 and 312 respectively. These Bluetooth elements 301 and 312 facilitate the special features of the present invention. A pressure sensor 311 on stylus 310 activates the Bluetooth-based communication and makes the PDA 300 regard the traditional stylus click as equivalent to a right mouse click.

[0031] Alternatively, the user may press down on the pressure sensor 311, without releasing pressure, to indicate an alternate state to the stylus action. For example, if the user presses with the stylus on an icon, the application or object represented by the icon will open normally (i.e. equivalent to left click function on a mouse). On the other hand, if the user presses on the pressure sensor before pressing the stylus on the icon, the icon/object will display a properties page that allows the user to set or adjust certain properties for that icon object or application.

[0032] In yet another embodiment, the user may simulate a right click function by pressing on the pressure sensor of the stylus and, without releasing the pressure, touching the stylus to the icon. This action will result in the display of a popup menu with action options that may be performed on or by the object.

[0033] If the user presses the pressure sensor and then, without releasing, touches the stylus to the pad and draws a circle around a plurality of icons or objects, the resulting display will be a popup menu with action items that may be performed on or by all of the grouped icons.

[0034] Referring to FIG. 4, a flowchart illustrating the process of simulating a mouse right click with a stylus is depicted in accordance with the present invention. The flowchart in FIG. 4 is an overview that encompasses all of the variants described above. The process is begun when the user activates the pressure sensor in the stylus (step 401). As described above, the user may activate the pressure sensor by pressing and then releasing it or by maintaining pressure throughout the desired function. Activation of the pressure

sensor initiates the Bluetooth communication protocol (step 402). The Bluetooth protocol then instructs the PDA to interpret subsequent stylus input as equivalent to a mouse right click (i.e. a request to display a properties/functions menu)(step 403). The user touches the stylus to an icon on the PDA display (step 404) and the icon displays a popup properties menu (step 405). From there, the user may make adjustments to the underlying object/ application, just as a user may do when using a mouse with a PC (step 406).

[0035] Referring now to FIG. 5, a flowchart illustrating the general algorithm for invoking the Bluetooth to carry out the desired function is depicted in accordance with the present invention. The user presses the button (pressure sensor) to invoke the desired function (i.e. right click) (step 501). The button press is mapped to a corresponding application on the stylus (step 502). This application then invokes the corresponding application on the PDA by using the Bluetooth module for communication between the stylus and the PDA (step 503). The necessary data is exchanged, within the application context, using the stylus Bluetooth capabilities (step 504). When the data exchange is finished, the communication connection is closed (step 505).

[0036] Referring to FIG. 6, a flowchart illustrating the process of Bluetooth service discovery and data exchange during connection setup is depicted in accordance with the present invention. After the user activates the pressure sensor to invoke the application using Bluetooth (step 601), Bluetooth dialup networking is invoked (step 602). A link is established between the stylus and PDA (step 603), and the stylus uses Service Discovery Protocol (SDP) to find out what services are supported by the PDA (step 604). SDP allows the stylus to be used with multiple devices and multiple services. Once the stylus knows which services are supported by the PDA, a connection is established between the stylus and PDA (step 605) and specific services are invoked (step 606). In the present example, the specific services in question are those associated with a mouse right click, as explained above.

[0037] Examples of other specific services which may be accessed with the present invention include calling up a calendar or e-mail by double clicking the pressure sensor or by means of another pressure sensor(s) on the stylus. E-mail messages or annotations to the calendar may then be hand written using the stylus.

[0038] Data related to the specific service is exchanged (step 607), and the processes is continually monitored to determine if the data exchange is complete (step 608). If the exchange is not yet complete, the process continues. Once the data exchange is complete, the Bluetooth connection is closed (step 609).

[0039] Referring to FIG. 7, a flowchart illustrating the process of establishing a link to other Bluetooth devices is depicted in accordance with the present invention. An inquiry packet is sent from the stylus to the PDA (step 701). The PDA returns a Frequency Hop Synchronization (FHS) packet (step 702). The FHS packet contains the necessary information to establish a connection between the two devices.

[0040] The stylus then looks up a list of Bluetooth devices to which it can connect (step 703), and passes this list to the application which invoked Bluetooth (step 704). Naturally,

in the present example the PDA will be on the list of compatible devices. However, as mentioned above, the stylus may also be used with other devices and services.

[0041] The user then selects the device (i.e. PDA) to which a connection is desired (step 705). Within the context of the present example (right clicking), the last step of selecting the device (PDA) can be performed automatically by the application.

[0042] Referring to FIG. 8, a diagram illustrating the process of determining what services are supported by a Bluetooth device is depicted in accordance with the present invention. The stylus pages the PDA using information gathered during the inquiry (described above) (step 801). The PDA scans for and responds to the pages from the stylus and initiates an Asynchronous ConnectionLess (ACL) link setup (step 802). A logical link control and adaptation protocol (L2CAP) connection is set up to transfer data between the stylus and PDA (step 803). The L2CAP connection is used to access the service discovery function on the PDA (step 804). The stylus then requests all information about the pertinent application profile(s)(step 805), and collects the service discovery information (step 806). Optionally, the stylus may close the SDP connection once all of the service discovery information is received (step 807). The user then chooses the desired service (step 808). As described above, the step of choosing the service may be performed automatically. Once the service is selected, a connection is established to use that service (step 809).

[0043] Referring to FIG. 9, a flowchart illustrating the process of establishing a Bluetooth connection to a service is depicted in accordance with the present invention. The stylus starts the paging process to set up a baseband ACL link with the PDA (step 901). If there are quality-of-service requirements, the application sends these requirements to the Bluetooth module by means of a Host Controller Interface (HCI) (step 902). The Bluetooth module's link manager then configures the link to meet the requirements by means of Link Manager Protocol (step 903).

[0044] After the ACL connection is set up, a L2CAP connection is set up (step 904). Radio Frequency Communication (RFCOMM) is used for the L2CAP connection if dialup networking is used. The Dialup Networking (DUN) connection is then established (step 905).

[0045] Data is sent and received over the connection (step 906), while the stylus continues to monitor the range of the PDA (step 907). If the PDA moves out of range, a new connection is established (step 908), and the process returns to the beginning. If the PDA remains in range, the stylus continues to use the same connection (step 909), while monitoring the connection to determine if the service is complete (step 910). Once the service is complete, the connection is ended (step 911).

[0046] The present invention solves the problem of providing additional functionality to the pervasive computing/PDA technology interface by permitting a stylus to emulate functions previously available only with a mouse input device.

[0047] It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are

capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of coded formats that are decoded for actual use in a particular data processing system.

[0048] The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

What is claimed is:

1. A method for enabling alternate input commands by means of a stylus associated with a personal digital assistant (PDA), the method comprising:

detecting activation of a pressure sensor on the stylus; and

in response to the activation of the pressure sensor, invoking an application on the PDA, wherein the application, in response to the stylus touching an object displayed by the PDA, opens a menu associated with that object, wherein the menu allows a user to initiate specified object functions and to change specified object properties.

2. The method according to claim 1, further comprising:

in response to the stylus drawing a perimeter around a plurality of objects displayed by the PDA, opening a menu of object functions and object properties associated with all objects in the perimeter.

3. The method according to claim 1, wherein the step of invoking the application on the PDA is accomplished by means of a Bluetooth™ signal between the stylus and the PDA.

4. A method for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the method comprising:

detecting activation of a pressure sensor on the stylus; and

in response to the activation of the second pressure sensor, invoking an application on the PDA, wherein the application opens at least one of the following function on the PDA:

e-mail, wherein e-mail messages can be hand written by means of the stylus; and

calendar, wherein annotations to the calendar may be hand written by means the stylus.

5. The method according to claim 4, wherein the step of invoking the application on the PDA is accomplished by means of a Bluetooth™ signal between the stylus and the PDA.

6. A method for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the method comprising:

detecting activation of a pressure sensor on a Bluetooth™-enabled stylus; and

in response to the activation of the pressure sensor, invoking an application on the PDA via Bluetooth™.

7. A computer program product in a computer readable medium for use in a data processing system, for enabling alternate input commands by means of a stylus associated with a personal digital assistant (PDA), the computer program product comprising:

instructions for detecting activation of a pressure sensor on the stylus; and

instructions for invoking an application on the PDA in response to the activation of the pressure sensor, wherein the application, in response to the stylus touching an object displayed by the PDA, opens a menu associated with that object, wherein the menu allows a user to initiate specified object functions and to change specified object properties.

8. The computer program product according to claim 7, further comprising:

instructions for opening a menu of object functions and object properties associated with a plurality of objects displayed by the PDA, in response to the stylus drawing a perimeter around said plurality of objects.

9. The computer program product according to claim 7, wherein the instructions for invoking the application on the PDA are executed in Bluetooth™.

10. A computer program product in a computer readable medium for use in a data processing system, for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the computer program product comprising:

instructions for detecting activation of a pressure sensor on the stylus; and

instructions for invoking an application on the PDA in response to the activation of the second pressure sensor, wherein the application opens at least one of the following function on the PDA:

e-mail, wherein e-mail messages can be hand written by means of the stylus; and

calendar, wherein annotations to the calendar may be hand written by means the stylus.

11. The computer program product according to claim 10, wherein the instructions for invoking the application on the PDA are executed in Bluetooth™.

12. A computer program product in a computer readable medium for use in a data processing system, for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the computer program product comprising:

instructions for detecting activation of a pressure sensor on a Bluetooth™-enabled stylus; and

instructions for invoking an application on the PDA via Bluetooth™ in response to the activation of the pressure sensor.

13. A system for enabling alternate input commands by means of a stylus associated with a personal digital assistant (PDA), the system comprising:

- a pressure sensor on the stylus;
- a module on the stylus which invokes an application on the PDA in response to activation of the pressure sensor, wherein the application, in response to the stylus touching an object displayed by the PDA, opens a menu associated with that object, wherein the menu allows a user to initiate specified object functions and to change specified object properties.

14. The system according to claim 13, wherein the module that invokes the application on the PDA is a Bluetooth™ module.

15. A system for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the system comprising:

- a pressure sensor on the stylus; and
- a module on the stylus which invokes an application on the PDA in response to activation of the pressure

sensor, wherein the application opens at least one of the following function on the PDA:

- e-mail, wherein e-mail messages can be hand written by means of the stylus; and
- calendar, wherein annotations to the calendar may be hand written by means the stylus.

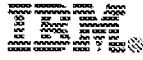
16. The system according to claim 14, wherein the module that invokes the application on the PDA is a Bluetooth™ module.

17. A system for enabling input commands by means of a stylus associated with a personal digital assistant (PDA), the system comprising:

- a pressure sensor on a Bluetooth™-enabled stylus; and
- a Bluetooth™ module on the stylus which invokes an application on the PDA in response to activation of the pressure sensor.

* * * * *

Exhibit 1010



Part Number: 82G2557

Printed in U.S.A.

Simon Says

"Here's How!"

Simon™

Mobile Communications Made Simple

U S E R S M A N U A L

From **BELLSOUTH**
Designed by IBM

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Welcome

You now have total personal communications — including your cellular phone — in one small, hand-held, mobile device. Simon™ has everything you need: cellular phone, fax, E-mail, pager, paperless notepad, address book, calendar, and calculator. And it's wireless! So it works where you work, goes where you go.

Simon's design lets you go from function to function smoothly, using the graphic symbols on the buttons and the messages on the display.

Buttons are the areas on the screen that you touch to start the features.

Simon has complete built-in help. Each time you need more information about a feature, just press



at the bottom of the screen.

Before you start using Simon, be sure to read "Introducing Simon" on page 4 and "Getting Started" on page 5, for useful information to help you get started. You may find it especially valuable to go through the tutorial, "Practicing with Simon" on page 13.

Before you continue, please take a few minutes to complete the Registration card. Return it to the address shown on the card.

™ Trademark of BellSouth Corporation.

Safety Information

Important!

To prevent harm to you and damage to your equipment, read this section carefully. Some or all of these conditions might apply to your vehicle or the place where you use your Simon.

Safely Using Simon

Because Simon has cellular telephone features, you should know how to use cellular telephones safely. Although you can use Simon in a vehicle, do not operate Simon while you are driving. Drive your vehicle safely out of moving traffic, stop the vehicle, and then use your Simon.

Important!

If you open up Simon you will cancel your warranty.

Radio Waves

Cellular phones send out radio waves. These waves might interfere with the proper functioning of electronic control systems, such as electronic fuel-injection systems, electronic cruise-control systems, and particularly, electronic antiskid braking systems.

If your vehicle has any of the above systems, take your vehicle to an authorized mechanic who is trained in this type of system testing and have your vehicle tested. The mechanic should make sure that the operation of your Simon will not cause interference with your car functions.

Radio Frequency Energy

This product complies with the U.S. Federal Communications Commission (FCC) electromagnetic energy safety guideline for human exposure to radio-frequency energy. If you use this product as recommended, exposure will be below the limits recommended by the FCC. However, take

the following precautions to avoid exposure to additional radio frequency energy.

- While Simon is on, do not hold it with the antenna contacting any exposed parts of your body, especially your eyes or face.
- Hold Simon as you hold the handset of a standard telephone. The antenna should be above your shoulder. Speak directly into the microphone.

Construction Areas

If you are in a construction area, obey signs concerning mobile-radio or phone transmission. If mobile-radio transmission is prohibited, turn phone power off. See "Phone Power" on page 21.

Turn phone power off if you are near blasting caps or if you are in an explosive atmosphere. Under some conditions, cellular phones (both incoming and outgoing calls) can interfere with blasting operations.

When you are out of the construction area, you can turn phone power on for your Simon.

Other Explosive Atmospheres

DO NOT USE Simon in mines, grain elevators, natural gas fields, or other explosive atmospheres.

Care of Simon

The following items will help prevent problems with your Simon.

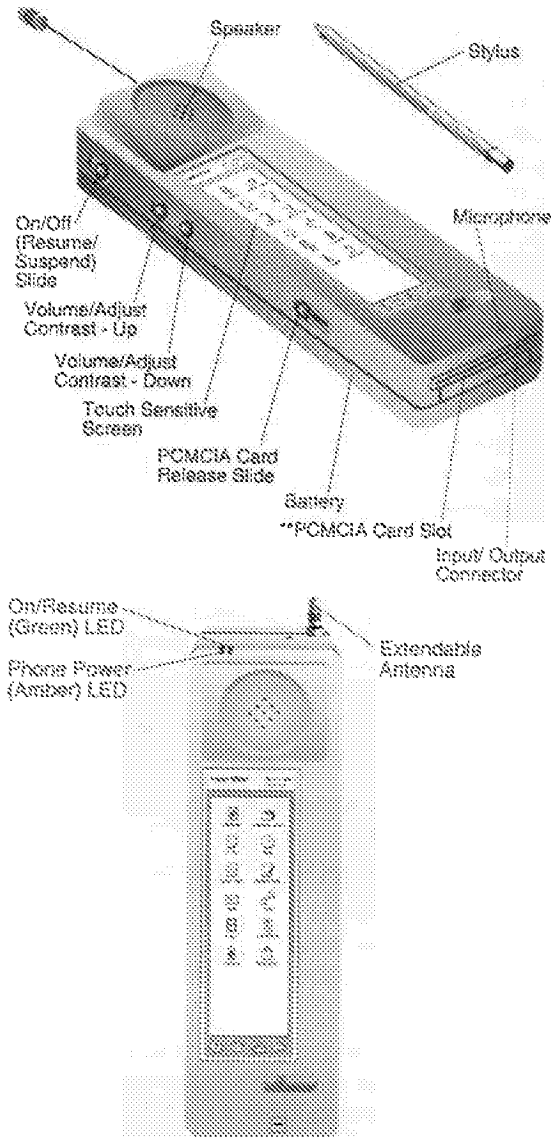
- Don't get Simon wet.
- Keep Simon clean.

To clean the screen, turn Simon off. Breathe on the screen and wipe it with a soft clean cloth. To clean stubborn spots, moisten your cloth with isopropyl or ethyl alcohol.

Note: Do not use water, ketone, or aromatic solvents.

- Keep the microphone hole clear.

Introducing Simon



** Trademark of the Personal Computer Memory Card International Association.

Getting Started

This section shows you how to install and charge the battery to turn on Simon, then directs you to more information, depending on how you are using Simon. You may find it especially valuable to go through the tutorial, "Practicing with Simon" on page 13.

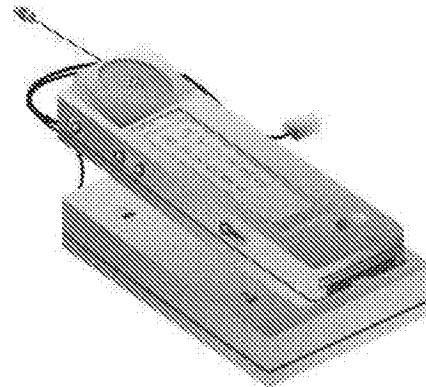
Important!

Before you use Simon for the first time, you must fully charge the battery for 14–16 hours. This conditions the main battery so it will work correctly and also charges the backup battery to prevent data loss.

Charging the Battery

To charge the battery for the first time:

1. Place Simon, with the battery attached, in the battery charger.



It needs to charge for 14–16 hours to condition the battery. (This applies only to a battery's first charge. It takes about 90 minutes to recharge a battery.) You will see a flashing amber light for about two seconds and then a solid amber light (marked with the number 2) indicating the battery is charging. If the amber light keeps flashing and you know your battery is hot or cold, just wait. Otherwise, try taking it out and putting it back in. If the light doesn't stop flashing, contact your service representative.

2. When the amber light changes to green, the battery is ready to use.
3. Remove Simon from the charger.

To charge the battery after the first time, place Simon with the battery attached, or place only the battery, into the charger. After about an hour and a half, the amber light (number 2) will change to green. Remove Simon or the battery from the charger.

You can use Simon while it charges. However, if you use it *continuously* while it charges, the battery might not receive full charge before the charge time-out of 90 minutes occurs.

Removing the Battery

Important!

Turn off the phone and Simon before you remove the battery. Otherwise, there is a good chance that you will need to reset your Simon, and a slight chance that you could damage your phone. (See "Solving Problems" on page 73)

1. Check the phone power (amber) LED. If it's on, go to the phone screen and touch the Phone Power button.
2. Slide the On/Off (Resume/Suspend) switch to turn Simon off. The green LED is off.
3. Push down on the battery release latch and slide the battery off.

Caution!

Always leave your main battery installed in Simon. If you leave Simon for too long without main battery power, you will lose the data you have in Simon. Simon's internal non-replaceable backup battery will preserve data for about two-and-a-half days. When you attach the main battery, it also charges the back-up battery. Even a low main battery may have enough charge to save Simon's data for awhile. If you follow the recommended battery charging practices, losing data should not be a problem. For further protection against data loss, see "Flier" on page 48.

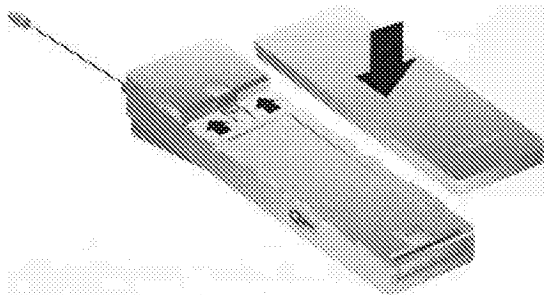
Information About the Battery Pack

- The new battery pack *has no power*. To charge the battery pack follow the instructions "Charging the Battery" on page 5.
- The rechargeable battery contains nickel cadmium cells. Local laws or regulations may require special disposal or recycling. Please dispose of your batteries appropriately.
- You should only use Simon battery chargers to charge Simon's batteries. Other chargers might damage your battery.
- If the battery does not charge properly, check the contacts. Dirt on the charger or battery contacts can prevent proper charging.
- Using Simon within 10 to 40° C (50 to 104° F) will prolong your battery's life.
- Do not recharge fully charged batteries to "top off" the battery. It can shorten battery life.
- If you store the battery at high temperatures (for example, in the car on a hot day), allow a few minutes for the battery to cool down before using it. Similarly, if you store the battery in a very cold place, allow it to warm up for a few minutes before using it.
- The battery contains protection devices that might activate if the battery is overcharged, or if the battery terminals are accidentally shorted. If the battery does not work, allow it to cool down and then try again.
- Store batteries in a cool and dry place, whenever possible, to maximize battery life. Do not use the battery if it gets wet.
- Discharge batteries before storing them.
- You must recharge the battery after long periods of storage. Depending on the time in storage, it may need up to four complete charge/discharge cycles for full capacity.
- Do not use the battery in explosive environments (mines, grain elevators, gas fields).
- Keep the battery away from loose metal (keys, coins) which can short the battery.

Installing the Battery

To install the battery:

1. Turn Simon over with the screen facing down.
2. Align the battery notches with the notches on Simon. The top of the battery should be even with the bottom of the arrows, and the battery should lie flat on Simon.
3. Slide the battery forward until you hear a slight click.



Turning Simon On and Off

Once you've charged the battery, your Simon is ready to use. This would be a good time to put Simon in the protective case. The case, in addition to giving protection, is also a good place to keep your stylus when you're not using it. To turn Simon on or off, slide the On/Off (Resume/Suspend) switch up and then release it. When you turn Simon "off," you are really suspending Simon. The screen goes blank and uses a lot less energy from the battery. However, Simon is not completely off. You will not lose your data when you suspend (turn off) Simon.

If you don't use Simon for five minutes, it automatically suspends (turns off). (You may increase this time to 10 or 15 minutes using the System feature from the Mobile Office screen.)

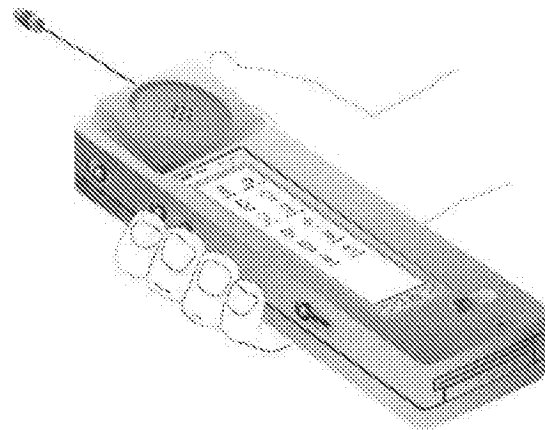
When you are ready to use Simon again, check the green On/Resume LED. If it's on, just touch the screen anywhere to continue. Otherwise, slide the Resume/Suspend (On/Off) switch. The screen where you were working previously will appear.

To save battery power, the backlight on the screen goes off after one minute if you don't touch the

screen. Just touch the screen anywhere to turn the backlight back on. You can use the System feature from the Mobile Office screen to increase the time that the backlight will stay on before it turns off. Keep in mind, though, that increasing this time can decrease the length of time that your battery will last.

LCD Contrast Adjustment

Simon's LCD screen contrast may change when it gets hot or cold. If this happens, you can adjust your LCD contrast. There are two methods for adjusting screen contrast. You can touch the System icon on the Mobile Office screen, select Screen Settings, and move the slider. Or, you can press and hold both volume buttons on the side of Simon, then release and press one button at a time. Press and release the volume-up button to increase the contrast, or the volume-down button to decrease the contrast. After you adjust contrast with this method, wait a few seconds before continuing to work with Simon.



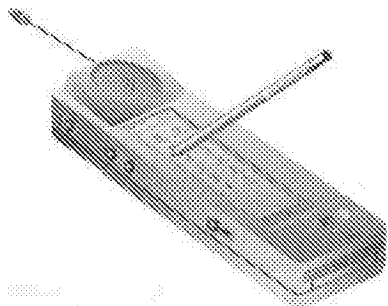
Using Your Touch Sensitive Screen

Simon has a touch-sensitive screen. To enter numbers and letters, to select buttons, or to change screens, touch the desired feature (number, letter, button, or screen).

You can touch a feature using either the stylus that came with this product or your finger. The stylus has a plastic tip on one end for using on the screen.

The other end has a cap covering a ball point pen. Do not use the ball point pen tip to touch the screen. (From here on, the term *stylus*, can also mean your *finger*.) You can slide the stylus across the screen until the button you want highlights. Then lift the stylus to select that feature.

Tip: Keep in mind that you activate features when you release the button, not when you first touch it. Also, touching harder will not make it work better.





You can touch buttons that have a solid border. You cannot use buttons that have a broken-line border. Buttons have a broken-line border when those features are not currently available.

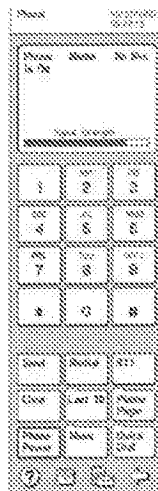
On some screens, when you touch a feature's box, a ✓ appears in the box. While the ✓ is present, that feature is active. To remove the check, touch the box again.

If the backlight turns off (saving battery power), just touch the screen to turn it back on.

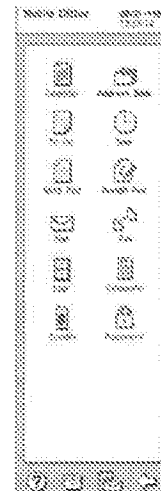
How Simon Works

Your Simon is a cellular phone with personal organization and communication capabilities. The phone has a display that shows you the screens for the available features. The two main screens are

the Phone  screen and the Mobile Office  screen, and you can get to them at any time by touching their picture (icon) on the bottom of the display area. You can use the phone functions by touching the button for the desired feature on the Phone screen. You can use the personal organization and communication functions by touching the appropriate icon on the Mobile Office screen.



The Phone screen



The Mobile Office screen

Note: You control Simon's main power and phone power separately. You turn main power on and off using the Resume/Suspend button on the side of Simon. You turn the phone power on and off using the on screen Phone Power button. To save battery power, you can keep your phone off while you work with the Mobile Office. You can also leave the phone on when you turn the main power off, if you want to be able to receive calls.

Using the Buttons

The buttons have three different shapes, depending on their type.



The button shaped like a rectangle is an action button.



The button shaped like a file folder contains a list of buttons.



The button with a clipped corner contains either text or a form.

There are four special icon buttons that are at the bottom of every screen. The icons are:



Help Touch this icon to get information about how to use features on the current screen.



Phone If the phone rings, gently extend the antenna and touch this icon to answer. Touch this icon any other time to get to the main phone screen.



Mobile Office Touch this icon to go directly to the Mobile Office screen. From the Mobile Office screen you can select advanced communication features (Fax and Electronic Mail), personal organization features (Address Book, Calendar for appointments, To-Do list), special Simon features (System, Filer, Password), and other helpful tools (Time, Calculator, Sketch Pad, Note Pad).



Back Touch this icon to back up to the screen you were just on. For example, suppose you are working with your calendar and the phone rings. Touch the Phone icon to answer. After you end the call, touch the back arrow to return to your work in the calendar.



Practicing with Simon

Now that you have a fully charged battery installed in Simon, slide the On/Off (Resume/Suspend) switch to resume. You will see the green LED light on Simon. If you don't touch the screen for one minute, you will notice that the backlight will shut itself off. Don't worry, Simon is just trying to save your battery. To get the backlight back on, just touch the screen.

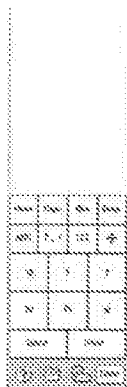
To make your first phone call with Simon, follow these steps:

1. Touch the Phone icon at the bottom of the screen to go to the main Phone screen.
2. Adjust the antenna by gently extending it straight out as far as it will go.
3. If the Phone Power (amber) LED is on, go to step 5.
4. Touch the on-screen Phone Power button and you will see the amber LED light, indicating that phone power is on.
5. Touch each of the numbers for the phone number that you want to call.
6. Touch the Send button. When you touch Send, the phone dials the number you entered. The In-Call screen will appear.
7. To end the call or hang up the phone, just touch End.
8. To receive calls, leave the phone's power on. Otherwise, touch Phone Power to turn it off.

The next practice session will take you through entering information into the Address Book. Refer to "Adding Entries to the Address Book" on page 37 to see the flow from screen to screen.

1. Touch the  Mobile Office icon. The Mobile Office screen will appear.
2. Touch  to work with the Address Book feature.

3. Touch New Entry. An Address Book form will appear in the upper half of the screen. The PredictaKey[®] keyboard appears in the lower half.



4. Learn about PredictaKey.

Simon has three keyboards that you can use to enter information: PredictaKey, a numeric keypad, and a standard keyboard. You can choose the keyboard that you like by touching the **Menu** button on any keyboard. Then touch the **Keyboards** button, and make your selection. For more information, see "Using Keyboards" on page 67. For this practice, try using PredictaKey, developed especially to make typing easy on Simon.

The PredictaKey keyboard always shows the six most-likely letters that you need, depending on the characters you've just typed. If you don't see the letter you need, touch the **Other** button, and you will see the next most-likely letters. If you type a letter accidentally, backspace with the **Bks** key.

To type one capital letter, touch **Caps** once. For Caps lock, touch **Caps** again. To unlock Caps, touch **Caps** one more time. For punctuation, touch the punctuation (**?,!**) button. A second touch will lock it. For numbers, touch the number (**123**) button. It locks automatically. To type letters again, touch the letters (**ABC**) button.

To move to the next field in a form, touch **Enter**. You can also move the cursor (the line that shows where typed letters will appear) directly by touching the screen with the stylus where you want to type. If you touch a field name, the cursor will appear in the first typing position for that field.

For this exercise type the last name of Smith. The cursor should be at **LAST>**. If it isn't, touch **LAST** to move the cursor there. Touch **Caps**, **S**, **Other** button, **m**, **i**, **t**, **h**, and **Enter**. Then type the first name of Simon. Touch **Caps**, **S**, **i**, **m**, **o**, and **n**. To enter a phone number of 555-1234, touch **Phone1** (the cursor will jump to **Phone1** in the form), (**123**) button, **555-1234**, and **Done**. Select the **Home** button from the pop-up that lists phone number labels.

5. Now you see the information in the new entry. Notice that the options that are available to you are in boxes with solid lines and the options that are not available at this time have a broken line border. From this screen you can change or erase the entry. You can touch the **Dial Home** button to place a call. You have completed your first Simon form. Most of the other features in Simon work this same way.
6. Touch **Erase** to erase this entry. Touch **OK**.
7. Touch the **Mobile Office** icon or the **Phone** icon to leave the Address Book.

[®] Trademark of the IBM Corporation.

What To Do Next

The following table can help you quickly find information you want next. Go to the page shown for complete information on that topic.

For Information On	See page
Phone	17
Mobile office	34
Address book	34
Calculator	41
Calendar	41
Fax	43
Filer	48
Keyboards	67
Mail	51
Note pad	57
Password security	59
Sketch pad	60
System features	65
Time	64
To Do	65

Simon Features

The following is a descriptive list of Simon's features. To help you learn about the features, some of Simon's screens are shown after each major topic. They show what happens when you touch certain features.




Phone

Simon's cellular phone, as all cellular phones, uses two-way radio communications controlled by a cellular system. The current conditions (both atmospheric and geographical) can affect the quality of your connection.

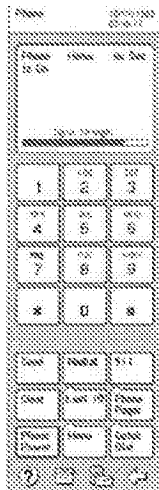
Note: When you place or receive a call, you must extend the antenna straight out as far as it will go.

Cellular phones are different from the standard "corded" phones with which you are familiar. Note that you don't hear a "dial tone" when you turn on your phone. Also, there might be times when you or the party to whom you are talking experience static, noise or occasionally a "dropped" or disconnected call.

When you experience these problems, your Simon might or might not be working correctly. The cellular system that you are using could be the cause for problems in operation. If you experience problems frequently, contact the dealer where you purchased your Simon or your cellular carrier.

The phone  feature lets you use Simon like a standard cellular phone. When you are at the Phone screen, you can use your cellular phone to send and receive phone calls. When you are in another application, simply touch the  at the bottom of the screen to return to the Phone screen for placing a telephone call. If the phone rings, touch the  to answer. The phone must be on to send or receive calls. Touch Phone Power to turn the phone on. The amber LED comes on, and the message in the upper left corner of the status

window changes from "Phone is Off" to "Phone is On".



To turn off the phone, touch Phone Power again. The amber LED goes off, and the status message changes to "Phone is Off."

911

In an emergency just one touch of the 911 button is all you need. The call will start with no other action on your part. If you touch 911 by accident, it's easy to cancel with the large Cancel Emergency Call button. You can change this setting to any emergency number you wish. To do this, just follow the instructions in "Phone Settings" on page 27.

Answer with Any Key

This feature makes it easier to answer your phone when you are on the main Phone screen. All you have to do to answer is touch any key on the main Phone screen. To set this feature, touch Menu, then Phone Settings, and then touch Answer with Any Key to check it. See "Phone Settings" on page 27.

Area Code

This feature lets you change your preset area code. When you dial seven digits and you are roaming, your phone automatically adds the area code to the phone number. See "Roaming Preference" on page 23. (For more information on roaming, see the booklet you received from your cellular system

provider.) To change the area code, touch Menu, then Roaming Preference, and then the Area Code button. Use the special phone number pad to change the area code. See "Setting Up Roaming" on page 31.

Answer Automatically

To set the automatic answer feature, touch Menu, then Phone Settings. When you set the Answer Automatically feature, the phone will answer automatically after 10 seconds. Just pick up the phone and begin speaking; Simon takes you to the In-Call screen.

Call Talk Time

The Call Talk Time feature shows you how long your call lasts in minutes and seconds. To set this feature, touch Menu, then Time in Use, then Display Call Time. After you set this feature, the call talk time will appear in the status window of the In-Call screen.

Call Timers

Your phone has a number of call timers that help you keep track of the time you spend talking on your cellular telephone. The timers include your last call time, total call time, time in calls you originated, time in calls you received, time you spent in calls while roaming, and the operation time (the total amount of time you've spent in calls). You can reset all the timers, except the operation time, to zero by touching the Reset Call Timers button on the Timers screen. To review or reset your call timers, touch Menu and then Time in Use to see the Timers screen. See "Setting Phone Timers" on page 32.

Clear

The Clear button erases previously entered characters, one at a time, like the backspace key on the standard keyboard. If you touch and hold the Clear button, it will repeat.

Code

This button appears on the In-Call screen if you have set up a special code. (See "Set Up Special Code" on page 24.) A special code could be a PIN number, voice-mail password, long-distance service

charge number, or any other sequence of numbers that you need frequently when you are in a call to an automated phone system. To send the code, just touch the Code button.

In-Call Screen

The In-Call screen appears when you place a call. (You place a call by entering the phone number and touching the Send button.) When you want to hang-up, touch the End key to end the call. To adjust the speaker volume during a call, use the volume adjust button on the side of the phone.

Last 10

The Last 10 feature provides a list of the last 10 phone numbers you called. The most recent number is at the top of the list. You can touch any number on the list to place a call.

Mark to Dial

You can mark telephone numbers in notes and forms by touching the screen, sliding your stylus to adjust the cursor position, pausing a moment (until you hear a short beep), then sliding your stylus again. As you slide your stylus, the number highlights. When you've marked the number you want, lift your stylus from the screen. A pop-up menu appears. To dial, select Dial from the menu. The In-Call screen will appear as the Phone feature places the call. For example, this can be useful if someone sends you a phone number in an electronic mail message. Just mark it and dial.

Menu

The Phone Menu lets you set sound settings, set phone settings, set roaming preferences, review time in use, and review the status monitor.

Mute

Use the mute feature (on the In-Call screen) to turn off the sound to the microphone so that the party on the other end of the line cannot hear your conversation. A "Mute" message will appear in the upper right hand corner of the display and the Mute button will change to Unmute. To turn the microphone back on, touch the Unmute button.

One Minute Beep

This feature helps you keep track of how much time you spend in a call by beeping every minute. To set this feature, touch Menu, then Time in Use, and then touch One Minute Beep to check it. See "Setting Phone Timers" on page 32.

Phone Pager

The Phone Pager feature allows callers to leave a telephone number. The Pager feature accepts up to nine phone numbers left by callers. To set this feature, touch Menu, then Phone Settings, then check Accept Pages. See "Phone Settings" on page 27.

Note: When you check Accept Pages, Answer Automatically also receives a check. They must both be active to receive pages.

When a caller places a call to you, the caller hears a few rings followed by three beeps. The caller should touch the pound (#) sign, enter a phone number, touch the pound (#) sign again, and hang up. When the Page arrives, Simon beeps, and the border around the Phone Pager button darkens to let you know a new Page has arrived.

When possible, let callers know what to do when they reach the pager instead of your voice.

To return the call, touch the Phone Pager button. The list of the last nine pages appears with the newest at the top. To dial the number, just touch the button you want.

Phone Power

This button, when touched, turns the phone on or off. When the phone is on, the amber LED is on, and the status window on the main Phone screen says "Phone is On." When you turn off the phone from the main Phone screen, the amber light goes off and the status window message changes to "Phone is Off." If you turn off the phone from the In-Call screen, a pop-up will appear to make sure you want your phone off.

Note: You control Simon's main power and phone power separately. You turn main power on and off using the Resume/Suspend button on the side of Simon. You turn the phone

power on and off using the on screen Phone Power button. To save battery power, you can keep your phone off while you work with the Mobile Office. You can also leave the phone on when you turn the main power off, if you want to be able to receive calls.

Phone Settings

The Phone Settings button takes you from the Phone Menu to the Phone Settings screen. From this screen, you can set your phone to answer automatically, retry automatically, answer with any key, accept pages, set Vox (voice activated transmitter), and change the emergency number.

Quick Dial

This feature lets you place calls quickly by touching Quick Dial and the button containing the desired number. You can program 16 frequently used numbers: eight on the first screen and another eight on a second screen. Touch the down arrow to see the second screen, and the up arrow to see the first screen.

Quick Dial phone numbers must be in the Address Book before you can put them in Quick Dial. To put a number in Quick Dial, touch any blank Quick Dial button. An instruction screen will appear. Touch OK after you read the instructions. Next, the Address Book index screen will appear. Touch the tab for the last name of the person you want in Quick Dial, and all the phone numbers for that letter will appear. Touch the button with the desired number, and that number will appear in Quick Dial.

To change a Quick Dial number, touch Add/Change, then the button you want to change. Follow the steps on the screen. To erase a Quick Dial number, touch Erase, then the button with the number you want to erase.

Redial

Touch the Redial button to call the last number dialed on the phone. This feature is useful when a number is busy the first time you try it.

Retry Automatically

This feature is convenient if you are in a busy cellular area. To set Retry Automatically, touch Menu, then Phone Settings, and then touch Retry Automatically to check it. When this feature is active and you place a call, the phone will try to connect to the cellular system 10 times every three seconds until it can place the call. Keep in mind that this feature will keep trying to connect to a busy cellular system, but will not keep trying to call a busy phone number. See "Phone Settings" on page 27.

Ringer Tone/Volume

To adjust the ringer volume, touch Menu, then Sound Settings, and adjust the slider. You have three ringing tones that you may select: Standard, Bell, and Beeps. When you touch a Ringing Tone check box, you hear that tone at the current volume. Touch OK when you finish.

Roaming Preference

(For complete information on roaming, see the materials you received from your cellular system provider.) When you got your Simon, you subscribed to a cellular telephone service. Cellular telephone services cover only a certain area. If you use your phone outside of this area, you are "roaming."

Use this feature to set your roaming preferences. Touch Menu, then Roaming Preferences to get to the Roaming screen. You can select a roaming preference, select which NAM (phone number) you want to use if you have more than one, and set up your area code. (See "Area Code" on page 18.)

"NAM" is the cellular telephone term for your telephone's number. You can have as many as four NAMs in Simon, each for a different cellular area. This can be useful if you travel frequently among different cellular system areas. If you have more than one NAM, you can select the NAM you want, or you can check Auto NAM. (See the screens on "Setting Up Roaming" on page 31.) If you check Auto NAM, Simon will automatically switch to the right NAM for the current cellular area.

Most areas have two cellular system providers (sometimes known as "A" and "B"). Your cellular service provider is your own system, and the other is the alternative system. You have five roaming preference choices.

Choice	Action
Prefer Own	You will start with your system, but will switch to the alternative if your system is busy. This applies to both home area use and roaming.
Prefer Alt	You will start with the alternative system, but will switch to your system if the alternative system is busy. This applies to both home area use and roaming.
Only Own	You will only use your system, both in your home area or roaming.
Only Alt	You will only use the alternative system, both in your home area or roaming.
Home Only	Your phone will have service only in your home area, using both own and alternative systems. You cannot roam.

Save Number

If you are talking to someone and you need to make a note of a phone number, use this feature. Touch the Save Number button on the In-Call screen. The Save Number button border darkens to show you've set it. Enter the phone number you want to save. Finally, touch the Save Number button again. The phone number is now at the top of the Last 10 list, and you can dial it later by touching the Last 10 button, then touching the button that contains the number.

Send

After you enter a phone number, touch Send to make the phone connection to the number you're calling.

Set Up Special Code

This feature lets you set up a Code button to appear on the In-Call screen. You can set up the Code button to send a special code, such as a PIN number, voice-mail password, or long-distance

service charge number. To set up the special code button, touch Menu, then Phone Settings, and then Set Up Special Code. See "Phone Settings" on page 27.

Speaker Volume

To adjust the speaker volume when you're in a call, use the volume-adjust buttons on the side of the phone.

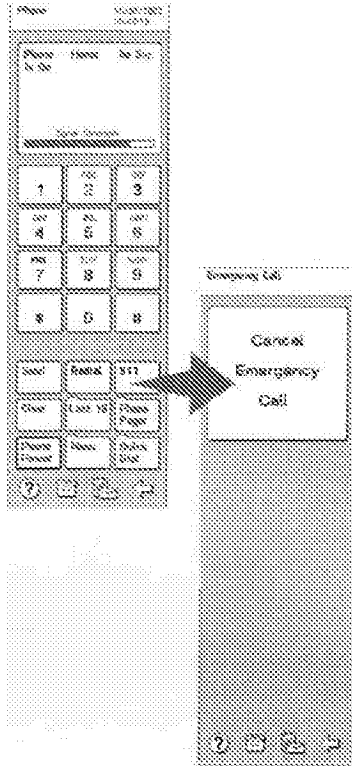
Status Monitor

The Status Monitor lets you view certain types of phone status. Normally, you would view this screen only if directed to do so by your Service Representative. To view the Status Monitor, touch Menu and then touch Status Monitor.

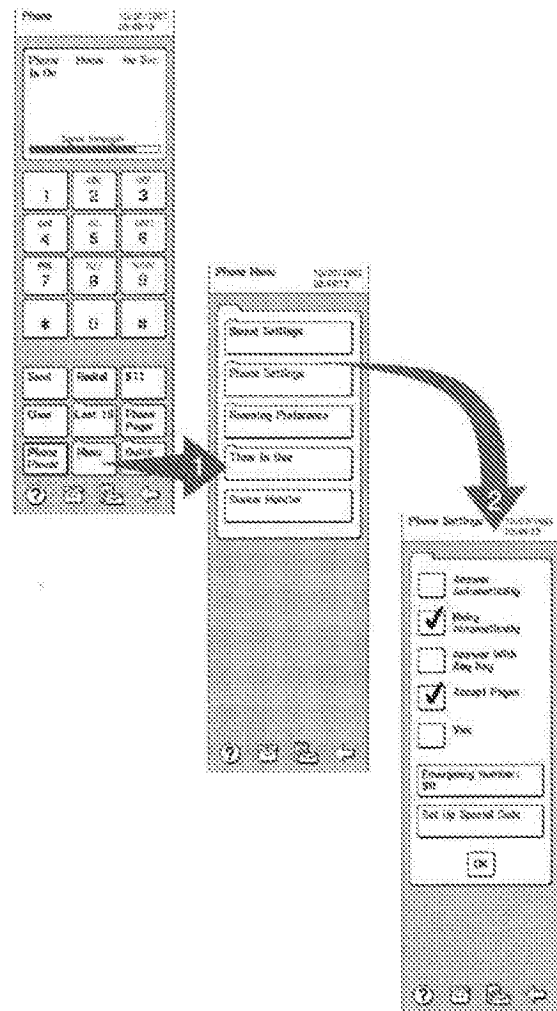
Vox (Voice Activated Transmitter)

If you set Vox and your cellular system supports it, your battery will last longer. When Vox is on, your phone transmitter only works when you talk, saving power. To set Vox, touch Menu, then Phone Settings, and then touch Vox to check it. See "Phone Settings" on page 27.

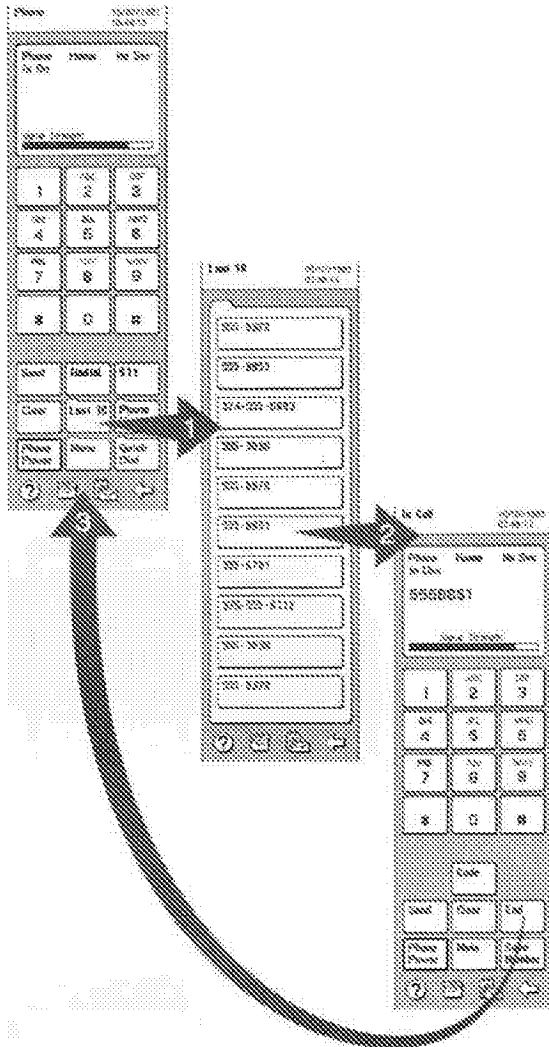
Emergency Dialing



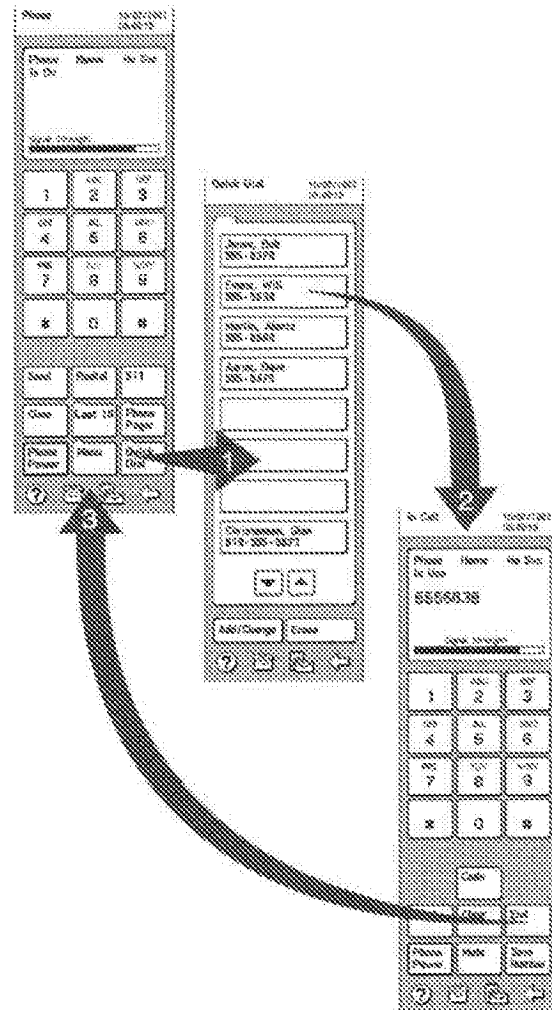
Phone Settings



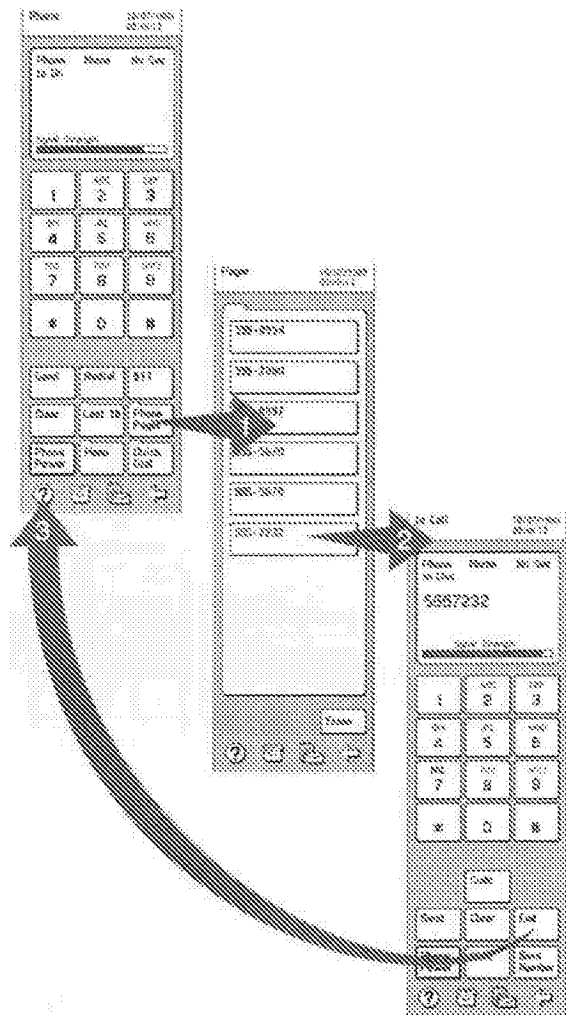
Last 10 Phone Use



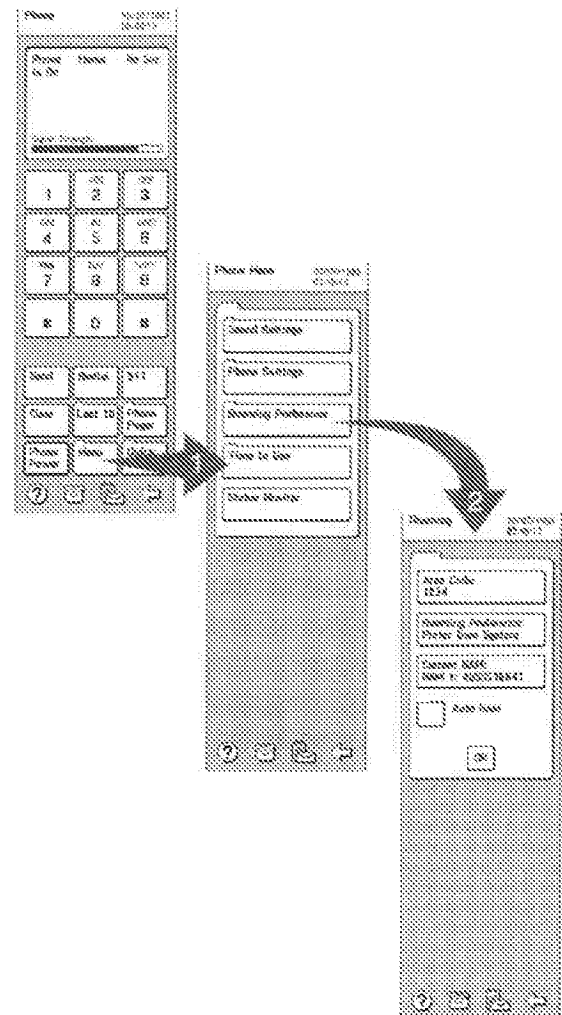
Quick Dial



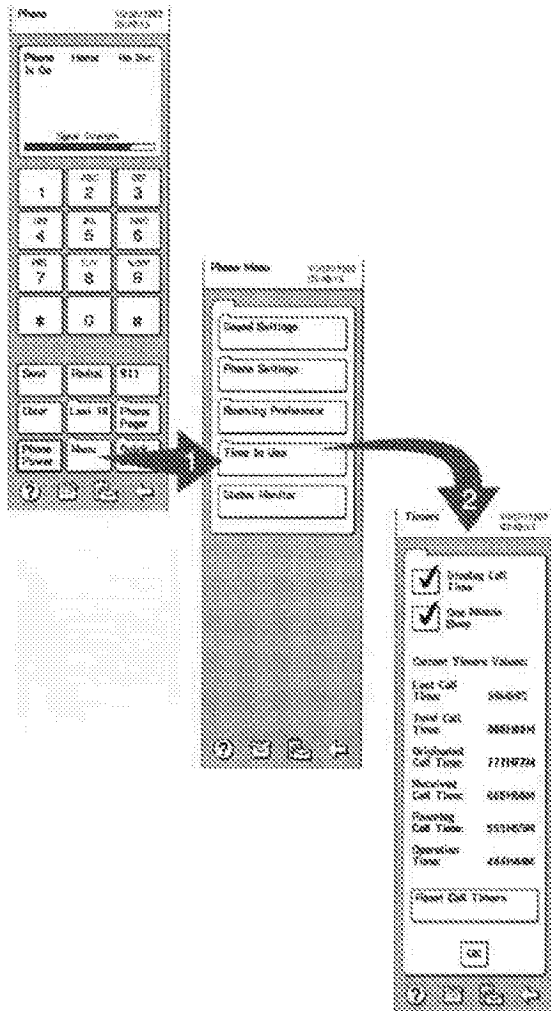
Phone Pager



Setting Up Roaming

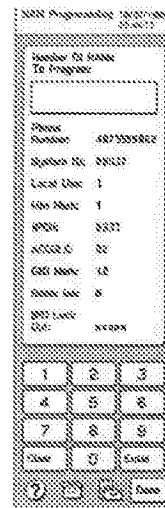


Setting Phone Timers





NAM Programming

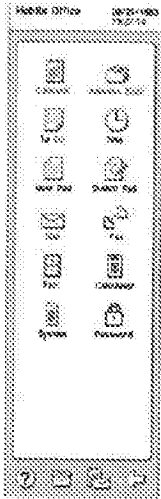
Do not use NAM programming unless instructed by your Service Representative. If you program your phone incorrectly, it will not work. Make sure the phone power is off. Then touch ***#626** (***#NAM**) and touch Send. You have 10 seconds to do this.




Mobile Office

The Mobile Office  screen provides a path to the Address Book, Calculator, Calendar, Fax, Filer, Mail, Note Pad, Password, Sketch Pad, System, Time, and To Do features.

You can get to the Mobile Office screen from any screen by touching . When the Mobile Office screen appears, select one of the features.



Once you select a feature and go to that screen, there will be other choices that you can make. If you need more information about those choices, you can touch .

Address Book

The Address Book provides a convenient place to store your list of names and phone numbers. The Address Book also has a Search feature to help you locate a number quickly, even if you can't remember the person's last name.

New Entry

To add information to the Address Book, touch New Entry. The on-screen keyboard and the Address Book form appear. You must enter a name (or other label) in the Last Name field. Fill out all the other information in the form that you can, but it's

OK if you leave some fields blank. Touch the Done button at the bottom of the screen when you've finished. See the screens on "Using the Address Book" on page 38. You may also want to review "Practicing with Simon" on page 13.

If you need the phone to pause when dialing a number, put a comma where you need the pause. Commas cause a two-second pause, and you can put in as many commas as you need. This can be useful if you are dialing special numbers, such as extensions or codes to automated phone services.

If you want to put more than two phone numbers and a fax number in the entry, type the extra numbers in the Notes field at the bottom of the form. Then you can use the Mark to Dial feature to call these numbers easily. See "Mark to Dial" on page 20.

Using the Index

The Index is the alphabetical arrangement of tabs on the main Address Book screen. The Address Book arranges entries by last names. When you touch a letter (A through Z), the entries for that letter appear. If a letter has no entries, a pop-up tells you. See the screens on "Adding Entries to the Address Book" on page 37. Most of the other Address Book screens have an Index button that you can touch to return immediately to the main Address Book screen.

Using an Entry

To see an entry, just touch its button in the entry list. The information in the entry will appear, along with a number of action buttons. These buttons provide one-touch dialing for phone numbers, the ability to change or erase the entry, the Search feature, and the New Entry feature. See the screens for "Using the Address Book" on page 38.

Search

When you touch Search, the "Search for" field and a keyboard appear. Use the keyboard to type the letters or numbers you want to search for in the Address Book, then touch the Done key.

Tip: You can enter a partial name and the Address Book will list all entries that contain those letters.

After the search finishes, all the entries that contain the "Search for" phrase appear in a list. (If no entries contain the "Search for" phrase, a pop-up will tell you.) You can use these entries just like those you get by touching a letter tab on the main Address Book screen. The only difference is that Restart and Cancel buttons replace the Search and New Entry buttons. Restart lets you start another search, and Cancel stops the current search. See the screens for "Searching an Address Book" on page 39.

Additional Address Books

You can work with additional address books by touching the Addr Books button on the main Address Book screen. Before you create additional address books, keep in mind that you can use only one address book at a time.

When you touch Addr Books, a screen appears that lists your address books, lets you create a new address book, and lets you choose to use address books in Simon's system memory or on a memory card.

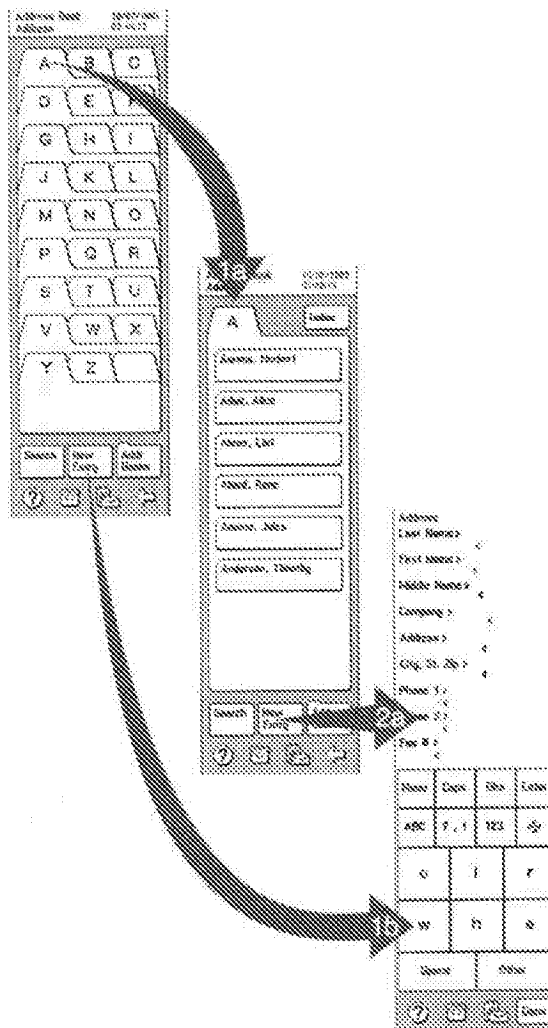
To use a memory card, touch the Card Memory check box. To switch back to Simon's system memory, touch the System Memory check box. To change to an existing address book, touch its button in the address book list.

To create a new address book, touch the New Book button. A pop-up appears to let you choose to put the new book in system memory or on a memory card. Next, use the on-screen keyboard to type a name for the new book, then touch the Done key when finished. The main Address Book screen appears, and you are ready to make new entries for the new book. The name of the current address book appears under the screen title (Address Book). If the current address book is on a memory card, a small symbol representing a memory card also appears on the address book title line.

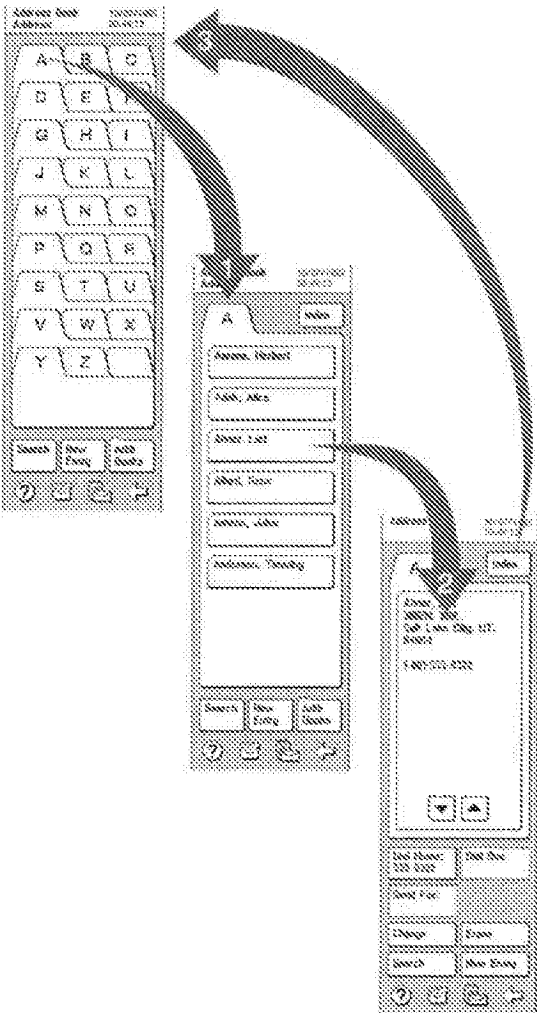
Adding Entries to the Address Book



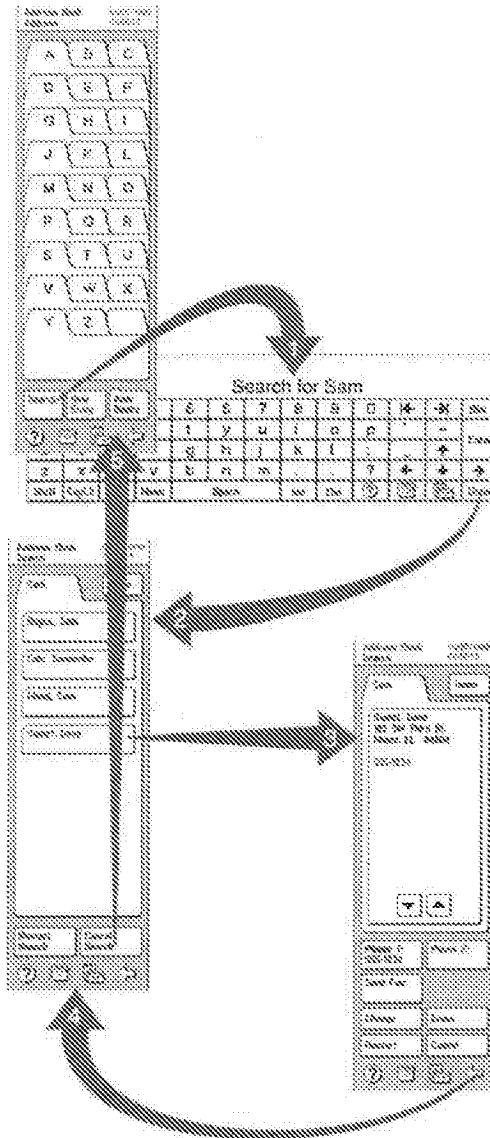
Address Book



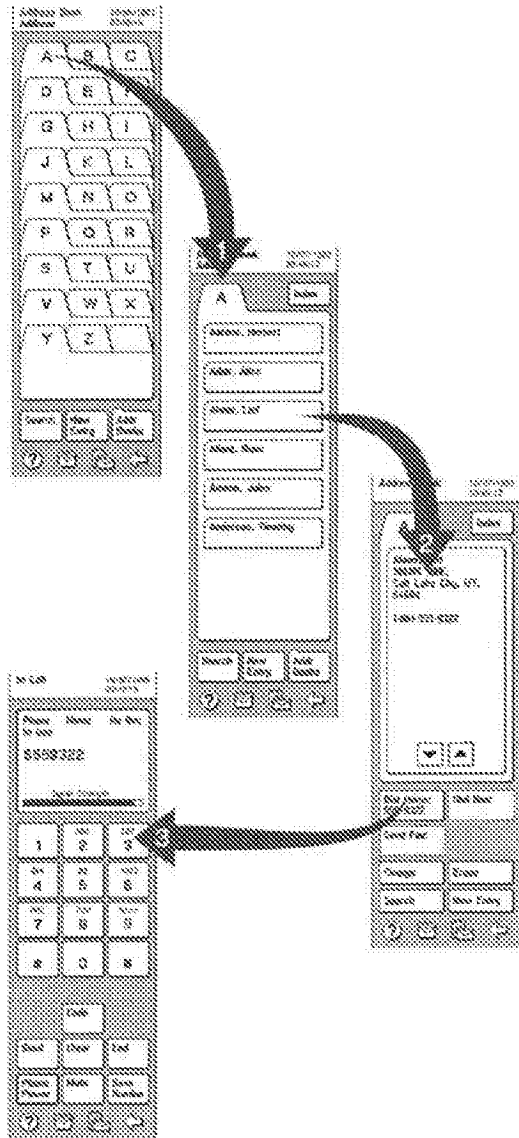
Using the Address Book




Searching an Address Book



Making a Phone Call From the Address Book



Calculator

The calculator  is available from the Mobile Office screen. When you touch Menu, you get a choice of calculator types: standard, financial, conversion, and programmer.

Calendar

Use the Calendar to keep track of your daily appointments. When you start the Calendar feature, you see the current month with today's date in a box. If you have any meetings, they appear as buttons below the calendar. From the main Calendar screen, you can create a new entry, go to a different date, switch to a 3-month calendar, use an existing entry, or go to your To Do list (see "To Do" on page 65).

New Entry

To add an appointment to the Calendar, touch New Entry. A form for selecting the date appears. This form has Today and Tomorrow buttons at the bottom for easily setting the date to today or tomorrow. Otherwise, touch the appropriate buttons to select the correct month, day, and year. Note that you can touch and hold arrow buttons to scroll quickly through the choices. When the date is correct, touch the OK button.

Next, a form appears for setting the time. If your meeting occurs on the hour between 8 a.m. and 5 p.m., you can touch one or more consecutive check boxes to set the meeting time, and then touch OK to continue. Otherwise, touch the Set Other Time button. If you do this, the Set Time screen appears to let you use arrow buttons to scroll the start and stop times. You can touch and hold an arrow button to scroll quickly through the times. You can touch AM to change it to PM, or PM to change it to AM. When the times are correct, touch the OK key to continue.

Next, the calendar form and the on-screen keyboard appear, ready for you to type in the Subject field. (If you're not sure how to complete a form, review "Practicing with Simon" on page 13.) Choose your subject so it is meaningful to you, because it will

appear along with the start and stop times in the entry's button when you review your day's entries. In the Notes field, type any additional information you will need, such as where the meeting will take place. If you do not want to set an alarm or repeat the meeting, touch the Done key now.

Setting an Alarm

If you want Simon to alert you before you are due for a meeting, you can enter a lead time (in minutes) in the Alarm field, which appears just above the Subject field. (You can touch the word Alarm, and the cursor will move to the correct typing position.) For example, if you enter 30 in this field, Simon will beep (three short beeps) 30 minutes before the meeting starts and provide a pop-up with all the meeting information. The lead-time limit is 99 minutes. 0 means no alarm.

Repeating Meetings

If this is a meeting that will occur regularly over a period of time, you can indicate this with a one-letter code in the Type of Repeat field. You can repeat meetings (W)eekly, (M)onthly, or (Y)early. Weekly meetings will repeat on the same day of each week, monthly meetings will repeat on the same date of each month, and Yearly meetings will repeat on the same month and date for each year. Next, you need to enter the number of times to repeat the meeting in the Number of Repeats field. You can repeat a meeting up to nine times.

Tip: Setting yearly "meetings" is a handy way to keep track of birthdays and anniversaries. To use them as reminders, put them in your calendar a week before they happen.

Changing Dates and Using the 3-Month View

To go to a different date in the displayed month, just touch the date on the calendar. If the date you want is within the next three months, touch the 3 Month button, then touch the desired date. If you want to view a date from a past month, or one more than three months in the future, touch the date button (the button that contains the month and year) that appears above the calendar. A form appears that lets you select the date to view.

Using an Entry

To see an entry, just touch its button in the entry list. The information in the entry will appear, along with three action buttons. Use these action buttons to erase or change the current entry, or to create a new entry.

Going Directly to the To Do List

In addition to the Calendar, Simon has a To Do feature. Use the calendar to keep track of your daily commitments. Use the To Do feature to keep track of the other things you need to do and their due dates. After you view your daily appointments, you can go directly to your To Do list by touching the To Do button. For more information, see "To Do" on page 65.

Note: To help you manage Simon's system memory, the Calendar feature automatically erases calendar entries that are more than a month old.

Fax

With the Fax feature, you can receive, create, view and send faxes. For example, you can write on (annotate) a received fax, then send it somewhere else. If you need a paper copy, just send it to a nearby fax machine.

Managing Faxes

Using check boxes, you can store your faxes either on the system memory of Simon or on an optional memory card. After you read and work with your faxes, erase them as soon as possible or copy them to an optional memory card (see the "Filer" on page 48). Most faxes use a large amount of memory, so the more faxes you keep in your Simon, the less memory you have for other applications, such as Address Book and Calendar. If you have an optional memory card, receive your faxes on it rather than using Simon's memory.

Setting Up the Fax Feature

To set Simon up for faxing, touch the Settings button on the main Fax screen, and the Fax Settings screen will appear. This screen contains six setting buttons, one check box, and a Use Defaults button at the bottom of the screen. If you

ever want to return the Fax feature to its factory settings, just touch the Use Defaults button. To put information into or change the setting of a button, touch that button and follow the on-screen directions.

The first two settings buttons are for your name and fax number. The third button is for the fax quality, with a factory setting of Standard. This setting is for your information — you cannot change it. If someone sends you a fine-quality fax, Simon will receive it as standard. All faxes that Simon sends are standard quality. (Standard-quality faxes look good, and use only half the system memory that fine-quality faxes would require.)

The fourth button is for fax speed, which has a factory setting of 4800 bps. If you select a higher number your faxes may go faster, but it may take more time to make the connection to the sending or receiving fax machine. As your Simon tries to connect to a fax machine, it tries the selected fax speed first, then tries lower speeds until it connects. This means that selecting higher fax speeds may slow down your fax. Normally, you get your best performance by using the factory setting.

Busy Retries sets up the number of times that Simon will try to call a busy fax machine. The factory setting is three times, but you can change it to one or five times. Retry Delay is the amount of time Simon will wait to try to call the busy fax machine between tries. The factory setting is one minute, but you can change it to five or 10 minutes.

If you want to send a cover page with the faxes you send, touch the Cover Page box to put a check in it.

After you have completed the settings, touch the OK key.

See "Setting Up Fax" on page 47.

Receiving Faxes

First, make sure your memory selection (System or Card) is correct. If possible, receive faxes to an optional memory card. Otherwise, you can receive them to Simon if you have enough memory.

When you touch the Receive Fax button on the main Fax screen, a Receiving Fax status window

appears. Keep in mind that touching the Receive Fax button turns Simon into a small wireless fax machine. While you wait for a fax, you can't do anything else with Simon except cancel by touching the Back Arrow. (The Back Arrow might not work for the first few seconds. If this happens, just try again.) While you receive the fax, look at the status window occasionally. The messages in the status window will keep you informed about whether you are receiving or have received the fax.

Note: If the Phone rings while you're working with Simon, touch the Phone icon to answer. If it's a fax call, you'll hear nothing. Touch the Mobile Office icon, the Fax icon, then Receive Fax. You have about 30 seconds to do this before the calling fax machine hangs up.

Viewing and Working with Faxes

To look at a fax, touch the View Fax button on the main Fax screen. The list of faxes appears. To view a fax from this list, just touch its button. The next screen shows a set of page buttons, one for each page in the fax. When you touch one of these buttons, the fax page appears in the display, with a set of tools and buttons below it.

Note: To make it easier to view faxes, they appear rotated (landscape orientation) in the viewing area. The upper left part of the fax appears first. You can return to this point of the fax at any time by touching the Home button.

The Pencil tool is active, indicated by a box around it. When the Pencil is active, you can draw or write on the fax with your stylus. To erase lines with the stylus, touch the Eraser tool. Keep in mind that the Eraser tool will erase both new lines and the lines that were in the fax when you received it. If the fax is too small to read, touch the Zoom tool (magnifying glass). The current zoom level appears in the upper left corner of the screen. At Most Detailed, lines drawn on Simon will be smaller on paper, and at Reduced or Most Reduced, they will be larger. You are looking at a fax through a small display. If you need to move the fax, touch the Pan tool (the symbol with four arrow heads). When the Pan tool is active, touch the screen, and a small box will appear. Slide your stylus across the screen in

the direction you want to drag the fax. After you lift your stylus from the screen, the fax will move the same distance that you slid your stylus, and in the same direction.

If you want to save your work with the fax, touch the Save button. Otherwise, touch the Menu button. The choices you have from the menu are (1) Erase the fax, (2) Quit without saving any changes or annotations, (3) Save the fax as is, with changes and annotations, or (4) Rename the fax. (When you Rename a fax, you also save it as is.) When you receive a fax, it automatically receives a name based on how many other faxes are stored on Simon. If you plan to keep a fax for a while, it may be handy to rename it.

Creating a New Fax

To create a fax, touch the Create New Fax button. A pop-up will appear that offers you three choices. To start the Sketch Pad, touch the In Sketch Pad button. To start the Note Pad touch the In Note Pad button. (You can easily fax any sketches or notes that you create.) To create a full-page fax, touch its button.

Creating a full-page fax is very similar to working with an existing fax, except you start with a blank screen. The tools and buttons are the same, but the zoom level starts at Most Detailed to make it easier to draw details and to provide the best system performance. You can change the zoom level, but it will take longer to pan across the page as you create the fax.

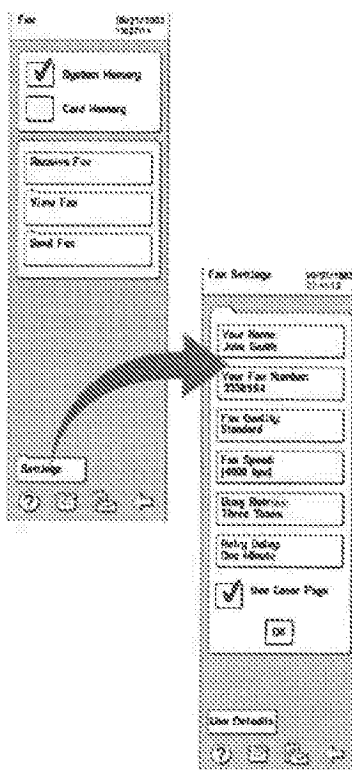
Because you are working on a full-size page with a small display (with landscape orientation), it can be tricky to create a new full-page fax. If you do not need a full-size page, keep in mind that it is easier to fax sketches using the Sketch Pad feature or to fax typed notes using the Note Pad feature.

Sending Faxes

To send a fax, touch the Send Fax button on the main Fax screen. The list of faxes available to send will appear. Touch the one you want to send. If the fax has more than one page, you have the option to send all pages or selected pages. If you choose to send selected pages, then a list of buttons will

appear, one for each page of the selected fax. Touch the pages that you want to send, and they will be highlighted. If you change your mind about a page, just touch it again. After you've selected the pages you want to send, touch the OK key. The screen will change to an on-screen keyboard and a form with two fields. For "To:," type the name of the person that you're sending the fax to. For "Fax #:," type the phone number of the recipient's fax machine. Then touch the Done key at the bottom of the screen. A Sending Fax status window will appear. You can keep track of your fax's progress by watching the messages in the status window.

Setting Up Fax



Filer

Use the Filer feature to manage your Simon files and to back up your personal data.

Memory Management

Simon works with two kinds of memory: system and card. System memory comes as part of Simon. Card memory is available on optional memory cards. As you save data to either system memory or a memory card, you have less room to store additional data. You can buy more memory cards, but you may also want to use Filer to manage your memory.

The main Filer screen has two memory check boxes, with the System Memory box checked to start with. To switch to card memory, touch its check box.

The main Filer screen also has a memory-used indicator, which shows you how much of the currently selected memory you have used. It also tells you how much memory you have left in bytes. "Byte" is a computer term for memory units. A good way to think of memory is that you have a memory budget to spend on data. If you start to run out of room, you either need to get more memory cards, or you need to erase data that you no longer need. For example, faxes require a lot of memory to store, so you probably want to erase them or copy them to memory cards as soon as possible after you receive them.

Working with Files

When you touch Filer from the Mobile Office, you see a set of folders for the different Simon features, such as Address Book, Calendar, and Fax. To look in a folder, just touch it. All available files in the folder appear as buttons. The button label shows the name of the file and how much memory it uses. To work with a file, touch its button. To return to the main Filer screen, touch the Index button in the upper right corner of the screen. See "Using the Filer" on page 50.

After you touch a file's button, a menu will appear. From this menu you can choose to copy the file, rename the file, or erase the file. If you are working

with a file in Simon's system memory, you can copy it to an optional memory card. If you are working with a file on a memory card, you can copy it to Simon's system memory.

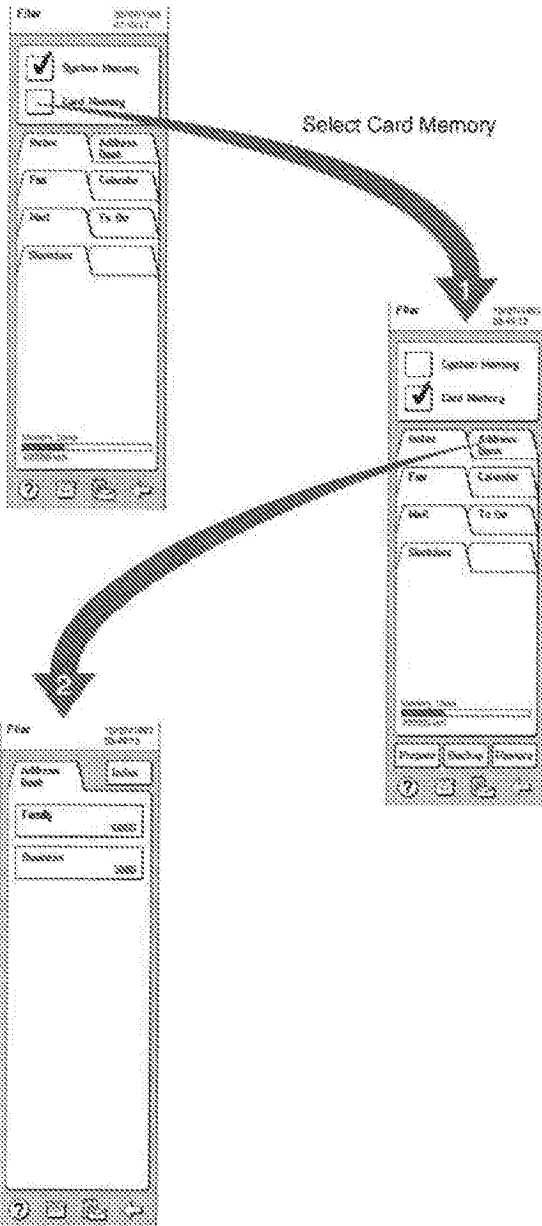
Prepare, Back Up, and Restore

When you check card memory, three additional buttons appear at the bottom of the main Filer screen: Prepare, Backup, and Restore. If you want to back up (copy) your personal data, you need to insert an optional memory card in the PCMCIA slot. If you have never used the card in Simon before, you must prepare it by touching the Prepare button. (Another common name for *prepare* is *format*.) This will take a while, and if the card has any data on it, preparing the card will erase it. After you've prepared the card, just touch the Backup key to copy all of your personal data to the card. Then, if anything happens to Simon's memory, you can use the Restore button to copy your personal data back to Simon. It is a good idea to back up your personal data frequently, and to keep the memory card in a safe place separate from where you keep your Simon.

Using the Filer



Filer



Mail

You can use the Mail feature to send and receive electronic mail (E-mail) messages. Simon can connect to a Lotus™ cc:Mail™ Post Office to send and receive electronic mail. You can always tell how many messages you have by looking at the message list buttons on the main Mail screen. The Received Messages button shows you how many messages you have in your Received Messages list (sometimes called an in-basket). The Ready to Send button shows you how many messages you have waiting to send (sometimes called an out-basket). The Saved Messages button shows you how many messages you have saved.

Setting Up Mail

With Mail, you send and receive messages by calling a computer set up as a cc:Mail post office. You don't have to worry about how to set up a post office, because your E-mail administrator or service does that. However, you will not be able to send or receive E-mail messages until you set up the Mail feature in Simon. To set up Mail, you need the following information from your E-mail administrator:

- Your user name
- Your cc:Mail password
- The cc:Mail post office name
- The cc:Mail post office phone number
- The cc:Mail post office modem speed

After you get this information, touch the Settings button on the main Mail screen. The Mail Settings screen will appear. Enter your cc:Mail information by touching the appropriate button and using the on-screen keyboard to type the information exactly as the administrator gave it to you. The factory setting for the modem speed is 1200 bps. Do not change this unless your administrator tells you.

To conserve Simon memory, you can check Receive Only Short Messages. When you put a check in this box by touching it, you will only receive

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messages that are no longer than a standard paragraph. You would only want to do this if you use the same user name and post office for your computer E-mail.

After you have completed the settings, touch the OK button. (See "Setting Up Mail" on page 55.)

Creating Mail

To create a new E-mail message, touch the Create New Mail button on the main Mail screen. The Mail Address Menu appears. Use this screen to enter the cc:Mail addressees for the people you want to receive this message.

To get an E-mail address from the Address Book, touch the "Address To: (From Address Book)" button. The Address Book alphabetical index will appear. Touch the letter tab for the last name of the recipient, then touch the recipient's button to add him or her to the "To" list. If the recipient is not in your Address Book, you can touch the "Address To: (Type)" button to type the recipient's E-mail address with the on-screen keyboard. Each time you type a recipient's E-mail address and touch the Done key, a post office name form will appear. If the recipient uses your post office, just touch the Done key to continue. Otherwise, fill in the recipient's post office name then touch the Done key. Follow the same steps to add people to the carbon copy (cc) list with the "cc: (From Address Book)" and "cc: (Type)" buttons. You can put as many E-mail addresses as you like in the "To" and "cc" lists.

If you want the Mail feature to notify you when the recipients get the message, touch the Notify on Receipt box to check it.

Once you have finished addressing the message, touch the Type Message button. A message form appears with the on-screen keyboard. Use the keyboard to type the subject and contents of the message, and touch the Done key when you have finished the message. A menu will appear that will let you (1) put the message in the Ready to Send list, (2) put the message in the Saved Messages list, (3) quit without saving the message, or (4) return to the addressing menu. If you are ready to mail the message, put it in the Ready to Send list. If you still want to work on the message, put it in the Saved

Messages list. If you thought of someone else you need to send the message to, return to the addressing menu. Once you've typed a message, you can put it in the Saved Messages or Ready to Send list directly from the Mail Address Menu. You can move back and forth between the Mail Address Menu and the message form as many times as you need to before you put the message in the Saved Messages or Ready to Send list.

Note: You can send Simon meeting notices in the messages you create. See Appendix B, "How to send calendar notices in an electronic message" on page 76 for instructions.

Sending and Receiving Mail

Usually, you will want to send the messages in your Ready to Send list and also receive any messages waiting for you at the cc:Mail post office. To do this, touch the Send and Receive button on the main Mail screen. If you only want to send, just touch the Send button. To receive only, touch the Receive button. If you plan to keep your messages on an optional memory card (to conserve Simon's system memory), make sure you've checked the Card Memory box.

Once you touch one of these buttons, Simon will call the cc:Mail post office, and the Mail Transfer in Progress screen will appear. The messages that appear on this screen will let you know how many messages you've sent and received as you send and receive them. Once you've sent and received all your messages, the main Mail screen will reappear. The Received Messages button shows you the number of messages you now have in your Received Messages list.

Working with a Message

To work with a message, touch the appropriate message list (Received, Ready to Send, Saved). The list of messages will appear, with a button for each message. Buttons for received messages will show who sent the message. Buttons for Ready to Send messages will show the recipient. Messages you've saved will show who the message was from if it was originally a received message, or who the

note is to if you created the message. All message buttons show the message's subject.

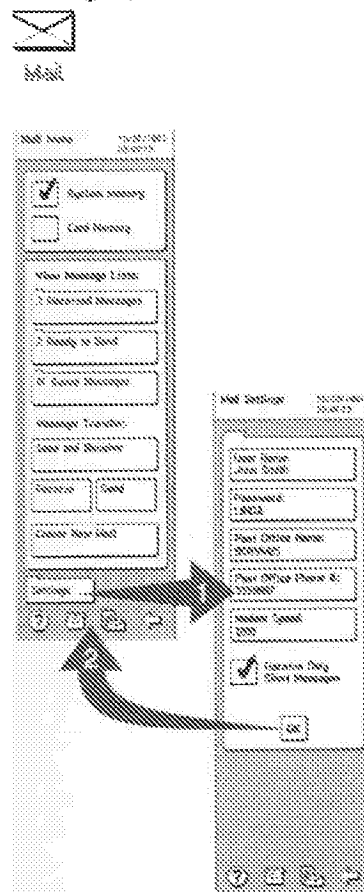
Touch the button for the message you want to work with. The contents of the message will appear, with a set of action buttons along the bottom of the screen. You can change the type size or orientation of the text you are viewing. For long messages, you may want to use the Find feature from the Menu to locate specific text in the message. For all messages, you may choose to erase, change, or fax the message. In addition, you can reply to or forward received messages. You can move received messages to either the Ready to Send or Saved Messages lists. You can move saved messages to the Ready to Send list. You can move messages from the Ready to Send list to the Saved Messages list. If the Cal button appears, the message contains specially coded calendar appointments. To put these appointments in your calendar, just touch the Cal button.

How to Erase Unwanted Messages

If you have received a few unwanted messages, you can erase them one at a time by touching them, touching the Erase button, then touching OK on the confirmation pop-up.

If you have many unwanted messages (for example, from a news service), then go through your Received Messages list and move the messages you want to keep to the Saved Messages list. Next, touch the Mobile Office icon at the bottom of the screen, then touch Filer. In Filer, touch the Mail folder, then the Received button. Select Erase from the pop-up menu, then OK from the confirmation pop-up to erase the remaining messages in your Received Messages list.

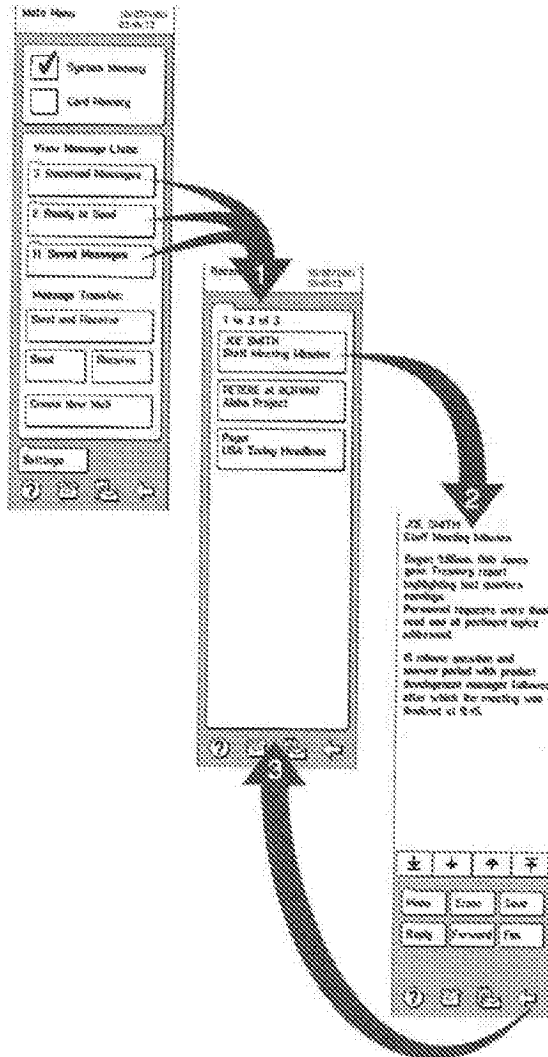
Setting Up Mail



Working with Messages



Mail



Note Pad

Use the Note Pad feature to create and work with typewritten notes. Once you've written a note, you can view it, change it, rename it, copy it, fax it to someone, or erase it.

Creating a New Note

To create a new note, touch the New Note button on the bottom of the main Note Pad screen. First, the on-screen keyboard will appear so you can enter a name for the note. A note name can be any combination of letters and numbers, up to 8 characters long.

After you type the note name, touch the Enter button. The note form appears along with the on-screen keyboard. The first line of the form is the Subject line. Later, when this note appears as a button in the note list, the information in the Subject line will appear in the button so you can use it as a reminder.

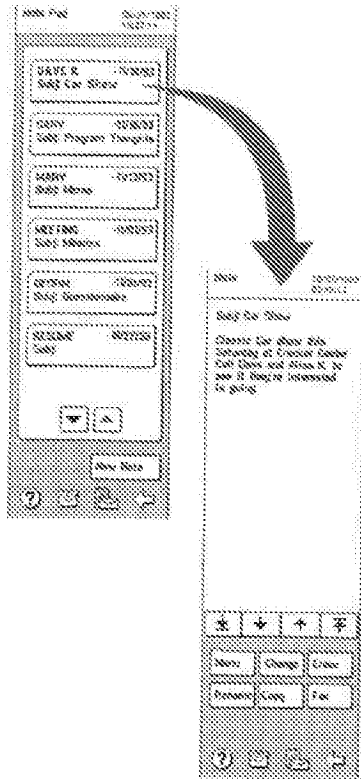
Move the cursor below the Subject line to type the body of the note. When you have finished typing, touch the Done button. A menu will appear to let you choose what to do with the note. For example, you might choose to save the note, or you might choose to fax the note to someone. (If you aren't sure how to use the on-screen keyboard, see the Keyboards section. You might also want to review "Practicing with Simon" on page 13 tutorial.)

Working with Notes

After you've saved a note, it appears in the note list on the main Note Pad screen. To work with a note, just touch its button. If you have more note buttons than will fit on a screen, use the arrow buttons to scroll until you see the note you want. When you touch a note button, the contents of the note appear, with action buttons below the note area.

To view the note, touch the arrow buttons to read any text that is above or below the current text. The other action buttons will let you Erase the note, Change the note, Copy the note (giving the copy a different name), Rename the note, or Fax the note to someone (using the Fax feature).

Working with a note



Password

Use the Password feature to protect your personal information. Before you can lock Simon, you must create a password.

Creating a Password

If you do not have a Simon password, the only action button available on the Password screen is the Create button. When you touch this button, a short form appears with the on-screen keyboard. Use the keyboard to type your password.

Note: Passwords may have any combination of three to seven letters or numbers.

After you type the password, touch the Done key.

For protection of your Simon and your personal data, only you should know your password. Write it down and keep it in a safe place. If you forget your password, you will not be able to unlock and use your Simon. If someone else learns your password, change it.

Locking Simon

After you have created a password, just touch the Lock button on the main Password screen to lock Simon. You will then have the choice of locking everything, or just the Mobile Office. If you lock everything, the Locked screen appears. If you lock only the Mobile Office, the main Phone screen appears. The Locked screen will not appear unless someone touches the Mobile Office icon at the bottom of the screen. This is useful if you want to let someone use your phone, but you do not want them to be able to view your personal data.

Dialing 911 when Locked

When you lock Simon, you still have one-touch dialing for 911 (or the emergency number you preset) without entering your password. Just touch the 911 button on the Locked screen.

Unlocking Simon

To unlock Simon, touch the Enter Password button. The on-screen keyboard will appear. Type your password, then touch the Done button. If the password is correct, Simon will unlock and show the main Password screen. From this screen, you can

go quickly to the Phone or Mobile Office by touching the appropriate icon at the bottom of the screen.

Changing the Password

To change the password, touch the Change button on the main Password screen. A short form and the on-screen keyboard will appear. Use the form to enter the new and current passwords, then touch the Done button. If the current password is correct, the password will change to the new password.

Removing the Password

If you decide to remove the password, touch the Remove button on the main Password screen. The on-screen keyboard will appear. Type your current password, then touch the Done button. If the current password is correct, then your Simon will no longer have password protection.

Sketch Pad

The Sketch Pad lets you write on the screen with your stylus or finger. You can save up to 32 sketches, and you can easily fax a sketch. However, keep in mind that the more sketches you save, the more Simon system memory you use, and the less you have available for other features such as Address Book and Calendar.

Working with Sketches

When you touch the Sketch Pad feature on the Mobile Office screen, the main Sketch Pad screen appears. The main Sketch Pad screen shows four thumbnail (small) sketch forms, and has a New Sketch button below the thumbnail forms.

You can start a new sketch by touching the New Sketch button. When you save this sketch, it will appear in the first available thumbnail form. You can also start a new sketch by touching the thumbnail form where you want the sketch to go when you save it. If you want to work with a thumbnail form that does not appear on the screen, touch the down arrow button until the form you want appears. Each thumbnail form has a number so you know where you are in the list.

After you start a new sketch, the blank sketch pad appears, with two tools and three action buttons

below the drawing area. The tools are a pencil and an eraser. The action buttons are Erase, Save, and Fax. When you start, the pencil tool has a box around it, indicating that it is active. When the pencil tool is active, you can draw in the drawing area. When the eraser is active, you can use your finger or stylus to erase lines in the drawing area. If you want to erase everything and start over, touch the Erase button. To fax the sketch to someone, touch the Fax button and follow the on-screen directions. To save your sketch, touch the Save button. The main Sketch Pad screen will appear, and you will see the thumbnail version of your sketch in the list.

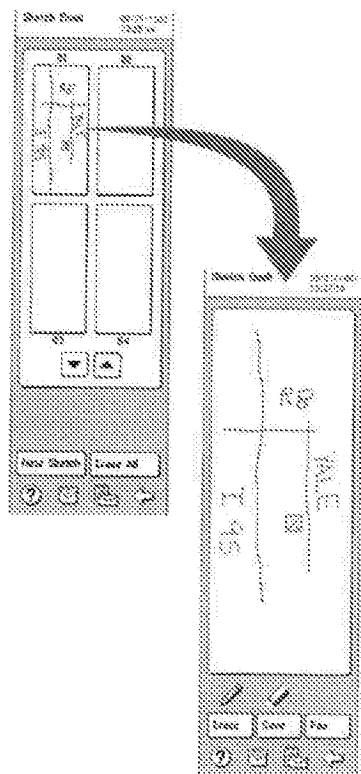
Erasing All Sketches

If you run low on Simon's system memory, you can erase all sketches by touching Erase All on the main Sketch Pad screen. Do not do this if there are any sketches you want to keep. After you touch Erase All, a pop-up appears that gives you a chance to cancel this action by touching the pop-up's Back Arrow.

Using the sketch pad



Sketch Pad



System

Use the System feature to control Simon's timeouts, display, and sounds. If directed by a Service Representative, you can also use the System feature to diagnose problems.

The Suspend Timeout

The Suspend Timeout is the time that Simon will wait to turn off (suspend) automatically. The factory setting is five minutes, but you can select check boxes to change the time to 10 or 15 minutes. The shorter this time is, the longer your battery will last between charges. You should not adjust this time unless you find that you need to turn Simon on more often than you would like.

Adjusting Screen Settings

To adjust screen settings, touch the Screen Settings button on the main System screen. The Screen Settings screen appears. On this screen, you can adjust the screen contrast and the backlight brightness with sliders. You can also adjust the backlight timeout so it is off all the time, or turns off after 10 seconds, 30 seconds, 1 minute, 5 minutes, or 1 hour of disuse. Keep in mind that the more you keep the backlight low or off, the longer your battery will last between charges. The factory setting is one minute.

Adjusting Sound Settings

To adjust sound settings, touch the Sound Settings button on the main System screen. The Sound Settings screen appears. On this screen, you can adjust Simon's sound volume with a slider. You can also turn Simon sounds off or on by touching the appropriate check box. The Simon sounds include:

- | | |
|-------------------|--|
| Key Click | When Key Click is on, you will hear a click each time you release a button or key. |
| Pager Beep | This feature produces a beep when you receive a phone page. (See "Phone Pager" on page 21 for more information about phone pages.) |

Calendar Alarm When this feature is on, you will hear a beep when a calendar alarm goes off. (See "New Entry" on page 41 for more information about setting calendar alarms.)

Error Beep When Error Beep is on, you hear a beep whenever there is an error, and a pop-up message window appears.

You can also change the phone ring tone from Standard to Bells or Beeps. When you touch the check boxes for these tones, you hear what they sound like.

Running Diagnostics

Usually, you would run the diagnostic programs only at the request of a service representative. To run the diagnostic program, touch the Diagnostics button on the main System screen. The Diagnostics screen appears. On the Diagnostics screen, you can choose to test only the cellular telephone or to test the system (which tests the cellular telephone, the modem, the display, the speaker, and the up/down buttons on the side of the unit).

Time

The Time feature lets you set the current date and time on your Simon. You can display the time and date using either a world or digital clock. To use the time feature, just touch the Time icon from the Mobile Office screen and then the Settings button. Then select Set Date, Set Time, Set Alarm, or Cancel Alarm. When the alarm sounds, just touch the screen anywhere to turn it off.

When you set the time, be sure the clock is in the correct time zone. If you move or travel to a different time zone, don't forget to change the time zone, or the clock (and any alarms you've set) will not be correct.

Tip: When you set the date and time, you can touch and hold the arrow buttons to scroll quickly. You can touch AM to change to PM, or PM to change to AM.

To Do

Use the To Do feature to help you keep track of your work items and their due dates.

Making a New Entry

To create a new To Do entry, touch the New Entry button on the main To Do screen. A form will appear to let you set the due date for the entry. Keep in mind that you can touch and hold the arrow buttons to scroll quickly through the choices. When you have set the due date, touch the OK button.

Next, the To Do form appears with the on-screen keyboard. The first line of the form is the Subject line. Later, when this entry appears as a button in the To Do list, the information in the Subject line will appear in the button so you can use it as a reminder. Below the Subject line, you can type other notes for this entry. When you have finished typing, touch the Done button. The main To Do screen will reappear, with this entry in its correct position in the To Do list (organized by due date).

Working with To Do Items

To work with an item, just touch its button. If you have more items than will fit on a screen, use the arrow buttons to scroll the To Do items until you see the one you want. When you touch a To Do item button, the contents of the item appear, with action buttons at the bottom of the screen.

To erase the item, touch the Erase button. To change the item, touch the Change button. If you have completed the item, but want to save it, touch the Put in Done List button. The Done list will appear, with this item in it.

Working with Done Items

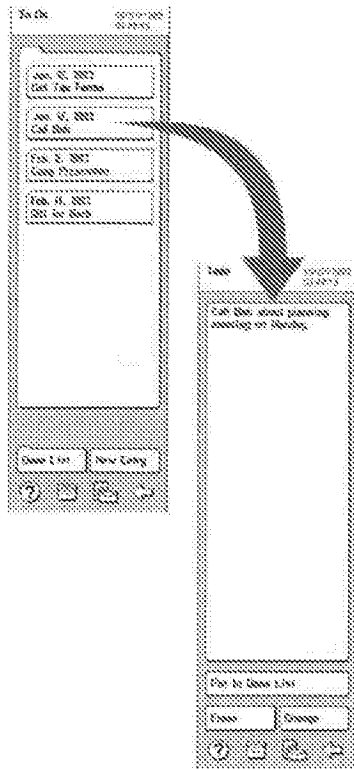
Usually, you should erase a To Do item after you complete it. However, you may want to save some items as reminders. To view the Done list, touch the Done List button on the main To Do screen. The Done list appears. To work with an item, just touch its button. When you are working with a single done item, you can use the action buttons to erase it, change it, or put it back in the To Do list. When you are looking at the entire Done list, you can choose to erase all the items in the Done list by

touching the Erase All button. This may be handy if you no longer need the items in the Done list, and you need to increase your Simon system memory.

Using the To Do list



To Do



Using Keyboards

You'll use an on-screen keyboard to enter information, for example, to make entries in your Calendar or add names to your Address Book. You can choose one of the following Simon keyboards:

- Standard
- PredictaKey
- Numeric key pad

The system remembers the last keyboard you chose. The next time you use a keyboard, the last one that you used will appear.

The Standard Keyboard

The Standard keyboard looks like a typewriter keyboard with a few differences. For example, this keyboard has the buttons for the Phone and Mobile Office screens, and a help button.

1	2	3	4	5	6	7	8	9	0	+	-	Bks
Q	W	E	R	T	Y	U	I	O	P			Enter
S	X	Z	F	G	H	J	K	L				
	X	O	V	B	N	M		?	+	-	→	←
Phone	Mobile	Office	Help	Space	Del	Del	Del	Del	Del	Del	Del	Del

The special keyboard keys are:

Note: Fields are spaces in forms where you enter information.

- ←** Back tab key
Touch the ← to move back through the fields on the screen.
- Forward tab key
Touch the → to move forward through the fields on the screen.
- Bks** Backspace
Touch Bks to move back, one space at a time. When you touch Bks, you erase each typed character as you move back over it.
- Enter** Enter
The Enter action depends on whether you are in a form or typing free text. In a form, Enter moves the cursor to the next field. In free text, Enter inserts a new line if the keyboard is in insert mode. If the keyboard is in replace

mode, Enter moves the cursor to the beginning of the next line. To change from insert to replace mode, touch the Ins key.



Cursor movement keys
Touch the arrow in the direction that you want to move the cursor (the line that shows where typed letters will appear).

Shift Shift
Touch and release Shift to type uppercase characters, such as capital letters and symbols (including the symbols that appear above the numbers on a standard keyboard). Then, select the key that you want. Repeat this procedure for each uppercase character. If you want a series of characters in uppercase, use the CapLk feature.

CapLk Caps Lock
Touch CapLk when typing several uppercase characters. This action changes the lowercase letters to uppercase. This key does not change numbers or symbols. When you are finished and want to return to lowercase letters, touch CapLk again.

View View
Touch View to be able to see more of the page or form that you are working on with navigation keys displayed.

Menu Keyboard changes
Touch Menu to change keyboards or type (font) size.

Space Spacebar
Touch Space to separate words and create blank spaces.

Del Delete
Touch Del to erase, one character at a time, the characters under the cursor. The cursor is the line that shows where typed characters will appear.




Phone screen

Touch this icon  to return to the Phone screen for placing a phone call.




Mobile Office screen

Touch this icon  to return to the Mobile Office screen to use features such as the Address Book and Calendar.



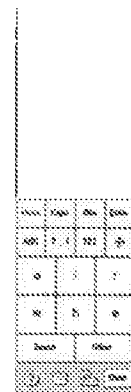
Help

Touch  when you need help for any feature.

Done

Touch Done when you finish entering characters from the keyboard.

The PredictaKey Keyboard



The PredictaKey keyboard always shows the six most-likely letters that you need, depending on the characters you've just typed. If you don't see the letter you need, touch the Other button, and you will see the next most-likely letters. If you type a letter accidentally, backspace with the Bks key. If you pass a letter you want, keep touching the Other button until it reappears.

For example, to type (touch) the word "this," find, then touch the letter t. The next six letters that appear on the keyboard will be the most likely letters to follow t, such as o l r w h e. Whether or not you are familiar with the Standard keyboard, you

might get faster results using the PredictaKey keyboard.

To change from the alphabetic keyboard to the numeric keyboard, touch (123). To change from the numeric keyboard to the alphabetic keyboard, touch (ABC).

To type one capital letter, touch Caps. For Caps lock, touch Caps again. To return to typing lowercase letters, touch Caps one more time. For punctuation, touch the punctuation (?,) button. A second touch will lock it.

To move to the next field in a form, touch Enter. You can also move the cursor (the line that shows where typed letters will appear) directly by touching the screen with the stylus where you want to type. If you touch a field name, the cursor will appear in the first typing position for that field.

To use cursor control, touch the four arrows icon. This is also where PredictaKey's Insert (Ins) key is.

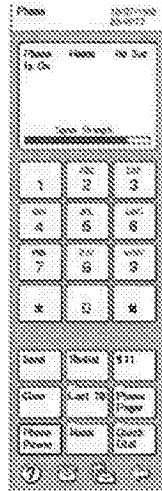
Numeric Keypad

You can select the numeric keypad if you only need to type numbers.

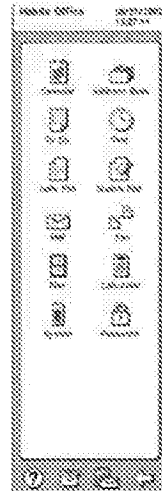
Type Size

You can change the type size by touching the menu button on the keyboard and making your selection.

Quick Reference



The Phone screen



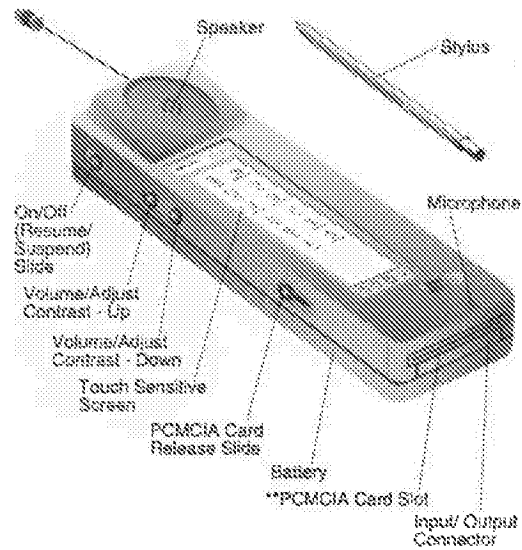
The Mobile Office screen




There are four special icon buttons that are at the bottom of every screen. The icons are:

Icon	Meaning	Description
	Help	Touch this icon to get information about how to use the current screen.
	Phone	If the phone rings, gently extend the antenna and touch this icon to answer. Touch this icon any other time to get to the main phone screen.
	Mobile Office	Touch this icon to go directly to the Mobile Office screen.
	Back	Touch this icon to back up to the screen you were just on.

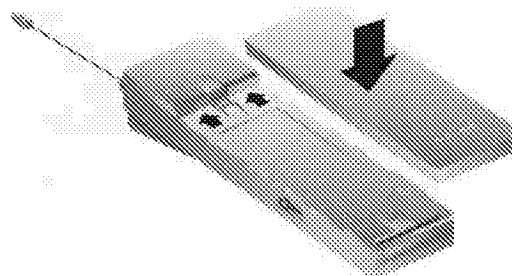
Service

If you have a problem with your Simon, contact your Authorized Reseller or place of purchase. You may also dial 611 or 811 on your cellular phone for customer service in your area.



-  On-screen buttons shaped like rectangles are action buttons.
-  On-screen buttons shaped like file folders contain a list of buttons.
-  On-screen buttons with clipped corners contain either text or a form.

Installing the battery



Line up the top edge of the battery with the bottom of the arrows, then push the battery in the arrows' direction to snap it in place.

Printed in U.S.A.
06H1852

** Trademark of the Personal Computer Memory Card International Association.


Quick Reference

Exhibit 1011

APPLICATION DATA SHEET

Electronic Version v14

Stylesheet Version v14.0

Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM	
Application Type :	regular, utility	
Attorney Docket Number :	10963.3801	
Correspondence address:		
Customer Number:	22235	
Inventor Information:		
<u>Inventor 1:</u>		
Applicant Authority Type:	Inventor	
Citizenship:	US	
Given Name:	Malcolm	
Middle Name:	K.	
Family Name:	Beyer	
Name suffix:	Jr.	
Residence:		
City of Residence:	Jupiter Inlet Colony	
State of Residence:	FL	
Country of Residence:	US	
Address-1 of Mailing Address:	92 Lighthouse Drive	
Address-2 of Mailing Address:		
City of Mailing Address:	Jupiter Inlet Colony	
State of Mailing Address:	FL	
Postal Code of Mailing Address:	33469-3504	
Country of Mailing Address:	US	
Phone:		
Fax:		
E-mail:		

FEE TRANSMITTAL

Electronic Version v08

Stylesheet Version v08.0

Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM																						
Application Number : Date : First Named Applicant: Malcolm K. Beyer Jr. Attorney Docket Number: 10963.3801																							
TOTAL FEE AUTHORIZED \$ 428																							
Patent fees are subject to annual revisions on or about October 1st of each year.																							
Filing as small entity																							
BASIC FILING FEE																							
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AUTHORIZED BILLING INFORMATION																							
The commissioner is hereby authorized to charge indicated fees and credit any overpayments to:																							
Deposit account number: 131130 Access Code **** Deposit name: MalinHaleyDiMaggio;Crobsy Deposit authorized name: Arlette J. Breakstone Signature: /arlette j breakstone/ Date (YYYYMMDD): 2004-09-21																							
Charge Any Additional Fee Required Under 37 C.F.R. Sections 1.16 and 1.17.																							

FEE TRANSMITTAL

Electronic Version v08

Stylesheet Version v08.0

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Application Number :																								
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Charge Any Additional Fee Required Under 37 C.F.R. Sections 1.16 and 1.17.																								

TRANSMITTAL

Electronic Version v1.1

Stylesheet Version v1.1.0


Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM	
Application Number :		
Date :		
First Named Applicant:	Malcolm K. Beyer Jr.	
Confirmation Number:		
Attorney Docket Number:	10963.3801	
<p>I hereby certify that the use of this system is for OFFICIAL correspondence between patent applicants or their representatives and the USPTO. Fraudulent or other use besides the filing of official correspondence by authorized parties is strictly prohibited, and subject to a fine and/or imprisonment under applicable law.</p> <p>I, the undersigned, certify that I have viewed a display of document(s) being electronically submitted to the United States Patent and Trademark Office, using either the USPTO provided style sheet or software, and that this is the document(s) I intend for initiation or further prosecution of a patent application noted in the submission. This document(s) will become part of the official electronic record at the USPTO.</p>		
Submitted By:	Elec. Sign.	Sign. Capacity
Barry Lee Haley Esq. Registered Number: 25,339	/barry lee haley/	Attorney

Documents being submitted:	Files
us-request	109633801-usrequ.xml us-request.dtd
us-fee-sheet	us-request.xml 109633801-usfees.xml
us-declaration us-power-of-attorney-grant application-body	us-fee-sheet.xml us-fee-sheet.dtd declPage1.tif declPage2.tif ABX109633801.xml application-body.dtd
	Image1.tif Image2.tif Image3.tif isoamsa.ent isoamsb.ent isoamsc.ent isoamsn.ent isoamso.ent isoamsr.ent isobox.ent isocyr1.ent isocyr2.ent isodia.ent isogr1.ent isogr2.ent isogr3.ent isogr4.ent isolat1.ent isolat2.ent isomfrk.ent isomopf.ent isomscr.ent isonum.ent isopub.ent isotech.ent mathml2.dtd mathml2-qname-1.mod mmlalias.ent mmlextra.ent soextblx.dtd us-application-body.xsl wipo.ent
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description-pdf	ABX109633801-desc.pdf
drawings-pdf	ABX109633801-draw.pdf
Comments	

ACKNOWLEDGEMENT RECEIPT

Electronic Version 1.1

Stylesheet Version v1.1.1

Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM																																																																																																						
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Timestamp:	2004-09-21 16:49:55 EDT																																																																																																						
From:	us																																																																																																						
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CELLULAR PHONE/PDA COMMUNICATION SYSTEM

DESCRIPTION

Field of the Invention

[Para 1] This invention relates generally to an integrated communications system using a plurality of cellular PDA/GPS phones for the management of a group of people through the use of a communications net and, specifically, provide each user with a cellular phone that has features that permit all the users to know each other's locations and status, to rapidly call and communicate data among the users by touching display screen symbols and to enable the users to easily access data concerning other users and other database information.

Description of Related Art

[Para 2] The purpose of a communications system is to transmit information bearing signals from a source, located at one point, to a user destination, located at another point some distance away. A communications system is generally comprised of three basic elements: transmitter, information channel and receiver. One form of communication in recent years is cellular phone telephony. A network of communication cells set up around an area such as the United States allows multiple users to talk to each other, either on individual calls or on group calls. Some cellular phone services enable a cellular phone to engage in conference calls with a small number of users. Furthermore, cellular conference calls can be established through 800 number services. Cellular telephony also now includes systems that include Global Positioning System (GPS) navigation that utilizes satellite navigation. These devices thus unite cellular phone cellular technology with navigation information and computer information transmission and receipt of data.

[Para 3] Digital SMS (Smart Message Service) and TCP/IP messages can be transmitted using cellular technology such as the various versions of GSM and CDMA or via a WiFi local area network. One implementation of these GPS location reporting cellular systems is for the data to go to a central site where the information is displayed for a person to monitor the locations of the units that have the combined GPS cellular phone. Another implementation permits the cellular phone users to also view the location of other GPS equipped units. A drawback of the current implementation is that these systems are either all on or all off. There is no way to selectively activate participants or to stop the participants from participating in the

network Another drawback of the use of the current combined cellular phone PDA technology is that when using the PDA to display a map (that also may depict georeferenced businesses, homes and other facilities' locations and phone numbers), and the operator wants to place a call, the cellular phone/PDA operator is required to obtain the phone number by touching the display screen at the correct location of that entity on the map to obtain the phone number, then the operator has to memorize the phone number, then go to a different display to enter the phone number, to make the call and then, if desired, go back to the map display. Needless to say, this is a cumbersome process. Sending a text message to a location, business, home or facility that appears on a PDA map display to another cellular phone can also be a cumbersome process as the PDA operator has to find the phone number on the map display, memorize the phone number, then go to a different display to enter a text message, enter the text message, send the text message and then shift back to the map display program. Furthermore, for a phone to send data concerning a new entity of interest (car, person, tank, accident, or other entity) the operator must type in the information and the latitude and longitude of the entity.

[Para 4] In spite of the rapid advance in cellular phone technology, it would also be desirable to actuate a remote cellular phone to annunciate an audio message to alert the remote user that there is an emergency (or for another reason) and that the calling cellular phone should be called immediately. Furthermore, it would be desirable to cause the remote phone to display a text message, photograph, video clip or video transmission, to announce the caller's name and to be able to control a remote phone and cause the remote phone to call another phone number (as an example, to automatically establish an 800 number conference call), to vibrate, or increase the loudness of an announcement without any action by the remote phone operator.

[Para 5] The present software invention overcomes many of these problems shown in the prior art by providing a cellular phone /PDA/GPS user: a) the ability to selectively poll each of the other PDA / GPS phones to start reporting their positions and status information directly to all or selected users equipped with cellular phone/PDA communication/GPS system in the communications net so that each of the systems that the data is transmitted to is provided a display of the location, status and other information of the other users; b) the ability to exchange other entities of interest information and to assign these entities a category (car, person, tank, accident, or other entity) by touching the display screen at their locations on the map, and selecting the appropriate category switch; c) the ability to make rapid voice and data call initiation to locations, businesses, homes and facilities whose phone number is available in a georeferenced database including the cellular phone/PDA/GPS systems in a communications net by touching the display screen at the appropriate location on the PDA display and selecting a call switch; d) the ability to make rapid voice and data conference call initiation to locations, businesses, homes and facilities whose phone

number is available in a georeferenced database including the cellular phone/PDA/GPS systems in a communications net by touching the display screen at the appropriate locations on the PDA display and selecting a conference call switch; e) the ability to remotely control from one cellular phone/PDA/GPS any of the other cellular phone/PDA/GPS systems phones including the ability to control remote cellular phones to make verbal prerecorded announcements, place return calls, place calls to another phone number, vibrate, execute text to speech software, change sound intensity and process and display information by touching the display screen at their location on the PDA display and selecting the appropriate switch; and f) the ability to layer a sufficient number of switches or buttons on the PDA display to perform the above functions without overlaying the map.

[Para 6] U.S. Patent Application No. 2003/0139150 published July 24, 2003 shows a portable navigation and communication system. In one embodiment, the system combines within a single enclosure a GPS satellite positioning unit, mobile telephony using cellular phone technology and personal computing capable of wired or wireless internet or intranet access using a standard operating system. The purpose of this invention is to provide portable navigation for an individual. However, to operate the device, one still needs to utilize a keypad with the telephone functions. U.S. Patent Application No. 2003/0139150 described a wireless communication operating the PDA in a conventional manner. There is no provision for displaying the location of other similarly equipped systems. There is no provision to cause other similarly equipped cellular phone PDA users to transmit their location. There is no provision for entering other entities of interest by touching the display screen at their locations on a map. There is no provision for making a telephone call by touching the display screen at a net participant's symbol to initiate automatically the telephone call to that user or by touching multiple symbols to make conference calls. There is no provision for sending text messages, photographs or videos by touching the net participant(s)' symbol(s) on the display screen to automatically send text messages, photographs or videos to that participant or participants. There is no description or disclosure of a procedure to cause digital messages to be sent to a remote cellular phone that would cause the cellular phone to make verbal announcements, increase sound intensity, vibrate or to call back or to call another phone number. There is no description of the uses of layered soft switches which confine the switches to a particular vicinity of the PDA's display screen.

SUMMARY OF THE INVENTION

[Para 7] A method and system employing cellular telephone communications to provide the location information to a group of geographically dispersed people, and to enable the rapid transmission of data concerning entities of interest to the members of the group and to coordinate the activities of the group through data and

voice communications. Each of the cellular telephones includes a visual display with a touch screen, a global positioning system (GPS) receiver and navigation display, a CPU, memory, power supply, battery, microphone, speaker and commercially available software. To this is added: a) communications data and voice exchange software, b) a map database and a database of geographically referenced fixed locations including military bases, homes, businesses, government facilities, street locations and the like, each with a specified latitude and longitude, along with, if available, phone numbers that are associated with of each of these entities, c) another database with the constantly updated GPS location and status of all the software equipped cellular phone/PDA/GPS systems that are part of the communications net.

[Para 8] Each cellular phone/PDA/GPS system is identified on the display of the other phone systems by a symbol that is generated to indicate its identity. The symbol is placed at the correct geographical location and is correlated with the map on the display. Each cellular phone/PDA/GPS System may enter other entities (locations of people, vehicles, buildings, facilities, and other entities) into its database. This information can be likewise transmitted to all the other participants on the communications net. The map, fixed entities, and cellular phone/PDA/GPS System communications net participants' latitude and longitude information is related to the display x, y display locations by a mathematical correlation algorithm.

[Para 9] When the cellular phone/PDA/GPS System user uses his stylus or finger to touch one or more of the symbols or a location on the cellular phone display, the system's software causes the status and latitude and longitude information concerning that symbol or location to be displayed.

[Para 10] To operate the present invention, the operator ("cellular phone one" or "phone one") starts the system by selecting the software which causes: a) the cellular phone to initiate (if it has not already been activated), b) the GPS interface to be established, c) a map of the geographic area where the operator is located and operator's own unit symbol to appear at the correct latitude and longitude on the map, d) the locations of people, vehicles, buildings, and the like that are part of the database appear as symbols on the map, e) the system selected item read out area (which provides amplification information for the communications net participant or object that has been touched on the display screen) to appear on the display, f) an insert area that contains various varying data including: the list of net participants, a list of messages to be read, an indication of what portion of the map is being displayed in major area and other information to appear on the display, and g) a row of primary software created "soft switches" that are always present on the display. One of these soft switches when touched causes a matrix of software driven layered switches (soft switches) to appear on the display in place of the readout and insert areas. Some of these soft switches, when touched, cause the system's functions to occur. Other soft switches cause yet another layer of soft switches to appear, replacing those that were previously displayed. The operator is provided an indication of where the operator is in

the layer of switches, and is able to return to the previous layer or to cause the layered switches to disappear and only the basic switches to remain. The operator can also use the phone's hardware pointing device (Navigation Pad) to control the soft switches. By using these soft switches, and hard switches that are part of the cellular phone, the operator can activate different maps, change map scales, select which fixed entities are desired to be displayed, display the information concerning the symbol the operator has touched, initiate phone voice calls, send messages (text, photographs and videos), enter symbols and information representative of other entities, view the locations and statuses of the other communications net participants, establish conference calls, pre-establish conference sub-nets that, when activated, cause all the phone numbers that are specified to be conferenced for voice, text and photograph and video communications, and transmit messages to remote phones which cause the remote phones to make calls, verbal announcements, vibrate, increase sound levels and other functions. To initialize the communications net, the cellular phone one operator selects, from a list, the other users (or all of them), that the operator desires to be part of the communications net. The system then polls the selected phones to activate and become part of the communications net. The selected phones then transmit their positions to all the other phones in the established net. Through interaction with one or more other software enabled cellular phones, symbols are generated on the operators' displays based on the participants' latitude and longitude that is exchanged between the cellular phones. The transmission of this information is based on an algorithm that considers time and or movement or upon a polling request. Each of the communication net symbols on the display represent a different cellular phone remote from cellular phone one. Each of the cellular phones has the phone numbers of all the phones in the communications net in its database. Each of the phones also has in its database the pre-established phone numbers for the fixed locations: people, buildings, facilities, military bases, and other desired locations that can be called in its database. The touch screen provided with the LCD display in the cellular phone includes x, y coordinates that are correlated with the map on the cellular phone display and the geographic location of the fixed sites and the cellular phones in the communications net. Each cellular phone can enter objects of interest by touching the display screen at the object's location on the display screen map. The operator can then assign these objects a category (car, person, tank, accident, or other category). The latitude and longitude of these objects along with their category and other information is then sent on the communications network. Because each of the receiving telephone units has software that automatically converts the received data to the correct map location, the transmitted symbols appear at the correct location without operator intervention and their category information is available by touching the symbol on the display screen.

[Para 11] Each cellular phone / PDA/ GPS has the communications hardware along with the circuitry in software to initiate a voice telephone call or transmit data messages, photographs, or videos by touching the screen with a stylus or finger at the

symbol location displayed on the screen of the desired phone to be called and then selecting the "call" software switch on the display touch screen. The software will then cause the cellular phone to call to the specific phone number represented by the symbol on the screen. This is done automatically. This action alleviates completely the necessity of actually looking up a phone number and manually entering the phone numbers required to make a cellular phone call.

[Para 12] A further benefit of the present invention is that more than one symbol can be specified to receive a cellular phone voice call and or data call, thus automatically conferencing them. The operator of the cellular phone can conference a small number of phones by touching the display screen locations of the communications net participant symbols that the operator wishes to conference by selecting a "conference" soft switch. This action will then cause the selected units to be conferenced together. The conference call can be expanded to a greater number of users by providing additional software that would conference phones by sending a digital message to the remote cellular phones from the operator cellular phone causing each of the remote cellular phones to dial a specified 800 conference call number and enter each individual phone participant code. The originator phone calls the same number and automatically enters the originator host code. Once all the phones have dialed the 800 number and entered their appropriate participant and host numbers, the conference call will be established. Furthermore, the operator of cellular phone one can pre-establish conference nets for voice and data exchange by either selecting them from a list or a table or by touching the display screen locations of the communication net participant symbols that the operator wishes to conference and selecting a "conference net" soft switch. Once the operator has done that, the software associates those communication net participants as being part of an established conference net. When the cellular phone operator chooses to call all the net participants, all the operator has to do is to select the designated software switch for that net to conference the pre-selected conference participants together. That action will then place a call to all the conferences without further action. This method of conference calling can be also used to send text messages, photographs and videos.

[Para 13] Another embodiment of the invention can include a unique feature in which cellular phone one can send a digital message using SMS, TCP/IP or another protocol to another cellular phone on the communications net by touching a display screen symbol on the geographical screen and then selecting the appropriate software switch to transmit a digital message that would then remotely activate a program in the remote cellular phone to play a recorded audio file to announce an emergency and that a call to cellular phone one is required immediately. Since each of the remote cellular phones has the same software as cellular phone one and includes a PDA and the ability to receive digital messages, the ability to control remote cellular phones to make verbal announcements, display images, place return calls, place calls to another

phone number, vibrate, change sound intensity and process and display pre-stored data, images and video can be achieved.

[Para 14] In accordance with the present invention, a multiple cellular phone communication network is set up using the invention. Each cellular phone contains the same software and circuitry that includes cellular phone technology, GPS navigation technology, and a PDA for displaying maps, georeferenced symbols, and data concerning symbols of interest and software created soft switches, transmitting and receiving digital SMS, TCP/IP and other protocol messages. To establish each other's communication net IP addresses, the cellular phones first exchange SMS messages (or use another method) that identifies their IP addresses. Each phone then transmits to all others its location and status in accordance with an established algorithm that is based on time and or movement. Each cellular phone is also able to poll the other cellular phones to transmit their locations. Each user is able to transmit to all the other users: text messages, photographs and videos. Using the present invention, a cellular telephone network can be set up in which all of the parties in the network have almost automatic and instant access to and status of any and all other parties in the network by touching the display screen symbol of the party he desires to initiate voice and data calls, thus, instantly activating the calls. This is an immense time saver in dealing with a cellular phone network for all the parties combined.

[Para 15] It is an object of this invention to provide an improved cellular telephone communication network among a plurality of cellular phones for greatly increasing the call up and initiation speed of each of the cellular phones with each other.

[Para 16] And yet another object of this invention is to enable each participant to automatically exchange IP addresses using SMS or another digital message format.

[Para 17] And yet another object of this invention is to enable each participant in the communications net to poll the other net participants to report or cease reporting their locations and status on the communication net.

[Para 18] And yet another object of this invention is to enable each participant in the communications net to be able to easily transmit entities of interest to the other participants of the net by touching the display at the entities' location on the map and causing a symbol to be entered and then entering the entities' category information.

[Para 19] And yet another object of this invention is to provide for initiating a cellular phone telephone call to another phone by touching the other phone's symbol on the screen of the cellular phone, which automatically activates the telephone call.

[Para 20] And yet another object of this invention is to provide a cellular phone network that provides for instant conference calling among a plurality of cellular phones by touching the screen of specific symbols for initiating the calls.

[Para 21] And yet another object of this invention is to provide a cellular phone network that provides for instant conference voice, text, photographs and video exchange by pre-establishing conferencing sub-nets and the subsequent activation of one of those sub-nets to establish a conference call.

[Para 22] And yet still another object of this invention is to provide a cellular phone that allows for remote alarm activation on another cellular phone to cause a remote cellular phone to make verbal announcements, display images, place return calls, place calls to another phone number, vibrate, change sound intensity and process and display pre-stored data, images and video.

[Para 23] In accordance with these and other objects which will become apparent hereinafter, the instant invention will now be described with particular reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[Para 24] Figure 1 shows a front plan view of a cellular phone/PDA and display in accordance with the present invention.

[Para 25] Figure 2 shows a front plan view of the cellular phone/PDA of Figure 1 with a different display.

[Para 26] Figure 3 shows a flow chart of the operation of the present invention.

DETAILED DESCRIPTION

[Para 27] Referring now to the drawings and, in particular, Figure 1, the present invention is shown generally at 10 that includes a small handheld cellular phone/PDA communications system in housing 12 that includes an on/off power switch 19, a microphone 38, and an LCD display 16 that is also a touch screen system. The small area 16a is the Navigation Bar that depicts the telephone, GPS and other status data and the active software. With the touch screen system, the screen symbols are entered through GPS inputs or by the operator using a stylus or finger 14 by manipulatively directing the stylus or finger 14 to literally touch display screen 16. The soft switches displayed on the screen are likewise activated by using a stylus or finger 14 and physically and manipulatively directing the stylus or finger to literally touch display screen 16. The display x, y coordinates of the touched point are known by a CPU in the PDA section of the communication system that can coordinate various information contained in the PDA portion relative to the x, y coordinate position on the screen. Inside housing 12 is contained the conventional cellular phone elements

including a modem, a CPU for use with a PDA and associated circuitry connected to a speaker 24 and a microphone 38. A GPS navigational system that can determine the latitude and longitude of the cellular phone can be internal or external to the housing 12. PDA / cellular phone units such as these are currently on sale and sold as a complete unit (or with an external connected GPS) that can be used for cellular telephone calls and sending cellular SMS and TCP/IP or other messages using the PDA's display and computer. The GPS system is capable of determining the latitude and longitude and through SMS, TCP/IP, WiFi or other digital messaging software, to also transmit this latitude and longitude information to other cellular phones via cellular communications, WiFi or radio. The unit includes a pair of cellular phone hardware activating buttons 20 to turn the cellular phone on and 22 to turn the cellular phone off. Navigation Pad actuator 18 is similar to a joy or force stick in that the actuator 18 manually provides movement commands that can be used by the PDA's software to move a cursor. Switches 26 and 28 are designed to quickly select an operator specified software program. Device 24 is the system's speaker. Device 38 is the system's microphone. Switch 19 at the top left of the unit is the power on and power off switch.

[Para 28] The heart of the invention lies in the software applications provided in the system. Mounted inside housing 12 as part of the PDA is the display function screen and the CPU. The CPU includes databases that provide for a geographical map and georeferenced entities that is shown as display portion 16b that includes as part of the display various areas of interest in the particular local map section.

[Para 29] When looking at display 16, the software switches which appear at the very bottom of the display 16d are used to control many of the software driven functions of the phone. The software drawn and controlled switches are activated through the operator's use of the Navigation Pad 18, or a small track ball, force stick or similar hardware pointing device. Alternatively, the operator may chose to activate the software switch matrix by touching the screen with his finger or stylus at the switches' locations. When some of the software switches are activated, it will cause yet different software switches to appear. The bar display 16d shows the software switches "ZM IN, (zoom in)" "ZM OT (zoom out)," "CENT (center)" "GRAB, (pan/grab)" at the bottom of the screen. These software switches are for the operator to perform these functions. The "SWITH (switch)" software switch at the lower right causes the matrix of layered software switches to appear above the bottom row of switches. Through use of the software switches, one can also manipulate the geographical map or chart display. When looking at Figure 1, permanent geographical locations and buildings are shown. For example, the police station is shown and when the symbol is touched by the stylus or finger, the latitude and longitude of the symbol's location, as shown in display section 16c, is displayed at the bottom left of the screen. The bottom right side of display 16c is a multifunction inset area that can contain a variety of information including: a) a list of the communication link

participants; b) a list of received messages; c) a map, aerial photograph or satellite image with an indication of the zoom and off set location of the main map display, which is indicated by a square that depicts the area actually displayed in the main geographical screen 16b; d) applicable status information; and e) a list of the communication net participants.

[Para 30] Also shown on the display screen 16, specifically the geographical display 16b, is a pair of different looking symbols 30 and 34, a small triangle and a small square, which are not labeled. These symbols 30 and 34 can represent communication net cellular phone users in the displayed geographical area that are part of the overall cellular phone communications net used in this invention wherein each of the users has a similar cellular phone to the one shown in Figure 1. The latitude and longitude of symbol 30 is associated within a database along with a specific phone number. The screen display 16b, which is a touch screen, provides x and y coordinates of the screen 16b to the CPU's software. The software has an algorithm that relates the x and y coordinates to latitude and longitude and can access a communications net participant's symbol or an entity's symbol as being the one closest to that point. In order to initiate a telephone call to the cellular phone user represented by symbol (triangle) 30 at a specific GPS provided latitude and longitude which has been sent to the cellular phone shown in Figure 1, the operator or initiator of what we call cellular phone one in Figure 1 can take the stylus or finger 14, touch the triangle 30 with the stylus or finger, and then touch a "call" software switch from a matrix of displayed switches that will overlay the display area 16c and immediately the cellular phone one will initiate a cellular phone telephone call to the cellular phone user at the location shown that represents symbol 30. A second cellular phone user is represented by symbol 34 which is a small square but could be any shape or icon to represent an individual cellular phone unit in the display area. The ring 32 around symbol 30 indicates that the symbol has been touched and that a telephone call can be initiated by touching the soft switch that says "call." When this is done, the telephone call is placed. Another type of symbolic display can indicate that the call is in effect. Furthermore, the operator of cellular phone one can call the police station or other locations, buildings, or facilities (whose phone numbers are stored in the database) by touching them on the display screen using the stylus or his finger and then the call switch. Additionally, the operator can touch both symbol 34 and symbol 30 and can activate a conference call between the two cellular phones and users represented by symbols 30 and 34. Again, a symbolic ring around symbol 34 indicates that a call has been initiated.

[Para 31] The system shown in Figure 1 can also initiate a telephone conference call for a small number of phones using a stylus or finger contact to touch all the displayed symbols on display 16 that the initiator desires to conference and then selecting the conference call soft switch. The operator can also pre-establish a conference sub-net that the operator desires to be able to rapidly call. The operator

performs this task by touching the symbols or by selecting participants from a list or a matrix of the participant addresses and assigning the participants to a net software switch. When the operator desires to place a conference call to these participants, the operator simply touches the net soft switch associated with this group. Software is provided in the unit that mimics setting up a normal small conference call from "phone one" to each of the cellular phones the user had indicated by touching their symbols or selecting their sub-net soft switch on the screen. Once the first call is complete, the party will be automatically put on hold and other callers will be called or answered in sequence and put on hold until all the parties are on line at which time the conference call will be announced at each phone. As each participant is called, the phone will announce that a conference call requested by cellular phone one is in progress. This will all be done by software.

[Para 32] If a conference call is desired that includes more than a small number of phone users, the use of an 800 number conferencing service is required. The initiator or operator of cellular phone one would select the "conference 800" call software switch and then use the stylus or finger to touch the cellular phone users' symbols to whom the calls are to be placed. For example, 50 users are desired on a conference call. The cellular phone would send out a SMS or TCP/IP message to all of the cellular phone displays that requests each cellular phone to call an 800 number (the given number for a conference call) to conference with cellular phone one. Each individual cellular phone user at that point in time would then be verbally notified that a conference call was requested. When the user selected the "accept" software switch, the phone would then call the 800 number and enter its conference participant code.

[Para 33] Another feature available in the cellular phone / PDA system shown in Figure 1 is its ability to activate a remote cellular phone to make verbal announcements, display images, place return calls, place calls to another phone number, vibrate, change sound intensity and process and display pre-stored data, images and video. As an example, on the PDA screen display 16, a software switch will be provided that would allow cellular phone one to call in an emergency situation and that would basically initiate an emergency audio response call. Using the stylus or finger again, a symbol such as 30 would be touched with the stylus or finger indicating a call to be made. The software switch labeled "call" would cause other software switches to appear, one of which would be "call provide emergency audio response" which when touched by the stylus or finger 14 would cause the cellular phone one system to automatically call the telephone number represented by symbol 30. The cellular phone 30 includes software that when it receives the SMS or TCP/IP message, can activate an audio message that announces "emergency please call cellular phone one immediately." The announcement would be done through the cellular phone speaker.

[Para 34] Thus, the system is capable of initiating a cellular phone call by touch only, initiating conference call by touch only and activating a remote cellular phone to

announce an emergency and other messages and elicit the audio response in the remote cellular phone by touch only.

[Para 35] Referring now to Figure 2, the same cellular phone/PDA 10 is shown with the soft switch matrix displayed at 16cc and 16d. The cellular phone/PDA is capable of an alternative method of contacting the participants. As shown in Figure 2 and display 16cc, a plurality of squares is displayed having letters and numbers, each square of which indicates a different participant such as "A1SQD." Also, on the right hand side, top line is a switch option called "call." The bottom line 16dd shows ZM IN, ZM OUT, CENT, GRAB and SWIT. Using this alternative telephone method, the initiator can touch individual squares, each having a reference to a participant to initiate one call or a conference call with all of the parties. These can also be joined in a single NET 1 as shown. Subsequent phone calls with the particular designated parties or participants established with NET 1 can subsequently be initiated just by touching NET 1 with the stylus or with a finger. The displayed information can be layered with a plurality of 'NETS' on a next layer for contacting groups of participants in each NET. This is used in lieu of the screen symbols for conference calls.

[Para 36] Referring now to Figure 3, a flow chart is shown of the activities provided by the present invention and the methodology. First, we provide a cellular phone that includes PDA computer technology and a GPS navigation system that provides to the PDA the location of the cellular phone in latitude and longitude at all times. The cellular phone includes an LCD display with touch screen features for use with a stylus or finger.

[Para 37] The communication device is also given a database that includes a geographical display on the LCD display and software that coordinates the x and y coordinates on the LCD display touch screen with the geographical display. There is also software that places symbols on the geographical display that represent other cellular phone users that are part of the communications net. All the participant's cellular phones that are a part of the communications net include an integrated or electronically connected GPS navigational system. Each phone can call the other cellular phones and request that they broadcast their latitude and longitude locations and status information. Each cellular phone can enter other entities of interest and assign each of them a category (car, person, tank, accident, or other category). The latitude and longitude of each of these entities along with each category is then sent on the communications network. Each phone can also have the latitude and longitude and phone numbers of fixed (geographically referenced fixed locations including: restaurants, gas stations, hospitals, fire departments, military bases, homes, businesses, government facilities, street locations, and the like) are also contained in the data base and displayed on the screen.

[Para 38] Therefore, the present invention can provide a cellular phone PDA GPS system that includes a geographical display that shows one or more other cellular phone users symbolically displayed on the screen and also entered entities that each of

the cellular phone users consider to be items of interest, along with pre-established points of interest (geographical referenced fixed locations including: restaurants, gas stations, hospitals, fire departments, military bases, homes, businesses, government facilities, street locations, and the like).

[Para 39] The present invention also includes a database that has the specific cellular phone telephone numbers of each of the displayed symbols thus providing a relationship between the symbol, its location on the geographical screen and the stored memory phone number.

[Para 40] There is also a software program that allows the operator of cellular phone one to touch one of the symbols representing a phone user on the display screen and to initiate a call by touching the appropriate switch with a stylus or finger at which time the software will automatically retrieve the designated symbolic phone telephone number from memory and will initiate instantly a telephone call to the cellular phone number that is associated with the symbol. This is all done by merely touching the symbol representing the phone in the database and touching the "call" soft switch.

[Para 41] In addition, with multiple cellular phone users present, the operator of cellular phone one can use the stylus or finger and touch more than one cellular phone user's symbol and then touch a software switch that says "conference call" wherein the software will initiate and establish conference calls with all of the designated cellular phone users by the touch of a stylus or finger or by selecting a pre-established participant conference net switch. In the event that there are more than a small number of phone users in the area that need to be established on a conference call, because of the technological limitations of conference calls on cellular phones, the system will send a different message that causes the remote cellular phone to call a specific 800 conference number that can establish a much larger number of conference callers. Thus, if the user selects to conference more than an established number of phone users for a conference call, the software will indicate that the 800 number software switch is to be utilized.

[Para 42] In addition the operator of cellular phone one can address text messages, photographs and video for transmission to one or more net participants by either touching their symbols and selecting the appropriate soft switch or selecting the appropriate call net.

[Para 43] Another important feature of the present invention is that the operator or initiator of cellular phone one can by touching a switch on the display, send through the PDA system, a signal and digital message to all the cellular phones in the communications net or to designated cellular phone(s), represented by their symbols on the geographic display, an emergency message which requires a response. When received, the software in the remote cellular phone causes the remote cellular phone to initiate an audio message to the cellular phone user that there is an

emergency (or another message) and to call the initiator immediately. This is accomplished by the message sent from cellular phone one to the software in the remote cellular phone(s).

[Para 44] In summary, the present invention provides for expeditious data exchange and cellular phone calls to one or more users by merely touching the display screen location of a remote cellular phone user's symbol to initiate the call. Other features include conference calling by stylus or finger and a rapid emergency remote activation and causing a remote phone to: announce various pre-established messages, execute text to speech software, increase its volume level, vibrate, show photographs, or show videos.

[Para 45] The instant invention has been shown and described herein in what is considered to be the most practical and preferred embodiment. It is recognized, however, that departures may be made there from within the scope of the invention and that obvious modifications will occur to a person skilled in the art.

What is claimed is:

[Claim 1]

A method of providing a cellular phone communication network for designated participating users, each having a similarly equipped cellular phone that includes a CPU, GPS navigational system and a touch screen display comprising the steps of:

- a) providing for the selective polling of position and status information from one user among all of the other users equipped with cellular phone/PDA/GPS system and its associated software;
- b1) providing for the entering of other entities of interest into the cellular phone CPU and assigning the other entities of interest a category;
- b2) providing the latitude and longitude of the entities of interest along with their categories being automatically sent on the communications network;
- c) providing rapid call initiation to one or more locations whose phone number is available in a geographical referenced database using the touch screen;
- d) providing rapid call initiation to the users of the cellular phone/PDA/GPS network system using the touch screen;
- e) providing rapidly sent text messages, photographs, and video to another cellular phone using the touch screen;
- f) providing rapid conference calling multiple phones that are contained within the geographical referenced data base; and
- g) providing remote control from one cellular phone/PDA/GPS system to any of the other cellular phone/PDA/GPS system phones, including the ability to control remote cellular phones to make verbal announcements, display images, place return calls, place calls to another phone number, vibrate, change sound intensity and process and display pre-stored data, images and video.

[Claim 2]

A communication system to provide a cellular phone network for a group of participants, each of the participants having an individual portable cellular phone that includes a CPU and a GPS navigational system that can accurately determine the location of the cellular phone. Each of the cellular phones in the communications net of participants contains:

- a CPU and memory;
- a touch screen display;
- symbol generator in said CPU that can generate symbols that represent each of the participants in the communication network on the display screen;
- a database that stores the individual telephone numbers related to each of the symbols each of which represents a participant in the communication network;

cellular phone call initiating software in said CPU connected to the telephone number database and the touch screen and the symbols on the touch screen whereby touching an individual symbol will automatically initiate a cellular phone telephone call to the use represented by the symbol; and

said display including databases that display geographical information that includes showing the geographical location of each of the symbols representing participants in the communication network, fixed locations, and entered items of interest.

[Claim 3]

A communication network that includes said participants, each having a cellular phone as in Claim 2 further comprising:

said software for automatically initiating a cellular phone call to a user represented by a symbol includes initiating a conference call to one or more of the participants from a base phone by touching the specific symbols of those participants that will be participating in a conference call by touching the symbol of each of those users and providing a software switch to initiate the conference call by touching the screen whereby each of the initiated conference participants will be called by the base phone to establish a conference call.

[Claim 4]

A communication network using the cellular phone as in Claim 3 whereby the communication network can include a large number of participants in a conference call comprising:

conference call initiating software in said CPU that includes the transmission by touching the symbol of each of the participants of an 800 number that will be provided to each of the proposed conference call participants allowing them to call the 800 number to establish the conference call with the base phone.

[Claim 5]

A communication network as in Claim 2 including the cellular phone in Claim 1 that comprising:

said CPU including a software program to initiate a call to one of the participants represented by a symbol on said touch screen in conjunction with a software switch displayed on said touch screen and software to initiate the cellular phone call automatically that turns the remote cellular phone on or off and generates in the receiving remote cellular phone a pre-stored message that alerts the remote cellular phone user to call the initiator.

[Claim 6]

A method of establishing a cellular phone communication network for designated participants, each having a similarly equipped cellular phone that includes a CPU, a GPS navigation system and a touch screen display comprising the steps of:

- a) generating one or more symbols on the touch display screen, each representing a different participant that has a cellular phone that includes a CPU, a GPS system and touch screen display;
- b) providing and storing in each of the participant cellular phones one or more cellular phone telephone numbers, each cellular phone number of which relates to a different symbol of each of the participants in the communication network;
- c) providing initiating cellular phone calling software in each cellular phone that is activated by touching a symbol on the touch display that automatically initiates a cellular phone using the stored cellular phone number to the participant represented by the symbol; and
- d) generating a geographical location chart on said display screen to show the geographical location of each of the symbols representing the participants in the communication network by latitude and longitude.

[Claim 7]

The method of establishing a communication network as in claim 6 comprising the additional step of:

- e) providing conference call initiating software that allows each of the participants to initiate a conference call to other participants by touching each of the symbols on the touch screen representing participants who will participate in the conference call.

[Claim 8]

A method of establishing a communication network as in claim 6 including the step of:

- f) providing conference call initiating software for a large number of participants represented by the symbols on the touch screen in which each of the proposed conference call participants are established by touching the participant's symbol on the screen which causes the cellular phone initiating the conference call to transmit messages to each of the users represented by the touched symbols that tells each of the called participants through their cellular phones to call a particular 800 number to establish the conference call.

[Claim 9]

The method of providing a communication network as in claim 1 including the step of:

providing in each of the cellular phones a remotely activatable software program for turning the cellular phone on and off and that initiates a signal from the remote cellular phone displaying a pre-stored message and to call the initiating cellular phone; and

providing software that activates the remote cellular phone causing the remote cellular phone to generate said pre-stored message to the remote cellular phone user.

[Claim 10]

A cellular phone for use in a communication network for a plurality of participants comprising:

a cellular phone transmitter and receiver;

a small hand held portable housing containing said cellular phone transmitter and receiver;

a touch display screen mounted in said housing;

a modem connected to said cellular phone transmitter and receiver;

a CPU connected to said cellular phone transmitter and receiver;

a GPS navigation system connected to said CPU and to said cellular phone transmitter and receiver on said touch screen;

a database connected to said CPU that includes the symbol of a list of telephone numbers that relate to specific symbols;

a symbol generator connected to said CPU and said database for generating symbols on said touch screen, each of said symbols representing a participant in a communication network that has a cellular phone;

CPU software for selectively polling other participants with a cellular phone;

call initiating software connected through said CPU and said telephone database and said symbol generator whereby when a user touches the symbol displayed on a display screen the cellular phone call is automatically initiated to the cellular phone represented by the symbol; and

a geographical database connected to said CPU to provide a geographical display on said touch screen representing a defined geographical area that also displays symbols representing each of the participants that has an identical cellular phone by latitude and longitude.

[Claim 11]

A cellular phone as in Claim 10, including:

conference call initiating software connected to said CPU that allows the cellular phone user to initiate a conference call to a plurality of participants

represented by symbols by touching each of the symbols and initiating a conference call software switch.

[Claim 12]

A cellular phone as in Claim 10, including:

conference call initiating software for large number of conference call participants that allows the user of the cellular phone to initiate a conference call to the cellular phone users represented by the symbols on the screen by touching each of the symbols representing a participant in the conference call which initiates an automatic cellular phone call to the remote cellular phone users represented by the symbols displaying a text message to call a particular 800 number to establish the conference call.

[Claim 13]

A cellular phone as in Claim 10, including:

an emergency call initiating software connected to said CPU that includes a remote cellular phone activating signal for causing a remote cellular phone that is called by touching a symbol representing the cellular phone to be called to generate and play an audio message telling the remote cellular phone user that there is an emergency and to call the cellular phone initiator.

[Claim 14]

A cellular phone as in Claim 12, including:

providing the ability to pre-establish phone conferencing nets by touching the PDA display screen at a symbolic representation of the person(s) location or by selecting the parties from a list appearing on the PDA screen and assigning them to a software drawn switch made to appear on a PDA display screen; and

providing the ability to conference the participants previously assigned to a net by using a software drawn switch(es) for a conference call, whereby the user touches the net software switch to initiate the call to all of the participants on the net.

[Claim 15]

A layered set of software drawn switches as in Claim 14, including:

a set of layered software drawn switches so that each switch that when activated on the PDA overlays the previously drawn switches, thus providing the operator a large choice of switches in the same physical space on the PDA screen.

ABSTRACT

A cellular PDA communication system for allowing a plurality of cellular phone users to monitor each others' location and status, to initiate cellular phone calls by touching a symbol on the display screen with a stylus or finger which can also include conferencing calling. The system also provides for remote activation of a cellular phone by an initiator causing the remote cellular phone to annunciate audio announcements, to call another phone number, to increase the volume of the speaker, to vibrate or to display images or videos. All this is accomplished with a conventional cellular phone PDA that includes GPS navigation with an enhanced improved software program.

10711490

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION
(English Language Declaration)

Our File No. 10963.3801

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **CELLULAR PHONE/PDA COMMUNICATION SYSTEM**, the specification of which (check one):

is attached hereto
 was filed on _____ as Serial No. _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability, as defined in Title 37, Code of Federal Regulations §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>			<u>Priority Claimed</u>	
<u>Number</u>	<u>Country</u>	<u>Day/Month/Year</u>	<u>Yes</u>	<u>No</u>

I hereby claim the benefit under Title 35, United States Code, Section 120, of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations 1.56, which occurred between the filing date of the prior application and the national or PCT International filing date of this application:

<u>Serial No.</u>	<u>Filing Date</u>	<u>Status</u>

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

10711490

POWER OF ATTORNEY

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith along with any and all foreign applications filed and foreign patents issued therefrom.

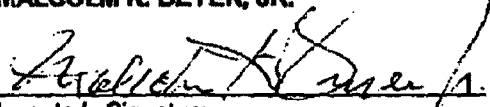
Barry L. Haley, Registration No. 25,339
Dale Paul DiMaggio, Registration No. 31,823
Joseph R. Englander, Registration No. 38,871
Jerry D. Haynes, Registration No. 42,646
James David Johnson, Registration No. 47,685

Send all correspondence to: Barry L. Haley, Esq.
MALIN, HALEY & DIMAGGIO, P.A.
Customer No. 22235
1936 South Andrews Avenue
Fort Lauderdale, Florida 33316

Direct telephone calls to: Barry L. Haley
(954) 763-3303

Full Name of Sole or First Inventor
MALCOLM K. BEYER, JR.

Citizenship
UNITED STATES OF AMERICA


Inventor's Signature

Sept 20, 2004
Date

Residence
Jupiter Inlet Colony, Florida

Post Office Address
92 Lighthouse Drive
Jupiter Inlet Colony, Florida 33469-3504

Full Name of Second Joint Inventor

Citizenship

Second Inventor's Signature

Date

Residence

Post Office Address

Et10893/mml3801.226pat

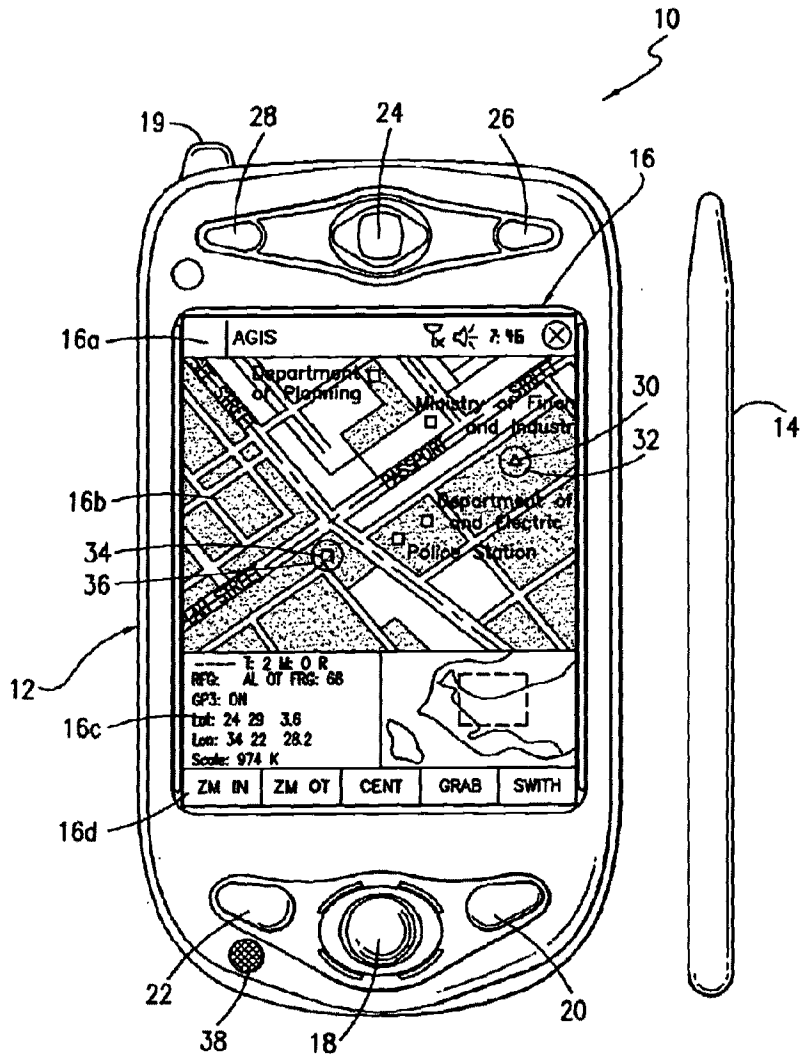


FIG. 1

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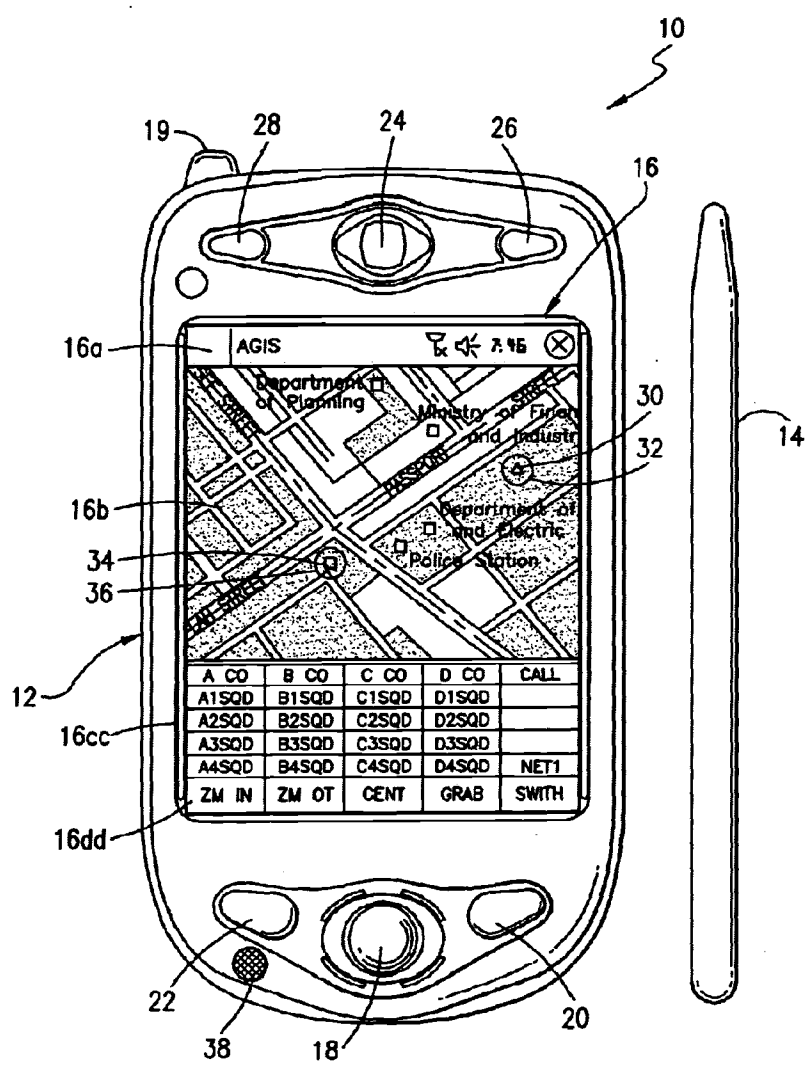


FIG. 2

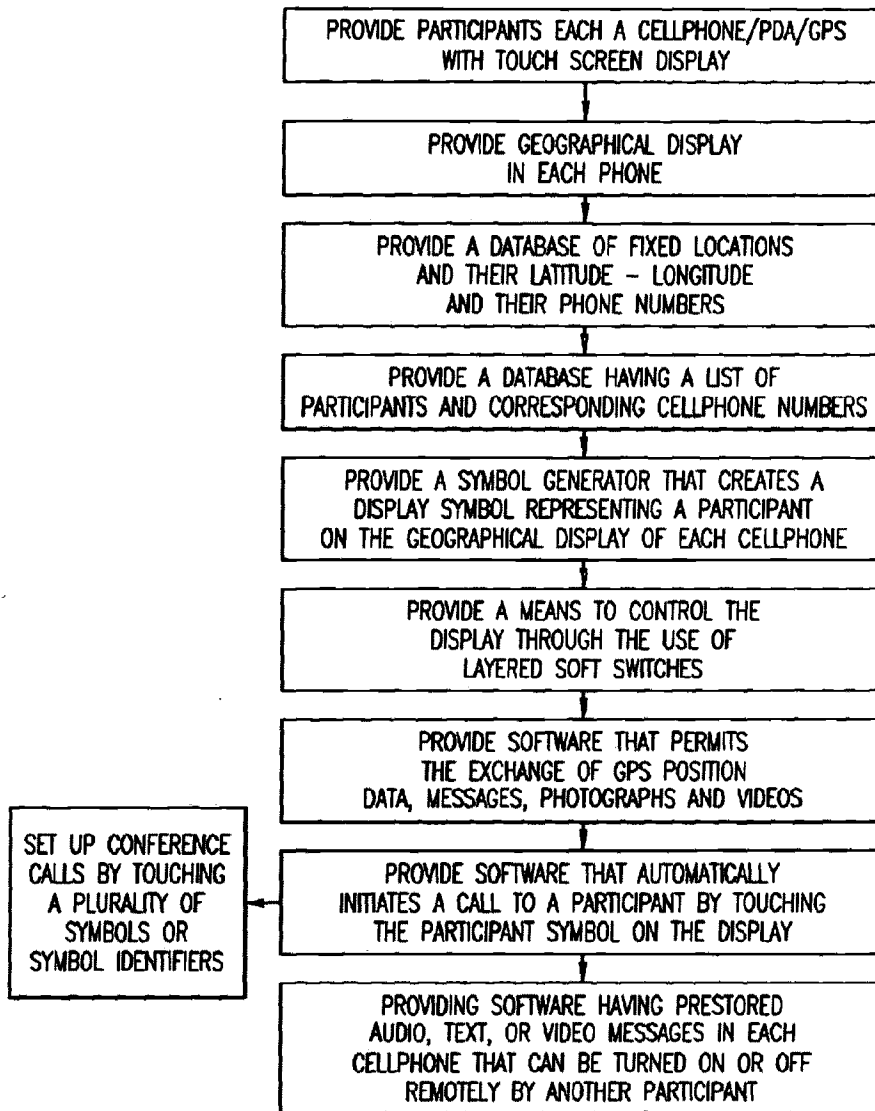


FIG. 3

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

**Title of
Invention**

CELLULAR PHONE/PDA COMMUNICATION SYSTEM

Application Number : 10/711490
Confirmation Number: 5489
First Named Applicant: Malcolm Beyer
Attorney Docket Number: 10963.3801
Art Unit: 2681
Examiner:
Search string: (20030139150).pn

**US Published Applications**

Note: Applicant is not required to submit a paper copy of cited US Published Applications

init	Cite.No.	Pub. No.	Date	Applicant	Kind	Class	Subclass
	1	20030139150	2003-07-24	Robert Michael Rodrigues, et al.			


Signature

Examiner Name	Date

TRANSMITTAL

Electronic Version v1.1

Stylesheet Version v1.1.0


Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM	
Application Number :	10/711490	
Date :	2004-10-28	
First Named Applicant:	Beyer Malcolm K. Jr.	
Confirmation Number:	5489	
Attorney Docket Number:	10963.3801	
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Submitted By:	Elec. Sign.	Sign. Capacity
Barry Lee Haley Esq. Registered Number: 25,339	/barry lee haley/	Attorney

Documents being submitted:	Files
us-ids	109633801ids-usidst.xml us-ids.dtd us-ids.xsl
Comments	

ACKNOWLEDGEMENT RECEIPT

Electronic Version 1.1

Stylesheet Version v1.1.1

Title of Invention	CELLULAR PHONE/PDA COMMUNICATION SYSTEM																																		
Submission Type :	Information Disclosure Statement																																		
Application Number:	10/711490																																		
EFS ID:	71384																																		
Server Response:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Confirmation Code</th> <th colspan="3">Message</th> </tr> </thead> <tbody> <tr> <td>ISVR1</td> <td colspan="3">Submission was successfully submitted - Even if Informational or Warning Messages appear below, please do not resubmit this application</td> </tr> <tr> <td>ICON1</td> <td colspan="3">5489</td> </tr> <tr> <td>USPTOEFSNot</td> <td colspan="3">For assistance with e-filing a patent application, contact the Patent Electronic Business Center: Toll-Free Number:1 (866) 217-9197 Website: http://www.uspto.gov/ebc/</td> </tr> </tbody> </table>			Confirmation Code	Message			ISVR1	Submission was successfully submitted - Even if Informational or Warning Messages appear below, please do not resubmit this application			ICON1	5489			USPTOEFSNot	For assistance with e-filing a patent application, contact the Patent Electronic Business Center: Toll-Free Number:1 (866) 217-9197 Website: http://www.uspto.gov/ebc/																		
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First Named Applicant:	Malcolm Beyer																																		
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Timestamp:	2004-10-28 14:04:53 EDT																																		
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Digital Certificate Holder Name:	cn=Barry Lee Haley,ou=Registered Attorneys,ou=Patent and Trademark Office,ou=Department of Commerce,o=U.S. Government,c=US																																		

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number

10711490

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	15 minus 20 =	-
INDEPENDENT CLAIMS	4 minus 3 =	1
MULTIPLE DEPENDENT CLAIM PRESENT	<input type="checkbox"/>	

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE

OR OTHER THAN SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
XS 9=		OR	XS18=	
X43=	43	OR	X86=	
+145=		OR	+290=	
TOTAL	428	OR	TOTAL	

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
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	Independent	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
XS 9=		OR	XS18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
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X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
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	Independent	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
XS 9=		OR	XS18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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S1	85066	"455"/\$6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:47
S2	0	"455"/\$6.ccls	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:47
S3	0	"455"/\$6.ccls	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:48
S4	0	"455"/\$6.ccls and (PDA with cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:48
S5	2070	"455"/\$6.ccls. and (PDA with cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:49
S6	96348	"455"/\$6.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:49
S7	1352930	(mobile or cellular or wireless or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:50
S8	100299	(PDA or (personal adj digital adj assistant) or (Blackberry) or (Pocket adj PC))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:50

S9	6440	S6 and S7 and S8	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:57
S10	37064	(LCD or touch) adj (screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:57
S11	702	S9 and S10	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 09:59
S12	27	S11 and (combination with (S7 with S8))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 10:15
S13	165	S6 and (combination with (S7 with S8))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 10:28
S14	253	455/556.2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 10:28
S15	226	455/556.2.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:00
S16	0	455/416,414.4,412.1,415,412.2, 404.2,457,422.1,427,431,456.1, 500,517,518,519,556.1,556.2,457, 463,458,516,564,420	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:01

S17	10742	455/416,414.4,412.1,415,412.2, 404.2,457,422.1,427,431,456.1, 500,517,518,519,556.1,556.2,457, 463,458,516,564,420.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:01
S18	211	S17 and stylus	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:03
S19	1313	(combo or combination) with S7 with S8	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:04
S20	11	S17 and S19 and stylus	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:04
S21	0	S17 with S7 with (S10) with stylus	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:15
S22	0	S17 with (S7 and (S10) and stylus)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 11:15
S23	106	S17 and (S7 and (S10) and stylus)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 12:57
S24	49	S23 and (communications adj network)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 13:04

S25	3149	S7 and (GPS or (Global adj Position\$3 adj Satellite) or Global Position\$3 System) and S10 and stylus	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 13:07
S26	1880	S25 and (icons or symbols or pix or pictures)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 13:07
S27	954	S26 and database	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 13:09
S28	161	S27 and (conference)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:24
S29	589	PDA and GPS and cellular and (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:24
S30	147	S28 and network	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:32
S32	39	PDA adj (communication adj (network or system))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:36
S33	33	PDA adj (wireless adj communication adj (network or system))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:38

S34	0	"6868337.pn"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:38
S35	2	"6868337"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:44
S36	589	PDA with (symbols or icons)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:45
S37	20	PDA with (symbols or icons) with map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 14:49
S38	127	PDA with (symbols or icons) and map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:05
S39	25	"0139150"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:05
S40	0	"0139150 A1"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:05
S41	0	"0139150A1"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:05

S42	0	"0139150A1.pn"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:05
S43	0	Robert adj Michael adj Rodriguez	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:07
S44	116	"5528248"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:13
S45	0	PDA with combo with GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:14
S46	66	PDA with combination with GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:14
S47	23	PDA with cellular with combination with GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:24
S48	0	PDA with cellular with combination with GPS with (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:24
S49	0	PDA with cellular with GPS with (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:25

S50	56	PDA with cellular with GPS and (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:25
S51	435	S7 with S8 with S10	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:45
S52	4	PDA with (touch adj screen) with (icon or symbol) with (call\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:48
S53	24	PDA with (touch adj screen) and(icon or symbol) with (call\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:51
S54	51	PDA with (touch adj screen) and(icon or symbol) same (call\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 15:52
S55	39	PDA adj communications adj (system or network)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:25
S56	15	(PDA adj communications adj (system or network)) and (LAN or Local adj area adj network)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:26
S57	10902	wireless adj communication adj network	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:29

S58	2764	S57 and PDA	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:30
S59	285	S57 with PDA	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:31
S60	4	S57 with (selected or group) with PDA	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:35
S61	2317	Palm adj pilot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:35
S62	3367	(Palm Pilot) with (communications adj (system or network))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:37
S63	2317	(Palm adj1 Pilot)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:38
S64	1	(Palm adj1 Pilot) with (icon or symbol) with (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:41
S65	0	(Pocket adj1 PC) with (icon or symbol) with (touch adj screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/11 16:41

S66	35	CPU with (icon or symbol\$2) adj generator	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 08:53
S67	100398	(PDA or (personal adj digital adj assistant) or (Blackberry) or (Pocket adj PC))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 08:53
S68	0	(CPU with (icon or symbol\$2) adj generator) and S67	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 08:54
S69	34	(CPU with (icon or symbol\$2) with software) and S67	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 08:59
S70	37104	(LCD or touch) adj (screen)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:00
S71	10754	455,416,414.4,412.1,415,412.2, 404.2,457,422.1,427,431,456.1, 500,517,518,519,556.1,556.2,457, 463,458,516,564,420.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:00
S72	913	S71 and (S70 or (LCD or touch) adj (panel or display or screen))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:00
S73	1353566	(mobile or cellular or wireless or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:00

S74	416	S72 and S67 and S73	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:17
S75	17	S74 and ((auto dial\$3) or (automatic dial\$3)) and (conferencing)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 09:18
S76	20	S74 and ((auto adj dial\$3) or (automatic adj dial\$3))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 12:44
S77	0	455/456.1,456.3,556.2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 12:45
S78	0	455/456.1,456.3,556.2.ccls	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 12:45
S79	2189	455/456.1,456.3,556.2.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 12:49
S80	1326	S79 and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 12:59
S81	1713	S79 and ((call\$3) or poll\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 13:06

S82	136	S79 and ((call\$3) or poll\$3) and (touch adj (screen or display or panel))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 13:07
S83	829	S79 and (map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:18
S84	53	S79 and (map with (symbol or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:36
S85	0	S79 and (map with (auto or automatic) adj calling)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:36
S86	0	S79 and (map with (auto or automatic) adj (calling or dialing))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:37
S87	46	S79 and (map with (graphic))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:37
S88	21	S79 and (map with (graphic)) and (icon or symbol)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:41
S89	20	S79 and (map with (graphic)) and (icon or symbol) and users	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:41

S90	3	S79 and (map with (graphic)) and (icon or symbol) and (multiple adj users)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:41
S91	50644	Kokai	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:55
S92	15985430	Kokai JP	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:56
S93	19	Kokai and (destination adj image)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:58
S94	14	"2159188"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 15:58
S95	86	Kokai	JPO	OR	ON	2005/07/12 15:59
S96	87	Kokai "2159"	JPO	OR	ON	2005/07/12 15:59
S97	0	Kokai and "2159"	JPO	OR	ON	2005/07/12 16:00
S98	0	Kokai and "215918"	JPO	OR	ON	2005/07/12 16:00
S99	0	Kokai and "2159188"	JPO	OR	ON	2005/07/12 16:00
S10 0	86	Kokai	JPO	OR	ON	2005/07/12 16:02
S10 1	0	S79 and (symbol with generator)	JPO	OR	ON	2005/07/12 16:02
S10 2	0	S79 and (symbolic with generator)	JPO	OR	ON	2005/07/12 16:02
S10 3	0	S79 and (participant with icon)	JPO	OR	ON	2005/07/12 16:02
S10 4	0	S79 and (participant with symbol)	JPO	OR	ON	2005/07/12 16:02
S10 5	0	S79 and ((user or participant) with (symbol or icon or graphic))	JPO	OR	ON	2005/07/12 16:03
S10 6	0	S79 and ((user or participant))	JPO	OR	ON	2005/07/12 16:03

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S10 7	0	S79 and ((user))	JPO	OR	ON	2005/07/12 16:04
S10 8	0	S101	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S10 9	0	S102	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 0	0	S103	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 1	0	S104	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 2	0	S105	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 3	0	S106	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 4	0	S107	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:04
S11 5	1867	S79 and user	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:05

S116	138	S79 and ((user or participant) with (icon or symbol))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:05
S117	84	S116 and map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:19
S118	279	S79 and (group with location)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:19
S119	24	S79 and (group adj location)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:19
S120	1	PDA with map with symbols with users	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:31
S121	10	PDA with map with icon with users	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:33
S122	31	PDA same map same icon same users	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/12 16:34
S123	0	455/456.1,456.3,556.2.ccls and "348"/\$6.ccls	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:44

S12 4	0	455/456.1,456.3,556.2.ccls	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:44
S12 5	2189	455/456.1,456.3,556.2.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:44
S12 6	68075	"348"/\$6.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:44
S12 7	137	(map same (touch adj (display or screen or panel)) same (symbol\$2 or icon\$2 or graphic))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:46
S12 8	0	S125 and S126 and S127	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:45
S12 9	22587	(map same (symbol\$2 or icon\$2 or graphic))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:46
S13 0	53582	(touch adj (screen or display or panel))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:47
S13 1	0	S130 and S129 and S126 and S125	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:47

S13 2	22	S130 and S129 and S125	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 08:54
S13 3	78	wireless same (map or geographic) same (symbol\$2 or icon\$2) same (display)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 09:11
S13 4	0	"0192331.pn"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 09:12
S13 5	88	Gorday	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 09:12
S13 6	4632	cellular and PDA and CPU	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 16:22
S13 7	3	cellular adj PDA and CPU	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 16:22
S13 8	1	cellular adj combination and PDA and CPU	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/13 16:22
S13 9	0	group adj location adj icon	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 08:49

S14 0	1	group adj location adj symbol	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:01
S14 1	3295	group adj symbol	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:01
S14 2	119	(group adj symbol) same location	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:01
S14 3	32	(group adj symbol) same wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:01
S14 4	22	(group adj symbol) same (wireless or mobile or portable) adj (communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:16
S14 5	0	(phone adj number adj symbol) same (wireless or mobile or portable) adj (communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:16
S14 6	1	(phone adj number adj icon) same (wireless or mobile or portable) adj (communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:39
S14 7	0	(group adj icon) same (wireless or mobile or portable) adj (communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:39

S14 8	22	(group adj symbol) same (wireless or mobile or portable) adj (communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 09:42
S14 9	13	"6097942"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 14:59
S15 0	0	(selective adj polling) same position same wireless adj communication	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 14:59
S15 1	0	(selective adj polling) same (position or location or status or GPS) same (wireless or mobile or portable) adj communication	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 15:00
S15 2	0	(selective adj polling) same (position or location or status or GPS) same ((wireless or mobile or portable) adj communication)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 15:00
S15 3	9	(selective adj polling) same (position or location or status or GPS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 15:03
S15 4	40	(selective\$2 adj poll\$3) same (position or location or status or GPS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/14 15:03
S15 5	0	(enter with map with location same interest) same wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:19

S15 6	5	(enter\$3 same map same location same interest) same wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:22
S15 7	129	(enter\$3 same (map or GPS) same location same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:26
S15 8	216	(enter\$3 same (map or GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:26
S15 9	114	(enter\$3 same (map or GPS) same interest) and (wireless or mobile) and (category or class)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:27
S16 0	0	(enter\$3 adj (item) same (map or GPS) same interest) and (wireless or mobile) and (category or class)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:27
S16 1	0	(enter\$3 adj (item) same (map or GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:27
S16 2	7	(enter\$3 adj (item or location) same (map or GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:29
S16 3	3	(enter\$3 adj (item or location) same (map same GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:29

S16 4	0	(manual same enter\$3 same (map same GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:31
S16 5	9	(user same enter\$3 same (map same GPS) same interest) and (wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:33
S16 6	0	GPS adj map adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:33
S16 7	18	GPS adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:34
S16 8	0	manual adj map adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:36
S16 9	0	user adj map adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:38
S17 0	2	"6868337"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:39
S17 1	15	"5307074"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:39

S17 2	6	"5745866"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:40
S17 3	30	"6133853"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:41
S17 4	66	map adj data adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:42
S17 5	0	(map adj data adj entry) same wireless same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:42
S17 6	0	(map adj data adj entry) same wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:42
S17 7	11	(map adj data adj entry) and wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:44
S17 8	183	(map adj entry) and wireless	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:44
S17 9	9	(map adj entry) and wireless and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:45

S18 0	196	(user adj entry) and wireless and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:45
S18 1	0	(location adj entry with interest) same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:46
S18 2	0	(location adj entry with interest) same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:46
S18 3	0	(location adj entry same interest) same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:46
S18 4	21	(location adj entry same interest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:46
S18 5	0	(location adj entry same interest) same map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:46
S18 6	0	(landmark adj entry) same map same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:49
S18 7	3	(landmark adj entry)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:51

S188	5	"6226615"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:52
S189	14	"6314365"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:56
S190	22	"6353798"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:58
S191	18	GPS adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:58
S192	2307	location adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:58
S193	3430	position adj entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 10:59
S194	14	(position adj entry) same GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:01
S195	50718	Kokai A2159188	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:01

S19 6	14	"2159188"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:02
S19 8	2516206	"1990" Kokai	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:02
S19 9	988	"1990" with Kokai	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:03
S20 0	0	"Kokai.in"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:03
S20 1	0	"Kokai.in."	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:03
S20 2	0	"Kokai.IN."	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:04
S20 3	8847	Kokai adj Publication	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:04
S20 4	1	"JP-A-2-159188"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:05

S20 5	0	"JPA2159188"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:05
S20 6	14	"2159188"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:05
S20 7	3278	entry same location same map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:12
S20 8	148	map adj database same entry	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 11:12
S20 9	89	((map adj database) same entry) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:22
S21 0	346	((map adj database) same storage) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:22
S21 1	102	((map adj database) same storage same user) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:56
S21 2	6	((map adj database) same updated same input same user) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:58

S21 3	4	((map adj database) same update same input same user) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:59
S21 4	4	((map adj database) same update same input\$3 same user) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 12:59
S21 5	27	((map adj database) same update same input\$3) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:53
S21 6	143	((map adj database) same location same input\$3) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:54
S21 7	0	((map adj database) same updat%3 same input\$3) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:54
S21 8	37	((map adj database) same updat\$3 same input\$3) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:55
S21 9	33	((map adj database) same updat\$3 same input\$3) and GPS and (wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:56
S22 0	1508	((database) same location same interest) and (wireless or mobile or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:57

S22 1	744	((database) same location same interest) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:57
S22 2	538	((database) with location same interest) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:57
S22 3	329	((database) with location with interest) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:57
S22 4	129	((database and map) with location with interest) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:58
S22 5	1	((database and map) with location with interest with updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 13:59
S22 6	8	((database) with location with interest with updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:01
S22 7	21	((database and map) same location same interest same updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:06
S22 8	0	((database and map) same location same (points adj of adj interest) same updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:05

S229	0	((database and map) same(points adj of adj interest) same updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:05
S230	0	((database and map) same (points adj of adj interest) same updat\$3) and (wireless or mobile or PDA) and GPS	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:05
S231	0	((database and map) same (points adj of adj interest) same updat\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:05
S232	0	((database and map) same (points adj of adj interest))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:05
S233	191	GPS same map same user same updat\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:07
S234	159	(GPS same map same user same updat\$3) and (cellular or wireless or mobile or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:07
S235	26	(GPS same map same user same updat\$3 same interest) and (cellular or wireless or mobile or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:12
S236	0	assign with ((point or place or entit\$3) adj of adj interest) same map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:13

S23 7	0	((point or place or entit\$3) adj of adj interest) same map	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:13
S23 8	0	((point or place or entit\$3) adj of adj interest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:14
S23 9	0	((point or place or entit\$3) adj "of" adj interest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:14
S24 0	224987	((point or place or entit\$3) adj "of" adj interest) or POI	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:14
S24 1	2	(POI same GPS same assign\$3 same user same map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:16
S24 2	14	(POI same GPS same select\$2 same user same map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:19
S24 3	2	(POI same GPS same assign\$3 same user same map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:19
S24 4	10	(POI same GPS same cho\$3 same user same map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:21

S24 5	31	(GPS same label\$3 same user same map)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:29
S24 6	2	(GPS same label\$3 same user same display same database)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 14:30
S24 7	114	remote adj activation with (cellular or wireless or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 15:31
S24 8	1	remote adj activation with ((cellular or wireless or mobile) adj (system or network))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 15:33
S24 9	352	455/420.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 15:34
S25 0	13	S249 and vibrate	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/15 15:34
S25 1	352	455/420.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:35
S25 2	15	S251 and (vibrate or callback)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:18

S25 3	3	S251 and (vibrate or callback) and (remote adj access)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:21
S25 4	14	S251 and (remote adj access)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:23
S25 5	100	S251 and (remote adj control)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:23
S25 6	205	S251 and (remot\$3 adj control) or (remot\$3 adj access) and (vibrate)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:24
S25 7	548	S251 and (remot\$3 adj control) or (remot\$3 adj access) and (vibrat\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:24
S25 8	342	(S251 and (remot\$3 adj control) or (remot\$3 adj access) and (vibrat\$3)) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:25
S25 9	18	(S251 and (remot\$3 adj access))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:25
S26 0	213	455/420.ccls. and (communication adj (network or system))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:40

S26 1	651	(wireless or mobile or cellular) and ((remot\$3 adj access) or (remot\$3 adj control)) and (communication adj (network or system)) and (vibrat\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:48
S26 2	0	(wireless or mobile or cellular) and ((remot\$3 adj access) or (remot\$3 adj control)) same (another adj phone)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:43
S26 3	0	(wireless or mobile or cellular) and (((remot\$3 adj access) or (remot\$3 adj control)) same (another adj phone))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:43
S26 4	0	(wireless or mobile or cellular) and (((remot\$3 adj access) or (remot\$3 adj control)) same (another adj (wireless or cellular or mobile)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:44
S26 5	0	(((remot\$3 adj access) or (remot\$3 adj control)) same (another adj (wireless or cellular or mobile)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:44
S26 6	0	(remote adj activation adj of adj cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:48
S26 7	132	(remote adj activation) same (cellular or wireless)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:48
S26 8	0	(remote adj activation) same (cellular or wireless) same vibrate	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 08:48

S26 9	132	(remote adj activation) same (cellular or wireless)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:05
S27 0	0	(remote adj activation) and (smart adj message adj service)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:05
S27 1	0	(remote adj activation) and (smart adj messaging adj service)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:06
S27 2	22	(remote adj activation) and (SMS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:15
S27 3	28	(remote adj actuation) and (SMS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:15
S27 4	240	(remote adj actuation) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:15
S27 5	41	(remote adj activation) and (PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:27
S27 6	3598	(remote adj control) and (PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:27

S27 7	892	(remote adj control) with (PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:27
S27 8	0	(remote adj control) same (PDA) same another	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:28
S27 9	0	(remote adj control) same (wireless or mobile or cellular) same another	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:28
S28 0	164	(remote adj control) same (wireless or mobile or cellular) same other	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:28
S28 1	960	(remote adj control) same (wireless or mobile or cellular) same features	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:28
S28 2	8	(remote adj control) same (wireless or mobile or cellular) adj features	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:29
S28 3	960	(remote adj control) same (wireless or mobile or cellular) same features	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 09:29
S28 4	4	S251 and (remote adj control) same (wireless or mobile or cellular) same features	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:04

S28 5	0	(conferenc\$3 adj call\$3) same (touch adj (screen or display)) and (software adj switch)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:05
S28 6	32	(conferenc\$3 adj call\$3) and (software adj switch)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:09
S28 7	20	(conferenc\$3 adj call\$3) and (software adj switch) and (wireless or mobile or cellular or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:05
S28 8	1572	software adj switch	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:15
S28 9	495	S288 and (wireless or cellular or mobile)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:15
S29 0	17	S289 and (conference adj call)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:16
S29 2	373	(wireless or cellular or mobile) and (conference adj call) and selective	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:30
S29 3	0	"09952261"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:30

S29 4	0	"09\952261"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:30
S29 5	1	"09\952261"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:31
S29 6	60	(selective same conference adj call) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:42
S29 7	65	(selective same (conference or multiple) adj call) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:48
S29 8	26	(selective same (conference or multiple) adj calling) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:49
S29 9	70	(touch adj (screen or display) and (conference or multiple) adj calling) and (wireless or mobile or cellular)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:55
S30 0	70	(touch adj (screen or display) and (conference or multiple) adj calling) and (wireless or mobile or cellular or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 14:55
S30 1	302	(touch adj (screen or display) and (conferen\$3 or multiple) adj call\$3) and (wireless or mobile or cellular or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 15:15

S30 2	476	((conferen\$3 or multiple) adj call\$3) with (button or switch) and (wireless or mobile or cellular or PDA)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 15:37
S30 3	73	((conferen\$3 or multiple) adj call\$3) with (button or switch) with method	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/18 15:37
S30 4	0	(conferenc\$3 adj call\$3) with ("800" and extension and number)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 09:12
S30 5	53	(conferenc\$3 adj call\$3) with ("800" and number)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 09:14
S30 6	15	(conferenc\$3 adj call\$3) with ("800" adj number)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 09:51
S30 7	15	(conferenc\$3 adj call\$3) with ("800" adj (number or extension))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 12:52
S30 8	47	(remot\$3 adj (control\$4 or activat\$4)) same ("on" and "off") and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 13:03
S30 9	47	(remot\$3 adj (control\$4 or activat\$4 or actuate)) same ("on" and "off") and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 13:04

S31 0	47	((remot\$3 adj (control\$4 or activat\$4 or actuate)) same ("on" and "off")) and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 13:05
S31 2	388	((remot\$3 adj (access)) same (("on" and "off") or power)) and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 13:09
S31 3	0	((remot\$3 adj (access)) same (("on" and "off"))) and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 13:09
S31 4	2	((remot\$3 adj (access\$3 or control\$3)) same (("on" and "off"))) and same activat\$3 and (cellular or wireless or mobile or portable)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:24
S31 5	1345	455/419	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:40
S31 6	0	S315 and remote same ("on" and "off")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:28
S31 7	620	S315 and remote	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:28
S31 8	16	S315 and (remote adj activation)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:28

S319	0	455/419,420	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:40
S320	936	455/419,420.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:11
S321	0	S320 and ("on" near "off")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:41
S322	555	S320 and (power)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:41
S323	101	S320 and (power same remote)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:41
S324	40	S320 and (power same (remot\$4 adj (activat\$4 or control\$3)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 14:42
S325	7313	"455"/\$ and (remot\$3 adj (control\$3 or access\$3 or activat\$4))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:13
S326	0	"455"/\$ and (remot\$3 adj (control\$3 or access\$3 or activat\$4)) same (another)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:22

S32 7	2566	455/418-420.ccls. or 455/88.ccls. or 455/41.2-41.3.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:23
S32 8	19411	bluetooth or blue-tooth	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:23
S32 9	0	S304 and S305	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:23
S33 0	671	S327 and S328	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:43
S33 1	0	S327 and S328 and ("off" near "on")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:44
S33 2	37	S327 and S328 and (power adj (off or on))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:50
S33 3	59	S327 and S328 and (turn adj (off or on))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 15:50
S33 4	20	"5613209"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:07

S33 5	323	(touch near screen near (overlap\$3 or overlay\$3))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:08
S33 6	101269	"455"/\$.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:08
S33 7	13	S335 and S336	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:22
S33 8	738	(touch near (screen or display)) same (icon or symbol) same (location or position or GPS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:23
S33 9	41	S338 and S336	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/21 15:23
S34 0	101269	"455"/\$.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:41
S34 1	4	(PDA or cellular) same (map near display) same (overlap\$3 or overlay\$3) same (display\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:45
S34 2	2	(PDA or cellular) same (map near display) same (overlap\$3 or overlay\$3) same (icon or symbol or identification)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:46

S34 3	37	(PDA or cellular) same (map near display) same (icon or symbol or identification)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:54
S34 4	1002	(PDA or cellular) same (software) same (icon or symbol or identification)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:54
S34 5	15	(PDA or cellular) same (software) same (icon or symbol or identification) same (overlay\$3 or overlap\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 08:55
S34 6	0	(PDA or cellular) same (software near switch\$3) same (icon or symbol or identification) same (overlay\$3 or overlap\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 09:00
S34 7	0	(PDA or cellular) same (software near switch\$3) same (icon or symbol or identification) same (multiple near display)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 09:00
S34 8	0	(PDA or cellular) same (software near switch\$3) same (multiple near display)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 09:01
S34 9	2	(PDA or cellular) same (software) same (multiple near display)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 11:03
S35 0	89	Gorday	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 11:03

S35 1	29	Paul near Gorday	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 11:03
S35 2	2	"20050049854"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/26 11:00
S35 3	2	"6820655"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/26 11:00
S35 4	3	"6820855"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/26 11:00
S35 5	2	"6820055"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/26 11:10
S35 6	31	PDA\$1 same (conferenc\$3) near10 (call\$1) and (touch\$3) and (LCD or display\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/26 11:11

WHT



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,490	09/21/2004	Malcolm K. Beyer JR.	10963.3801	5489
22235	7590	08/10/2005	EXAMINER	
MALIN HALEY AND DIMAGGIO, PA 1936 S ANDREWS AVENUE FORT LAUDERDALE, FL 33316			MOE, AUNG SOE	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/711,490	Applicant(s) BEYER, MALCOLM K.	
	Examiner Aung S. Moe	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-15 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-15 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 21 September 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>see attached</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 5 should refer to other claims in the **alternative only**. See MPEP § 608.01(n). Accordingly, the claim 5 has not been further treated on the merits.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1-9, 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear how "video" recited in line 23 related to "video" recited in line 15? If there is the same "video", the Examiner suggests changing "video" recited in line 23 to - - said video - -.

In claim 2, it is unclear how "a CPU" recited in line 6 related to "a CPU" recited in line 3? If there is the same "CPU", the Examiner suggests changing "a CPU" in line 6 to - - said CPU - -.

In claim 2, it is unclear whether it should be "use" or "user" recited line 15? It is also noted that there is insufficient antecedent basis for this limitation (i.e., "the use") in the claim. For the purpose of examining, Examiner will consider "the use" as recited in line 15 as "a user".

Regarding claim 6, it is unclear how "a CPU" and "a GPS" recited in line 6 related to "a CPU" and "a GPS" recited in lines 2-3? If there are the same "CPU" and "GPS", Examiner suggests changing "a CPU" and "a GPS" in line 6 to -- said CPU -- and -- said GPS --.

Regarding claim 6, it is unclear how "a cellular phone" recited in line 13 related to "a cellular phone" recited in line 5? If there are the same "cellular phone", Examiner suggests changing "a cellular phone" in line 13 to -- said cellular phone --.

Regarding claims 3, 4, 5 and 7-9, the remaining claims (dependent claims 3-5 & 7-9) are dependent on the rejected based claim (independent claims 1, 2 and 6) and therefore inherit the deficiencies thereof.

Regarding claim 10, it is unclear how "a communication network" recited in line 15 related to "a communication network" recited in line 1? If there are the same "communication network", Examiner suggests changing "a communication network" in line 15 to -- said communication network --.

Regarding claim 10, it is unclear how "a display screen" recited in line 19 related to "a touch display screen" recited in line 5? If there are the same "display screen", Examiner suggests changing "a display screen" in line 19 to -- said display screen --.

Regarding claim 10, it is unclear how "a cellular phone" recited in line 15 related to "a cellular phone" recited in line 1? If there are the same "cellular phone", Examiner suggests changing "a cellular phone" in line 15 to -- said cellular phone --.

Regarding claim 14, Claim 14 recites the limitation "the PDA display screen" in line 3. There is insufficient antecedent basis for this limitation in the claim. It should be change to -- a

PDA display screen - -, and also noted that "a PDA display screen" recited in line 5 should be changed to - - the PDA display screen - -.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu '377 (U.S. 6,868,337) in view of Gorday '331 (U.S. Publication 2004/0192331A1) and Bostrom '456 (U.S. Publication 02664546A1).

Regarding claim 2, Muramatsu '377 discloses a communication system to provide a cellular phone network for a group of participants (Muramatsu '377 Col. 2, line 17+), each of the participants having an individual portable cellular phone (Muramatsu '377 Fig. 17) that includes a CPU (Muramatsu '377 Fig. 3, element 100) and a GPS navigational system (Muramatsu '377 Fig. 3, element 108) that can accurately determine the location of the cellular phone. Each of the phones in the communications net of participants contains (Muramatsu '377 Col. 8, line 59+): a CPU (Muramatsu '377 Fig. 3, element 100) and memory (Muramatsu '377 Fig. 3, elements 102 and 104); a display (Muramatsu '377 Fig. 3, element 118); symbol generator in said CPU that can generate symbols that represent each of the participants in the communication network on

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the display screen (Muramatsu '337 Col. 5, line 11+), (Muramatsu '337 Col. 10, line 19+), (Muramatsu '337 Col. 10, line 49+), (Muramatsu '337 Fig. 17); a database that stores the individual telephone numbers related to each of the symbols of which represents a participant in the communication network (Muramatsu '337 Col. 5, line 51+); cellular phone call initiating software in said CPU connected to the telephone number database and the screen and the symbols on the screen whereby selecting an individual symbol will automatically initiate a cellular phone telephone call to the use represented by the symbol (Muramatsu '337 Col. 10, line 3+); and said display including databases that display geographical information that includes showing the geographical location of each of the symbols representing participants in the communication network (Muramatsu '337 Col. 4, line 20+) and fixed locations (Muramatsu '337 Col. 4, line 30+).

Also, it is noted that Muramatsu '337 show the use of user interface (106) in Fig. 3 for entering the user commands and the symbols on the screen (i.e., see Fig. 10), Muramatsu '337 does not specifically disclose the *touch screen* and the symbols on the *touch screen* whereby *touching* an individual symbol, however Gorday '331 teaches the *touch screen* and the symbols on the *touch screen* whereby *touching* an individual symbol (i.e. software connected to the touch screen and the symbols on the touch screen whereby touching an individual symbol will target the device for communication, see Gorday '331 Para 0014+).

In view of the above, having the system of Muramatsu '337 and then given the well-established teaching of Gorday '331, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Muramatsu '337 by incorporating the touch screen whereby touching an individual symbol as taught by Gorday '331,

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so that the overall system has the touch screen and the symbols on the touch screen whereby touching an individual symbol, which gives a method of targeting a message to one of several devices, without specifying an address inherently associated with that device (Gorday '331, 0003+ and 0004+).

In addition, Muramatsu '337 does not specifically disclose a database that displays geographical information that includes showing the geographical location of entered items of interest, however Bostrom '456 teaches a database that displays geographical information (i.e. that includes showing the geographical location of entered items of interest by having location coordinates such as determined by the global positioning satellite system being entered by a subscriber from the location to be marked by making a telephone call request, and having a node storing the coordinates, see Bostrom '456, Para 0004+).

In view of this, having the system of Muramatsu '337 and then given the well-established teaching of Bostrom '456, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Muramatsu '337 by incorporating the database that displays geographical information that includes showing the geographical location of entered items of interest by having location coordinates such as determined by the global positioning satellite system being entered by a subscriber from the location to be marked by making a telephone call request, and having a node storing the coordinates as taught by Bostrom '456, so that the overall system has a database that displays geographical information that includes showing the geographical location of entered items of interest, in order to enable sharing of locations and navigation instructions with others that do not have access to the user's receiver (Bostrom '456, Para 0002+).

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3. Claims 3-4, are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu '377 (U.S. 6,868,337) in view of Gorday '331 (U.S. Publication 0192331A1) and Bostrom '456 (U.S. Publication 02664546A1) as discussed above and in further in view of Bala '475 (U.S. 5,542,475).

Regarding claim 3, the combination of Muramatsu '337, Gorday '331, and Bostrom '456 discloses a communication network that includes said participants, each having a cellular phone as in Claim 2 further comprising: said software for automatically initiating a cellular phone call to a user represented by a symbol (Muramatsu '337 Col. 10, line 3+) includes initiating a communication (Gorday '331, Para 0014+) to one or more of the participants from a base phone by touching the specific symbols of those participants that will be participating in a communication by touching the symbol of each of those users (Gorday '331, Para 0014+) and providing a way to initiate the communication by touching the screen whereby each of the initiated communication participants will be contacted by the base phone to establish a communication (Gorday '331, Fig. 3 elements 334 and 336 Note: a way to initiate the communication pertains to transmit message to selected recipients which is the next step after using the touch screen to select message recipient(s)).

Moreover, it is noted that the combination of Muramatsu '337, Gorday '331, and Bostrom '456 does not specifically providing a *software switch* to initiate the *conference call* by touching the screen whereby each of the initiated *conference* participants will be *called* by the base phone to establish a *conference call*.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Bala '475. In particular, Bala '475 teaches inclusion of initiating a *conference call*

to one or more of the participants from a base phone by touching the specific symbols of those participants that will be participating in a *conference call* by touching the symbol of each of those users and providing a *software switch* to initiate the *conference call* by touching the screen whereby each of the initiated *conference* participants will be *called* by the base phone to establish a *conference call* (i.e. Conference button on “soft phone” display, Bala ‘475 Fig. 2 elements 50 and 76, clearly showing conference call capabilities).

In view of the above, having the system of the combination of Muramatsu ‘337, Gorday ‘331, and Bostrom ‘456 and then given the well-established teaching of Bala ‘475, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of the combination of Muramatsu ‘337, Gorday ‘331, and Bostrom ‘456 by incorporating the Conference button on “soft phone” display as taught by Bala ‘475, so that the overall system has inclusion of initiating a *conference call* to one or more of the participants from a base phone by touching the specific symbols of those participants that will be participating in a *conference call* by touching the symbol of each of those users and providing a *software switch* to initiate the *conference call* by touching the screen whereby each of the initiated *conference* participants will be *called* by the base phone to establish a *conference call*, providing enhanced call service features at remote locations (Bala ‘475 Col. 1, lines 56+).

Regarding claim 4, the combination of Muramatsu ‘337, Gorday ‘331, Bostrom ‘456, and Bala ‘475 discloses a communication network using the cellular phone as in Claim 3 whereby the communication network can include a large number of participants (Muramatsu ‘337, Fig. 17) in a conference call (Bala ‘475 Fig. 2, elements 50 and 76) comprising conference call initiating

software in said CPU (Bala '475 Fig. 2, elements 50 and 76 Note: Conference button on "soft screen" must have software in order to function) that includes the transmission by touching the symbol of each of the participants (Gorday '331 Para 0014+) of an 800 number that will be provided to each of the proposed conference call participants allowing them to call the 800 number to establish the conference call with the base phone (Bala '475 Fig. 2, element 58 and 66 showing the 800 numbers, elements 50 and 76 showing conferencing capabilities).

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu '377 (U.S. 6,868,337) in view of Gorday '331 (U.S. Publication 2004/0192331A1).

Regarding claim 6, Muramatsu '337 discloses a method of establishing a cellular phone communication network for designated participants, each having a similarly equipped cellular phone that includes a CPU (Muramatsu '337 Fig. 3, element 100), a GPS navigation system (Muramatsu '337 Fig. 3, element 108) and a display (Muramatsu '337 Fig. 3, element 118) comprising the steps of:

a) generating one or more symbols on the display screen, each representing a different participant that has a cellular phone {Muramatsu '337 (Col. 5, line 11+), (Col. 10, line 49+), (Col. 11, line 14+)} that includes a CPU (Muramatsu '337 Fig. 3, element 100), a GPS system (Muramatsu '337 Fig. 3, element 108), and a display (Muramatsu '337 Fig. 3, element 118);

b) providing and storing in each of the participant cellular phones one or more cellular phone telephone numbers, each cellular phone number of which relates to a different symbol of each of the participants in the communication network; (Muramatsu '337 Fig. 16)

c) providing initiating cellular phone calling software in each cellular phone that is activated by selecting a symbol on the display that automatically initiates a cellular phone using the stored cellular phone number to the participant represented by the symbol; (Muramatsu '337 Col. 10, line 3+)

d) generating a geographical location chart on said display screen to show the geographical location of each of the symbols representing the participants in the communication network by latitude and longitude; (Muramatsu '337 Fig. 16 and 17).

Furthermore, it is noted that Muramatsu '337 show the use of user interface (106) in Fig. 3 for entering the user commands and the symbols on the screen (i.e., see Fig. 10), Muramatsu '337 does not specifically disclose providing initiating cellular phone calling software in each cellular phone that is activated by *touching* a symbol on the *touch* display that automatically initiates a cellular phone using the stored cellular phone number to the participant represented by the symbol, however Gorday '331 teaches providing initiating cellular phone calling software in each cellular phone that is activated by *touching* a symbol on the *touch* display that automatically initiates a cellular phone using the stored cellular phone number to the participant represented by the symbol (i.e. software connected to the touch screen and the symbols on the touch screen whereby touching an individual symbol will target the device for communication, Gorday '331 Para. 0014+).

In view of the above, having the system of Muramatsu '337 and then given the well-established teaching of Gorday '331, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Muramatsu '337 by incorporating the software connected to the touch screen and the symbols on the touch screen