System and Method of Content Restoration in Mobile Devices

Field of the Invention

This invention relates to a system and method for restoring content in mobile communication devices. More particularly, this invention relates to a system for restoring data in mobile communication devices via secure wireless communication links between the mobile device and a remotely located data server.

Description of the Prior Art

Since the introduction of wireless mobile communication devices into the daily lives of consumers worldwide, these devices have evolved beyond being mere instruments of communication to advanced mobile communication devices such as personal digital assistants (PDA) and smart-phones. Specific applications created for mobile communication devices allow for the storage and management of a user's personal data such as a calendar of events or appointments, a phone or address book, digital photos, notes, memos, emails and many others types of data.

After a certain period of time, users customize their mobile communication device to suit their daily life. For example, business users have most of their appointments or meetings for the month entered into the calendar application in their mobile communication device together with daily reminders for upcoming events. This data may be lost due to a variety of reasons such as accidental deletion, data corruption or simply because the mobile device was replaced with a newer model. Alternatively, a company administrator may want to upload a new application or new contacts or reminders to the mobile communication device for the user.

Some phone manufacturers provide their own proprietary software that allows data on the phone to be synchronized with a computer via a data transfer cable. Third party vendors have also introduced universal applications which allow data in mobile devices to be synchronized with remotely located data servers and restored via wireless methods.

These wireless methods typically include some encryption/decryption process to ensure that the transfer of data is not compromised. As the functionality of mobile communication devices increase, so does the complexity of the device's applications. An automated data transfer application is needed that allows the data in the mobile devices to be quickly and seamlessly restored and/or updated with minimal user intervention. This data could then be restored to the mobile device as when determined by the mobile device's user. A method for backing up and restoring data in mobile devices using wireless communication links has been described in US Patent Number US 7,505,762 issued in the name of Onyon et. al. entitled "Wireless Telephone Data Backup System".

Memory space in mobile communication devices is normally limited. When the size of the restored data exceeds the free memory space on the mobile device, the restoration process may not be carried out until space is freed up on the memory or until alternate memory storage is allocated. While this may not be a major issue, it is still inconvenient for the user to have to trawl through the data on the mobile device, deleting existing data in order to free up space for data restoration. The prior art described above addresses this issue by allowing the user the choice of 'rolling back' the data contained in the phone to the state the data was in at an older date.

From the above, it is clear that there is a need in the art for a reliable and easy method to restore and/or update data on a mobile device.

Summary of the Invention

The above and other problems are solved and an advance in the art is made by a data restoration system in accordance with the present invention. A first advantage of a system in accordance with this invention is that the data in a mobile communication device can be restored and/or updated without user intervention. A second advantage of this invention is that an alternate method of restoring and/or updating the data is provided if a primary method fails. A third advantage of a system in accordance with this invention is that the system determines that the mobile device has sufficient memory space available

to store the restored and/or updated data prior to sending to ensure the integrity of the data.

In accordance with an embodiment of this invention, a system for performing a data transfer to a mobile device operates in the following manner. The mobile device receives a short message service (SMS) message from an administrator computer via a wireless telephonic network. The system then reads the contents of the SMS message. The system then determines whether the contents include a command code for a data transfer function. If the contents of the message include a command for a data transfer function, the system attempts to establish a wireless connection to a second data network. If the wireless connection is established the system performs the data transfer function.

In accordance with some embodiments of this invention, the system generates a SMS message indicating a connection failure and transmits the message to the administrator computer when the system determines that the attempt to establish a connection failed. In accordance with some of these embodiments, the administrator computer then generates a second SMS message and transmits the second message to the device when the SMS message from the device is received. The second SMS message may include a link or address to a system for completing the data transfer at a later time when a connection is established. The user may then connect to the second data network at a later time to communicate with the system at the link or address to perform the data transfer.

In accordance with some embodiments of this invention, the system begins performing the data transfer function by transmitting a request for data to an address of the second data network from the mobile device. A system having the second address receives the request and then determines the amount of data to transfer. This system then transmits a message to the mobile device that includes the amount of data to transfer. The system in the mobile device then determines if the device has enough memory available to store the total amount of data. If so, the mobile device system generates and

transmits an acknowledgement to the system at the second address. The system at the second address then transmits the data.

In accordance with some embodiments of this invention, the system in the mobile device erases data from the memory of the mobile device when the system determines that the mobile device does not have enough memory available to store the data to be transferred. In some of these embodiments, data older than a certain time is erased. In some others of these embodiments, data that has not been accessed for a predetermined amount of time is erased. In still other embodiments, data of a predetermined type is erased.

In accordance with some embodiments of the invention, the system having the address in the second data network performs a user authentication with the mobile device communicating with the second address when communication is requested by the mobile device. In further accordance with some embodiments, the system having the address in the second data network may communicate with the mobile device with encrypted data.

In accordance with some embodiments of this invention, the mobile device includes multiple systems for connecting to the second data network. In accordance with some of these embodiments, the connecting systems attempt to establish a connection to the second data network in the following manner. First, the system selects one of the systems for connecting to the second data network. The system then attempts to establish a connection to the second data network using the selected system. If a connection is not established, the system attempts to establish a connection with another one of the systems for connecting to the second network until all of the systems for connecting have been used. In accordance with some of these embodiments, the system selected for use in connecting to the network is based upon predetermined criteria. In accordance with some others of these embodiments, the system selected for use in connecting to the network is based upon user input criteria.

Furthermore once a connection is established, the system may determine whether Hypertext Transfer Protocol (HTTP) format communications are available over the second

data network in accordance with some of the embodiments of this invention. If the HTTP format is not available, the system may communicate with the second address via sockets using a specified port in response to communications using HTTP format being unavailable.

Brief Description of the Drawings

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

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

Figure 2 illustrating a block diagram of a processing system of the various components for providing a system in accordance with an embodiment of this invention;

Figure 3 illustrating a flow diagram for a process executed by a mobile device for performing a function in accordance with this invention;

Figure 4 illustrating a process executed by the mobile device for performing a data transfer in accordance with this invention;

Figure 5 illustrating a process executed by the mobile device for connecting to a second data network in accordance with this invention;

Figure 6 illustrating a process executed by an administrator computer for requesting a data transfer in accordance with an embodiment of this invention; and

Figure 7 illustrating a process executed by a server system on the second data network for performing a data transfer in accordance with this invention.

Detailed Description

This invention relates to a system and method for restoring content in mobile communication devices. More particularly, this invention relates to a system for restoring

data in mobile communication devices via secure wireless communication links between the mobile device and a remotely located data server.

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

Administrator computer system 115 is a conventional computer system that executes instructions to provide an administrator interface to allow an administrator to generate and transmit requests to mobile device 140 in accordance with embodiments of this invention. Administrator computer system 115 is connected to Internet 110 and/or equivalent networks to communicate with other digital processing devices.

PSTN 130 is a conventional network of switches and other routing devices for handling calls and other data transmission between mobile devices. PSTN is connected to Internet 110 via one or more gateways (Not shown) to allow for devices connected to Internet 110 to communicate with devices connected to PSTN 130 to communicate with devices connected to Internet 110. PSTN also includes at least one wireless base station 135 that transmits and receives Radio Frequency (RF) and/or other types of signals 137 to communicate with mobile device 140. One skilled in the art will recognize that only those components of PSTN 130 and wireless base station 135 needed to understand the invention are discussed and a complete discussion of these components is omitted for brevity.

Wireless router 120 or another equivalent device is a device connected to the Internet 110 to allow mobile devices to connect to Internet 110 via RF and/or equivalent signals 125. A complete understanding of the operation of wireless router 120 is not

needed to provide a system in accordance with this invention. Therefore, a complete description of wireless router 120 is omitted for brevity.

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

Figure 2 illustrates a block diagram of the components of the processing systems in each of the components that execute instructions stored in memory to provide processes in accordance with this invention. One skilled in the art will recognize that Figure 2 is for illustrative purposes only and the exact configuration of the components in the processing device may be different without departing from this invention. Processing system 200 includes Central Processing Unit (CPU) 205. CPU 205 is a processor, microprocessor, or any combination of processors and microprocessors that execute instructions to perform the processes in accordance with the present invention. CPU 205 connects to memory bus 210 and Input/Output (I/O) bus 215. Memory bus 210 connects CPU 205 to memories 220 and 225 to transmit data and instructions between the memories and CPU 205. I/O bus 215 connects CPU 205 to peripheral devices to transmit data between CPU 205 and the peripheral devices. One skilled in the art will recognize that I/O bus 215 and memory bus 210 may be combined into one bus or subdivided into many other busses and the exact configuration is left to those skilled in the art.

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

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

I/O device 230, keyboard 235, display 240, memory 245, network device 250 and any number of other peripheral devices connect to I/O bus 215 to exchange data with CPU 205 for use in applications being executed by CPU 205. I/O device 230 is any device that transmits and/or receives data from CPU 205. Keyboard 235 is a specific type of I/O that receives user input and transmits the input to CPU 205. Display 240 receives display data from CPU 205 and display images on a screen for a user to see. Memory 245 is a device that transmits and receives data to and from CPU 205 for storing data to a media. Network device 250 connects CPU 205 to a network for transmission of data to and from other processing systems.

Figure 3 illustrates a flow diagram of a process performed by a system in a mobile device in accordance with this invention. The system is provided by processes stored in software, firmware, or hardware that performs the processes described. Process 300 begins in step 305 when the mobile device receives an SMS message from administrator computer 115 via PSTN 130. The generation, transmission, and reception of the message are conventional and omitted for brevity. One skilled in the art will recognize that other message formats may be used to transmit message over PSTN without departing from the invention.

In step 310, contents of the received SMS message are read. In step 315, the system in accordance with this invention determines whether the contents of the SMS message include a command code for a data transfer. One skilled in the art will recognize that this step may look for other command codes to implement different functions that are not related to the current invention without departing from this invention.

If the contents do not include the command code, the system causes the SMS to be handled in a conventional manner in step 330 and process 300 ends. If the contents include the command code, the function indicated by the command code is performed in step 320. In particular, a command code indicating a data transfer is to be performed is detected and the data transfer is performed in step 320 in accordance with this invention. After the function is performed, process 300 ends.

Figure 4 illustrates an embodiment of a process for performing a data transfer in accordance with this invention. Process 400 begins with step 405. In step 405, the system attempts to establish a connection to a second data network, such as Internet 110. In particular, the second data network is a different network from PSTN 130. In step 410, the system determines whether a connection to the second data network is established.

If a connection is not established, the system generates and transmits a connection failure SMS. In this particular embodiment, the connection failure SMS is transmitted to administrator computer 115 in step 440. However, the connection failure SMS may be transmitted to another party in accordance with this invention. In response to sending the failure connection message, the mobile device receives a second SMS message that includes a hyper-link, web address or other address that may be used at a later time to complete the transfer in step 445. In some embodiments, the second address may include a second command that invokes a process that connects to the address automatically when the connection to the second network is established. After the second SMS message is received process 400 ends.

If a connection to the second data network is established, the system transmits a request to a server for the data transfer over the second data network in step 415. The address of the second data network may be previously stored by the memory of the mobile device or may be included as part of the command code without departing from this invention.

The system then receives an acknowledgement from the server in step 420. The acknowledgement includes an indication of the amount of data to transfer. The system

then determines if mobile device 140 has enough memory available to store the data being transferred in step 425. If the mobile device 140 does not have enough memory to store the data, the system may erase at least enough memory in the mobile device to store the transferred data in step 450. Any number of criteria may be used to select the data stored in memory to erase. The criteria include, but are not limited to, data stored prior to a predetermined date and/or time; data not accessed for a predetermined time; or user input criteria. Before the data is erased, the system may prompt the user to backup the selected data to a secondary media such as a removable memory media or an online backup server. This allows the user to retrieve the data and serves as a fail safe in case the user erases data that is important.

After step 450 or if there is sufficient memory to store the data, the system generates and transmits a message to the server indicating the system is ready to proceed with the data transfer in step 430. The system then receives and stores the transferred data in step 435 and process 400 ends.

In accordance with some embodiments of this invention, mobile device 140 may include components that allow connection to the second network in more than one manner. Some examples include but are not limited to, broad band data connections, wireless network antenna, and Bluetooth communications. Figure 5 illustrates process 500 for determining a connection. Process 500 provides a method in accordance with this invention for connecting to the second network when more than one method may be employed. Process 500 begins in step 505 by selecting a manner for connection. One skilled in the art will recognize that the methods may be attempted in an order based on criteria including, but not limited to, performance, cost, and user preference.

In step 510, the system attempts to establish a connection in the selected manner. In step 515, the system determines whether a connection has been established. If a connection has been established, the system attempts to establish a HTTP connection to the address of the server in step 540. The system determines if the HTTP connection is

established in step 545. If the connection is established, an indication of connection is generated in step 520 and process 500 ends.

If a HTTP connection cannot be established, the system attempts to make a socket connection to the server over a designated port in step 550. The system determines whether the socket connection is established in step 555. If the socket connection is established, an indication of connection is generated in step 520 and process 500 ends.

If connection cannot be established in step 515 or 555, the system determines whether there is another method available to connect to the second network. If there is another method available, process 500 repeats from step 505. Otherwise, process 500 generates an indication that no connection is available in step 535 and process 500 ends.

With reference to Figure 6, process 600 illustrates an embodiment of the processes performed by administrator computer 115 in accordance with an embodiment of this invention. One skilled in the art will recognize the steps described in process 600 may be performed by one or more different application being executed by administrator computer system 115 without departing from this invention. Process 600 begins in step 605 by receiving an input from an administrator requesting a data transfer to mobile device.

In step 610, process 600 generates and transmits the SMS message to mobile device 140. The SMS message includes the telephone number (PSTN address) of mobile device 140 and the command code for a data transfer. The SMS message is transmitted over Internet 110 to PSTN 130. PSTN 130, in turn, transmits the SMS to proper wireless base station 135 for transmission of the message to mobile device 140 using RF signals 137.

Process 600 then waits to receive a response at step 615. If no response is received, process 600 ends. If a failure to connect SMS is received from mobile device 140, process 600 generates and transmits a second SMS that includes a link or other network connection address that may be used at a later time to complete the data transfer. After the second SMS message is transmitted, process 600 ends. One skilled in the art

will recognize that steps 615 and 620 may be completed by another system, such as server 105 without departing from this invention.

Figure 7 illustrates an embodiment of the process performed by server 105 to complete the data transfer in accordance with one embodiment of this invention. One skilled in the art will recognize that to protect the data being transferred, encryption of the data should be employed. In accordance with this invention, any encryption system may be used to transmit data between mobile device 140 and server 105. The choice of communication protocol and encryption are left as design choices for those skilled in the art.

Process 700 begins in step 705 with server 105 receiving a request for a data transfer from mobile device 140. The exact information and format of the request are left to those skilled in the art. In some embodiments, the request will include an identification of mobile device 140 or a user. Server 105 then determines the data to transfer based upon the identification.

In step 710, server 105 performs a user and/or device authentication with mobile device 140. The authentication is a conventional process and not explained in detail with reference to process 700 and/or process 400. In step 715, server 105 determines if mobile device 140 is authenticated. If mobile device 140 is not authenticated process 700 ends.

If mobile device 140 is authenticated, server 105 determines the amount of data to transfer in step 720. Server 105 then generates and transmits an acknowledgement to mobile device 140 that includes the amount of data to transmit in step 725. The exact format of the acknowledgement is left as a design choice for those skilled in the art.

Process 700 then remains idle until an acknowledgement from mobile device 140 is received in step 730. In some embodiments, process 700 will end if the acknowledgement is not received in a certain amount of time or if other predetermined criteria are met. If an acknowledgement is received, server 105 performs the data transfer in step 735 and process 700 ends.

The above is a description of embodiments of a system in accordance with the invention as set forth below. It is envisioned that those skilled in the art can and will design alternative embodiments of this invention based upon this invention that infringe on this invention as set forth in the following claims.

What is claimed is:

1. A method for performing a data transfer function by a mobile device comprising:

receiving a short message service message from an administrator computer via a wireless telephonic network;

reading contents of said short message service message;

determining whether said contents include a command code for a data transfer function;

attempting to establish a wireless connection to a second data network in response to said contents including said command code, wherein said device includes a plurality of systems for connecting to said second data network;

selecting one of said plurality of systems for connecting to said second data network;

attempting to establish a connection to said second data network with said selected one of said plurality of systems;

determining said wireless connection is established with said selected one of said plurality of systems;

repeating said step of selecting one of said plurality of systems, attempting to establish a connection to said second data network with said selected one of said plurality of systems, and determining whether said connection is established with said selected one of said plurality of system steps for each of said plurality of system until a connection is established; and

performing said data transfer function in response to a determination that said connection is established.

2. The method of claim 1 further comprising:

determining that said attempt to establish said wireless connection failed;

generating a response short message service indicating said wireless connection failed; and

transmitting said response short message service message to said administrator computer via said wireless telephonic network.

3. The method of claim 2 further comprising:

receiving a second short message service message from said administrator computer wherein said second short message service message includes an address on said second data network wherein said address is to be used to perform said data transfer function at a later time.

4. The method of claim 3 further comprising:

generating said second short message service in said administrator computer.

5. The method of claim 3 further comprising:

connecting to said second data network subsequent to receiving said second short message service message; and

communicating with said address on said second data network to perform said data transfer function.

6. The method of claim 1 wherein said step of performing said data transfer function comprises:

transmitting a request for data to an address on said second data network.

7. The method of claim 6 wherein said step of performing said data transfer function comprises:

receiving a total amount of data to be transferred from said address; and

determining whether said device has enough memory available to store said total amount of data.

8. The method of claim 7 wherein said step of performing said function further comprises:

transmitting a confirmation from said mobile device to said second address in response to a determination that said device has enough data to store said data.

9. The method of claim 8 wherein said step of performing said data transfer function comprises:

transmitting said data from said address to said mobile device over said second data network in response to receiving said confirmation from said mobile device.

10. The method of claim 7 wherein said step of performing said data transfer comprises:

erasing data from memory of said device in response to a determination that said mobile device does not have sufficient memory to store said amount of data.

11. The method of claim 10 wherein data older than a certain time is erased.

12. The method of claim 10 wherein data that has not been accessed for a predetermined period is erased.

13. The method of claim 10 wherein data of a predetermined type is erased.

14. The method of claim 6 wherein said step of performing said data transfer function further comprises:

performing a user authentication in response to said device communicating with said second address.

15. The method of claim 14 wherein said step of performing said data transfer function further comprises:

encrypting data transmitted between said device and said second address.

16. The method of claim 1 wherein said selecting is based upon predetermined criteria.

17. The method of claim 1 wherein said selecting is based upon user input criteria.

18. The method of claim 1 further comprising:

determining whether HTTP format communications are available over said second data network.

19. The method of claim 18 further comprising:

communicating with said second address via sockets using a specified port in response to communications using HTTP format being unavailable.

20. A system for providing a data transfer function for a mobile device comprising:

instructions for directing a processing unit in said mobile device to:

receive a short message service message from an administrator computer via a wireless telephonic network,

read contents of said short message service message,

determine whether said contents include a command code for a data transfer function,

attempt to establish a wireless connection to a second data network in response to said contents including said command code, wherein said device includes a plurality of systems for connecting to said second data network

select one of said plurality of systems for connecting to said second data network,

attempt to establish a connection to said second data network with said selected one of said plurality of systems,

determine whether said wireless connection is established with said selected one of said plurality of systems,

repeat said instructions to select one of said plurality of systems, attempt to establish a connection to said second data network with said selected one of said plurality of systems, and determine whether said connection is established for each of said plurality of system until a connection is established, and

perform said data transfer function in response to a determination that said connection is established; and

a media readable by said processing unit in said mobile device storing said instructions.

21. The system of claim 20 further comprising:

instructions for directing said processing unit in said mobile device to:

determine that said attempt to establish said wireless connection failed,

generate a response short message service indicating said wireless connection failed, and

transmit said response short message service message to said administrator computer via said wireless telephonic network.

22. The system of claim 21 further comprising:

instructions for directing said processing unit in said mobile device to:

receive a second short message service message from said administrator computer wherein said second short message service message includes an address on said second data network wherein said address is to be used to perform said data transfer function at a later time.

23. The system of claim 22 further comprising:

instructions for directing a processing unit in said administrator computer to:

generate said second short message service in said administrator computer; and

a media readable by said processing unit in said administrator computer for storing said instructions.

24. The system of claim 22 further comprising:

instructions for directing said processing unit in said mobile device to:

connect to said second data network subsequent to receiving said second short message service message; and

communicate with said address on said second data network to perform said data transfer function.

25. The system of claim 20 wherein said instructions to perform said data transfer function comprises:

instructions for directing said processing unit in said mobile device to:

transmit a request for data to an address on said second data network.

26. The system of claim 25 wherein said instructions to perform said data transfer function comprises:

instructions for directing said processing unit in said mobile device to:

receive a total amount of data to be transferred from said address, and

determine whether said device has enough memory available to store said total amount of data.

27. The system of claim 26 wherein said instructions to perform said function further comprises:

instructions for directing said processing unit in said mobile device to:

transmit a confirmation to said second address in response to a determination that said device has enough data to store said data.

28. The system of claim 27 further comprising:

instructions for directing a processing unit in a processing system having said second address to:

transmit said data from said address to said mobile device over said second data network in response to receiving said confirmation from said mobile device; and

a media readable by said processing unit in said processing system for storing said instructions.

29. The system of claim 26 wherein said instructions to perform said data transfer function comprises:

instructions for directing a processing unit in said mobile device to:

erase data from memory of said device in response to a determination that said mobile device does not have sufficient memory to store said amount of data.

30. The system of claim 26 wherein data older than a certain time is erased.

31. The system of claim 26 wherein data that has not been accessed for a predetermined period is erased.

32. The system of claim 26 wherein data of a predetermined type is erased.

33. The system of claim 25 further comprising:

instructions for directing a processing unit in a processing system having said address to:

perform a user authentication in response to said device communicating with said second address; and

a media readable by said processing unit in said processing system for storing said instructions.

34. The system of claim 33 further comprising:

instructions for directing said processing unit in said processing system having said address to:

encrypt data transmitted to said mobile device.

35. The system of claim 20 wherein said selecting is based upon predetermined criteria.

36. The system of claim 20 wherein said selecting is based upon user input criteria.

37. The system of claim 20 further comprising:

instructions for directing said processing unit in said mobile device to:

determine whether HTTP format communications are available over said second data network.

38. The system of claim 37 further comprising:

instructions for directing said processing unit in said mobile device to:

communicate with said second address via sockets using a specified port in response to communications using HTTP format being unavailable.

39. A system for providing a data transfer function for a mobile device comprising:

circuitry in said mobile device configured to receive a short message service message from an administrator computer via a wireless telephonic network;

circuitry in said mobile device configured to read contents of said short message service message;

circuitry in said mobile device configured to determine whether said contents include a command code for a data transfer function;

circuitry in said mobile device configured to attempt to establish a wireless connection to a second data network in response to said contents including said command code, wherein said mobile device includes a plurality of systems for connecting to said second data network;

circuitry in said mobile device configured to select one of said plurality of systems for connecting to said second data network;

circuitry in said mobile device configured to attempt to establish a connection to said second data network with said selected one of said plurality of systems;

circuitry in said mobile device configured to determine whether said wireless connection is established with said selected one of said plurality of systems;

circuitry in said mobile device configured to repeat said application of said circuitry configured to select one of said plurality of systems, circuitry configured to attempt to establish a connection to said second data network with said selected one of said plurality of systems, and circuitry configured to determine whether said connection is established with said selected one of said plurality of systems for each of said plurality of system until a connection is established; and

circuitry in said mobile device configured to perform said data transfer function in response to a determination that said connection is established.

40. The system of claim 39 further comprising:

circuitry in said mobile device configured to determine that said attempt to establish said wireless connection failed;

circuitry in said mobile device configured to generate a response short message service indicating said wireless connection failed; and

circuitry in said mobile device configured to transmit said response short message service message to said administrator computer via said wireless telephonic network.

41. The system of claim 40 further comprising:

circuitry in said mobile device configured to receive a second short message service message from said administrator computer wherein said second short message service message includes an address on said second data network wherein said address is to be used to perform said data transfer function at a later time.

42. The system of claim 41 further comprising:

circuitry in said administrator computer configured to generate said second short message service in said administrator computer.

43. The system of claim 41 further comprising:

circuitry in said mobile device configured to connect to said second data network subsequent to receiving said second short message service message; and

circuitry in said mobile device configured to communicate with said address on said second data network to perform said data transfer function.

44. The system of claim 39 wherein said circuitry configured to said data transfer function comprises:

circuitry in said mobile device configured to transmit a request for data to an address on said second data network.

45. The system of claim 39 wherein said circuitry configured to perform said data transfer function comprises:

circuitry in said mobile device configured to receive a total amount of data to be transferred from said address; and

circuitry in said mobile device configured to determine whether said device has enough memory available to store said total amount of data.

46. The system of claim 45 wherein said circuitry configured to perform said transfer function further comprises:

circuitry in said mobile device configured to transmit a confirmation to said second address in response to a determination that said device has enough data to store said data.

47. The system of claim 46 further comprising:

circuitry in an administrator computer configured to transmit said data from said address to said mobile device over said second data network in response to receiving said confirmation from said mobile device.

48. The system of claim 45 wherein said circuitry configured to perform said data transfer function comprises:

circuitry in said mobile device configured to erase data from memory of said device in response to a determination that said mobile device does not have sufficient memory to store said amount of data.

49. The system of claim 48 wherein data older than a certain time is erased.

50. The system of claim 48 wherein data that has not been accessed for a predetermined period is erased.

51. The system of claim 48 wherein data of a predetermined type is erased.

52. The system of claim 44 further comprising:

circuitry in a processing system having said address configured to perform a user authentication in response to said device communicating with said second address.

53. The system of claim 52 further comprising:

circuitry in said processing system having said address configured to encrypt data transmitted to said mobile device.

54. The system of claim 39 wherein said selecting is based upon predetermined criteria.

55. The system of claim 39 wherein said selecting is based upon user input criteria.

56. The system of claim 39 further comprising:

circuitry in said mobile device configured to determine whether HTTP format communications are available over said second data network.

57. The system of claim 56 further comprising:

circuitry in said mobile device configured to communicate with said second address via sockets using a specified port in response to communications using HTTP format being unavailable.