**Title:** SYSTEM AND METHOD FOR TRANSMITTING/RECEIVING MESSAGE

**Abstract:** Provided is a system and method for transmitting/receiving a message. The system comprises a transmitter; a data server receiving the message data and the recipient mobile communication terminal information from the transmitter and storing them and requesting a message transmission center in such a way that a wake up message including address information of the message data can be transmitted to a recipient mobile communication terminal; a message transmission center generating the wake up message according to a wake up message transmission request to transmit the wake up message to the recipient mobile communication terminal; and a recipient mobile communication terminal connecting to the data server based on message data address information included in the wake up message to request download of corresponding message data if the wake up message is received from the message transmission center, and if the message data is downloaded from the data server according to the request, the recipient mobile communication terminal notifying reception of the message data to the user, interpreting the downloaded message data and displaying the interpreted message on a display unit according to user's selection.
SYSTEM AND METHOD FOR TRANSMITTING/RECEIVING MESSAGE

Technical Field
5 The present invention relates to a system and method for transmitting/receiving a message, and more particularly, to a system and method for transmitting/receiving a message comprising a recipient mobile communication terminal which communicates with a data server according to a message transmitted from a message transmission center such as a short message service center etc., receives predetermined message data stored in the data server, and requests predetermined information processing through a response to a reply event included in the message data.

15 Background Art
As the use of mobile communication terminals increases, a user has demanded a function for interchanging information using various methods as well as voice telephone conversation. Accordingly, mobile communication providers have provided to customers various additional services in which transmission/reception of information between users or between a user and a service provider is possible.

A representative additional service among them is a short message service (SMS). The SMS is used to transmit or receive a message such as a text etc. in a mobile communication terminal. After a message is drawn up by using a key pad of the mobile communication terminal at a transmitter, a telephone number of a person who will receive the message is designated and the message is transmitted so that the contents of the corresponding message is displayed on a recipient mobile communication terminal.

Such SMS uses a corresponding communication channel only during transmission and thus, many users use the SMS at a low cost.
However, the SMS has a drawback that the amount of messages to be transmitted at one time is limited to about 80 bytes. In other words, when the number of bytes of contents to be transmitted exceeds a limited capacity, the user must send the messages by reducing the amount of message according to the limited capacity or by sending the messages several times.

Meanwhile, various methods related to expression of information have been recently suggested, and among them, the utilization of markup data drawn up in a markup language increases.

Markup means displaying of special information on a text, i.e., original contents. A markup language may be a set of rules designating elements of markup and its meaning etc. A well known, representative markup language is a hypertext markup language (HTML).

In this way, data drawn up in a markup language is referred to as markup data. Markup data drawn up in a wireless markup language (WML) which is a wireless protocol markup language operating at a wireless application protocol (WAP) has been widely used in the mobile communication terminal. In case of data drawn up in the markup language in this way, unlike a general text, the structure and expression of information can be represented in various ways, and each information can be connected to each other in a hyper text format so that more stereoscopic expression is possible.

However, when data in a hyper text format which is drawn up in a markup language and can be browsed is transmitted to the mobile communication terminal, in order to transmit the data using a wireless protocol such as WAP etc., a mobile communication terminal user must have access to a wireless data network using key manipulation, but its procedure is complicated. And due to a limitation of capacity of about 80 bytes, it is not easy to transmit markup data using the SMS. In particular, additional contents for markup information are added to the markup data drawn up in the markup language as well as information to
be transmitted so that due to a limitation of capacity of about 80 bytes, it is not easy to transmit necessary information.

In other words, for example, when a communication service provider wants to transmit weather information or information about stock market situations or the detailed statement of the use of a credit card etc. in a markup data format to a user, due to a limitation of transmission amount, there is a severe limitation in using the SMS, and there are inconveniences that a mobile communication terminal user must request connection previously in order to use a wireless data network service.

Furthermore, in order to facilitate a payment date to change and to facilitate credit card updating to request as well as to check information about a credit card bill by a mobile communication terminal user (who has received the detailed statement of the use of a credit card), the markup data etc. including related information as described above needs to be transmitted to the mobile communication terminal. Thus, when data in which various information can be expressed, such as the markup data is transmitted, a more available and improved method is needed.

Disclosure of the Invention

To overcome drawbacks in a conventional message transmission service and in a conventional wireless data communication service such as a wireless application protocol (WAP) etc., the objective of the present invention is to provide a system and method for transmitting/receiving a message in which transmission of data in which various information can be expressed is facilitated.

The present invention also provides a system and method for transmitting/receiving a message in which, when data in which various information can be expressed is received, a reply response is facilitated using information included in corresponding data.

According to an aspect of the present invention, there is provided a system for transmitting/receiving a message, the system comprising: a
transmitter transmitting message data including predetermined information and at least one recipient mobile communication terminal information to receive the message data to a data server; a data server receiving the message data and the recipient mobile communication terminal information from the transmitter and storing them and requesting a message transmission center in such a way that a wake up message including address information of the message data can be transmitted to a recipient mobile communication terminal; a message transmission center generating the wake up message according to a wake up message transmission request to transmit the wake up message to the recipient mobile communication terminal; and a recipient mobile communication terminal connecting to the data server based on message data address information included in the wake up message to request download of corresponding message data if the wake up message is received from the message transmission center, and if the message data is downloaded from the data server according to the request, the recipient mobile communication terminal notifying reception of the message data to the user, interpreting the downloaded message data and displaying the interpreted message on a display unit according to user's selection.

According to another aspect of the present invention, there is provided a method for transmitting/receiving a message, the method comprising: (a) transmitting message data including predetermined information and at least one recipient mobile communication terminal information to receive the message data to a data server, using a transmitter; (b) receiving the message data and the recipient mobile communication terminal information from the transmitter and storing them and requesting a message transmission center in such a way that a wake up message including address information of the message data can be transmitted to a recipient mobile communication terminal, using the data server; (c) generating the wake up message according to a wake up
message transmission request to transmit the wake up message to the recipient mobile communication terminal, using the message transmission center; and (d) if the wake up message is received from the message transmission center, connecting to the data server based on message data address information included in the wake up message to request download of corresponding message data, and if the message data is downloaded from the data server according to the request, notifying reception of the message data to the user, interpreting the downloaded message data and displaying the interpreted message on a display unit according to user's selection using the recipient mobile communication terminal.

**Brief Description of the Drawings**

FIG. 1 is a schematic diagram illustrating the structure of a system for transmitting/receiving a message according to an embodiment of the present invention.

FIG. 2 is a functional block diagram of a data server of FIG. 1.

FIG. 3 is a functional block diagram of a recipient mobile communication terminal of FIG. 1;

FIGS. 4A through 5B are flowcharts illustrating a method for transmitting a message according to an embodiment of the present invention.

FIGS. 6A through 6E illustrate an example of a screen displayed on a display unit of a recipient mobile communication terminal in processing procedures of FIGS. 5A and 5B.

FIGS. 7A and 7B illustrate a modified example of the embodiment of FIGS. 4A and 4B.

FIGS. 8A and 8B illustrate a modified example of the embodiment of FIGS. 5A and 5B.

**Best mode for carrying out the Invention**
Exemplary embodiments of the present invention will now be described with reference to the attached drawings.

Referring to FIG. 1, a system for transmitting/receiving a message according to an embodiment of the present invention comprises a transmitter 10, an Internet provider (IP) network 50, a data server 20, a message transmission center 40, a signaling system 7 (SS7) network 60, a packet data serving node (PDSN) 100, a base station controller/packet control function (BSC/PCF) 80, an exchange 70, a base station 90, and a recipient mobile communication terminal 30.

The transmitter 10 transmits predetermined message data and information about at least one recipient mobile communication terminal 30 to receive the message data to the data server 20 and may be a personal computer (PC) or a kind of computer system.

In other words, the transmitter 10 may be a PC for immediately transmitting the message data drawn up by a user to the data server 20 according to a user’s command or may be a credit card company billing system for transmitting a credit card bill to the data server 20 in a predetermined time period. Thus, the transmitter 10 may be a system for providing predetermined information to customers such as a credit card company billing system etc. or may just be a control terminal (i.e., a PC) of a credit card company billing system. When the transmitter 10 is a control terminal, the transmitter 10 may constitute a system (i.e., a credit card company billing system) together with the data server 20 which will be described later.

A predetermined reply event may be included in message data. A detailed description of the type of a reply event and its contents will be described later.

Here, the message data transmitted to the data server 20 from the transmitter 10 may be markup data drawn up in a markup language, for example. In this case, the markup data may be interpreted at a browser operating on the recipient mobile communication terminal 30, as will be
described later. The recipient mobile communication terminal information may be a telephone number of the recipient mobile communication terminal 30 to receive the markup data, for example.

Hereinafter, the message data transmitted from the transmitter 10 will be described by exemplifying the markup data drawn up in a markup language.

The IP network 50 is a network using a transmission control protocol/Internet protocol (TCP/IP). The IP network 50 provides a routing environment based on an IP address so that a signal transmitted from the transmitter 10 can be transmitted to the data server 20, a wake up message transmission request from the data server 20 can be transmitted to the message transmission center 40, and the message data can be transmitted to the recipient mobile communication terminal 30 from the data server 20.

The data server 20 receives the message data and the recipient mobile communication terminal information from the transmitter 10 and stores them, provides address information about the stored message data, for example, a uniform resource locator (URL) of a position in which the message data is stored, to the message transmission center 40, and request the message transmission center 40 in such a way that the wake up message including the address information of the message data can be transmitted to the recipient mobile communication terminal 30.

In addition, the data server 20 transmits the requested message data to the recipient mobile communication terminal 30 when there is a message data request from the recipient mobile communication terminal 30 receiving the wake up message. When the requested message data is comprised of a plurality of layers in a markup data format, only an upper layer in which link information of a lower layer of the plurality of layers is included may also be transmitted to the recipient mobile communication terminal 30 and all of the layers may also be transmitted at one time. In other words, due to the characteristic of the markup data,
information to be transmitted may be divided into several layers (for example, each web page). When there is a request from the recipient mobile communication terminal 30, the data server 20 may also transmit only the uppermost layer including link information of other (lower) layer of the divided several layers, and the divided several layers may also be transmitted continuously at one time, and each divided layer may also be combined as one single layer and transmitted at one time.

In order to perform the above-described functions, the data server 20 may comprise a network interface unit 23 for allowing the data server 20 to be connected to the IP network 50, a data storage unit 24 for storing data to be transmitted, for example, message data, a customer information management unit 21 for storing recipient mobile communication terminal information, and a server controller 22 for controlling each unit described above and performing several necessary functions of the data server 20, as illustrated in FIG. 2. Here, a unique encryption key of each terminal for encryption communication with the transmitter 10 and the recipient mobile communication terminal 30 may be previously stored in the customer information management unit 21.

The message transmission center 40 generates a wake up message according to a wake up message transmission request received through the IP network 50 from the data server 20 to transmit the wake up message to the recipient mobile communication terminal 30. In this case, the message transmission center 40 may transmit the wake up message to the recipient mobile communication terminal 30 through the SS7 network 60, the exchange 70, BSC/PCF 80, and the base station 90. Here, a flow from the SS7 network 60 to the base station 90 is an example of a general transmission flow of the mobile communication network and thus, a detailed description thereof will be omitted. A signal transmission path from the message transmission center 50 to the recipient mobile communication terminal 30 may be changed.

Here, the wake up message is a message which is transmitted to
the recipient mobile communication terminal 30 so that a specific function of the recipient mobile communication terminal 30 can be performed. In the present embodiment, the wake up message comprises information about program that takes charge in the specific function, an address to request connection after the program is executed, i.e., message data address information.

In this way, the message transmission center 40 transmitting the wake up message to the recipient mobile communication terminal 30 may correspond to various kinds of devices for transmitting a message such as a short message service center (SMSC).

In addition, the message transmission center 40 checks the current time and determines whether the current time reaches a predetermined alarm time or not. When the current time reaches the alarm time, the message transmission center 40 may transmit a reception alarm operation message to the recipient mobile communication terminal 30. Here, the reception alarm operation message is a signal for determining a point of time at which a reception state is notified to a user when the recipient mobile communication terminal 30 receives the message data from the data server 20 according to the wake up message. A detailed description thereof will be described later.

The PDSN 100 supports networking of wireless packet data. The PDSN 100 takes charge in functions such as authentication processing, packet routing, and handover for securing mobility etc., so that the recipient mobile communication terminal 30 can receive a packet transmission service.

In other words, the PDSN 100 sets a connection session with the recipient mobile communication terminal 30 for trying to the use of a wireless data service through the base station 90 and the BSC/PCF 80 and performing a basic operation for interchanging a packet data. The PDSN 100 is interlocked with the data server 20 through the IP network 50, transmits a request signal from the recipient mobile communication
terminal 30 to the data server 20, and transmits the message data transmitted from the data server 20 to the recipient mobile communication terminal 30.

When the wake up message is received from the message transmission center 40, the recipient mobile communication terminal 30 connects to the data server 20 based on message data address information included in the wake up message to request download of corresponding message data, and when the message data is downloaded from the data server 20 according to the request, the recipient mobile communication terminal 30 notifies reception of the message data to the user. The recipient mobile communication terminal 30 interprets and displays the downloaded message data according to a message data check request due to user's key input. When the user selects a reply event included in the displayed message data and request transmission of the reply event, the recipient mobile communication terminal 30 transmits a reply event response signal to the data server 20.

To this end, the recipient mobile communication terminal 30 may comprise a wireless communication module 31 for allowing the recipient mobile communication terminal 30 to make wireless communication with the base station 90, a key inputting unit 34 that is manipulated by a user, a memory 32 in which a program (for example, a browser) for interpreting message data, i.e., markup data is stored, and a display unit 35 on which the interpreted message data is displayed, as illustrated in FIG. 3.

In other words, when code information of the browser program and address to which the browser program connects are included in the wake up message received through the wireless communication module 31 in the state where the browser program for interpreting and displaying the message data is stored in the memory 32, the terminal controller 33 drives the browser program that has been already stored in the memory 32 to perform a corresponding function.

In other words, all of functions [request of message data,
interpreting of the message data, and displaying of the message data etc.] of the terminal controller 33 which will be described as below may be performed according to operations of a browser. Here, the browser may be provided at the recipient mobile communication terminal 30 in a production step or may be downloaded from an additional, specific service provider when there is a user's request and may be provided at the recipient mobile communication terminal 30. The browser may be operated on a virtual machine platform such as wireless Internet platform for interoperability (WIPi).

The terminal controller 33 connects to the data server 20 based on the address information included in the received wake up message to request download of the message data. Here, the operation of connecting to the data server 20, requesting of the message data, and receiving of the message data using the terminal controller 33 may be performed using various protocols such as a wireless application protocol (WAP) and a hypertext transfer protocol (HTTP) etc. Contents of the wireless protocols are well known and thus, a detailed description thereof will be omitted.

When the message data is downloaded from the data server 20 according to the above-described request, the terminal controller 33 notifies the user of reception of the message data. Here, various notification methods such as a vibration method using rotation of a vibration motor (not shown), a sound output method using a speaker (not shown), and a visual displaying method using the display unit 35 are possible. The terminal controller 33 may notify the reception of the message data to the user after all of corresponding message data are received so that a user's standby time can be reduced.

In addition, when reception of the message data is notified, the terminal controller 33 may notify a reception state of the message data to the user only when a reception alarm operation message is received from the message transmission center 40.
Subsequently, the terminal controller 33 is in a standby state for user's key input. When there is key input to check the message data from the user, the terminal controller 33 interprets the downloaded message data and displays the interpreted message data on the display unit 35. Here, the terminal controller 33 may sense a user's reception check intention when a backlight of the display unit 35 is turned on, a folder is opened in case of a folder type recipient mobile communication terminal, or a slide is moved upwards in case of a slide type recipient mobile communication terminal besides key input.

Interpreting of the received message data, i.e., the markup data is performed by a parser built in a program. The parser reads out the contents of the transmitted markup data, analyses a grammatical configuration and syntax, and generates a parser tree. In addition, an operation of displaying the message data on the display unit 35 is performed by a renderer built in a browser program. The renderer hierarchically displays the message data on a screen based on the parser tree generated by the parser. The contents displayed on the screen in this way may be constituted in a hyper text format in which various expressions are possible by a grammar of a markup language.

When the message data requested to the data server 20 from the terminal controller 33 is comprised of a plurality of layers, only an upper layer of the plurality of layers may be transmitted from the data server 20, as described above. Here, the upper layer is a layer including link information that can be connected to each lower layer. The link information may be expressed using an element such as \(<A>\) in the case of a WML markup language, for example.

When only the upper layer is received from the data server 20 and the contents of the upper layer are displayed on the display unit 35, the terminal controller 33 maintains a standby state for user's key input. In this case, when the link information about the lower layer included in the upper layer is selected by user's manipulation of the key inputting unit 34,
the terminal controller 33 requests the data server 20 of download of the lower layer corresponding to the selected link information. As such, the lower layer may be received from the data server 20.

When the message data received by the terminal controller 33 is comprised of a single layer, the received message data comprises all information. Thus, the entire contents of information displayed on the display unit 35 by the terminal controller 33 may be read without link connection by user’s manipulation of other key buttons etc.

In addition, a reply event to be retransmitted to the data server 20 may be included in the message data displayed on the display unit 35. When the user selects a specific reply event, the terminal controller 33 may transmit a response signal of the selected reply event to the data server 20 so that a specific function can be performed. More detailed description of selection and transmission of the reply event will be described later.

FIGS. 4A through 5B illustrate a signal flow of a system for transmitting/receiving a message according to an embodiment of the present invention. First, an operation of transmitting message data to a recipient mobile communication terminal 30 from a transmitter 10 will be described with reference to FIGS. 4A and 4B.

If the message data and recipient mobile communication terminal information are input by a user, the transmitter 10 stores corresponding contents (operations S1 and S3), and if there is a transmission command of the message data from the user (operation S3), the transmitter 10 encrypts the message data and the recipient mobile communication terminal information using a unique encryption key (operation S5) and then transmits the encrypted message data and recipient mobile communication terminal information to the data server 20 (operation S7). Here, when the transmitter 10 is comprised of a credit card company billing system etc., information (i.e., a credit card bill etc.) that is periodically generated by a predetermined internal program may also be
transmitted to the data server 20 according to a predetermined transmission date. The encryption operation S5 is necessary for data protection. However, when security of a transmitted data is not necessary, operation S5 may also be omitted for performance of the system.

The data server 20 decodes the encrypted data received from the transmitter 10 using a corresponding, unique encryption key while including a unique encryption key of each communicating terminal (operation S11). Subsequently, a decoded, general text data, in particular, message data is compressed for efficiency during transmission (operation S13). At this time, lossy compression or lossless compression may be selected according to an object to be compressed. This compression operation may also be omitted like encryption/decoding operation. However, the compression operation may be performed for transmission efficiency in a wireless section in which the message data is to be transmitted to the recipient mobile communication terminal 30 within a range where a load is not applied to the system.

The data server 20 stores the recipient mobile communication terminal information in the customer information management unit 21 and stores the message data in the data storage unit 24 (operation S15). Here, the recipient mobile communication terminal information comprise information about subscribers who have subscribed to a message data reception service (i.e., a subscriber name, a recipient mobile communication terminal telephone number etc.).

In the present embodiment, a symmetrical key encryption method for performing encryption and decoding using the same encryption key has been exemplified for explanatory conveniences. However, data may be encrypted/decoded using various algorithms including a public key encryption method such as Rivest Shamir Adleman (RSA). When the public key encryption method is used, an operation of interchanging a public key may be further included. The operation of interchanging a
public key is a well known technology and thus, a detailed description thereof will be omitted.

After the message data and the recipient mobile communication terminal information are stored, the data server 20 transmits a wake up message transmission request signal in which message data address information is included, to a message transmission center 40 (operation S17).

Thus, the message transmission center 40 transmits the wake up message to the recipient mobile communication terminal 30 (operation S19). Program code information to be executed at the recipient mobile communication terminal 30 and address which a corresponding program must connect, i.e., message data address information are included in the wake up message. The present embodiment uses the case where a program to be executed at the recipient mobile communication terminal 30 is a browser interpreting and displaying message data, i.e., markup data, as an example.

The recipient mobile communication terminal 30 which receives the wake up message drives the browser (operation S21), and the browser connects to the data server 20 using the address information included in the wakeup message to request transmission of the message data (operation S23).

The data server 20 which receives a message data request from the recipient mobile communication terminal 30 checks whether a terminal requesting the message data has an authority to request the message data (operation S25). For example, checking of the authorization of the terminal may be performed by comparing a recipient mobile communication terminal telephone number requesting the message data with a recipient mobile communication terminal telephone number which is set to a recipient mobile communication telephone number to receive the message data and stored in the customer information management unit 21.
As a result of checking, if the recipient mobile communication terminal 30 requesting the message data has no authority to request a corresponding message data (operation S27), the data server 20 performs terminal processing (operation S29). Here, although not shown, the data server 20 may also transmit an error message in which there is no authority to request the message data, to the recipient mobile communication terminal 30 together with termination processing.

As a result of checking, if the recipient mobile communication terminal 30 requesting the message data has an authority to request a corresponding message data (operation S27), the data server 20 encrypts the compressed message data using a unique encryption key of the recipient mobile communication terminal 30 (operation S31) and transmits the encrypted message data to the recipient mobile communication terminal 30 (operation S33).

Here, predetermined reply event information may be included in the message data transmitted to the recipient mobile communication terminal 30. This reply event may be generated by at least one of the transmitter 10 or the data server 20 and included in the message data. A more detailed description of the reply event will be described later.

After the message data is downloaded, the recipient mobile communication terminal 30 firstly decodes the received message data (operation S35), releases compression (operation S37), and temporarily stores the message data (operation S39).

Hereinafter, the operation of the recipient mobile communication terminal 30 receiving the message data from the data sever and an operation of transmitting a reply event response signal to the data server 20 will be describe with reference to FIGS. 5A and 5B. When describing the present embodiment, the message data transmitted to the recipient mobile communication terminal 30 from the data server 20 is a credit card bill as an example. In other words, in the state where the transmitter 10 comprised of a kind of credit card billing system transmits
the detailed statement of the user of a customer's credit card periodically (according to a predetermined card detail transmission date etc.), an operation in which the recipient mobile communication terminal 30 receiving the detailed statement of the user of a customer's credit card notifies received information to the user and the user utilizes corresponding information will be described.

The recipient mobile communication terminal 30 which temporarily stores the message data received from the data server 20 notifies the received state of the message data to the user (operation S40). In order to notify the received state, a reception notifying message may be displayed on the display unit 35 as illustrated in FIG. 6A or flickering of a light emitting diode (LED) or sound output through a speaker or vibration by a motor etc. may be used separately or together.

The recipient mobile communication terminal 30 determines whether a user's reception checking intention is sensed or not after reception alarm of the message data. For example, when there is predetermined key input (check button input etc. of FIG. 6A) of a key inputting unit 34, or when a backlight of a display unit is turned on, or when, in case of a folder type terminal, the folder is opened, or when, in case of a slide type terminal, the slide is moved upwards, the recipient mobile communication terminal 30 senses a user's reception check intention. In other words, the recipient mobile communication terminal 30 checks whether the user wants to read the message data or not.

If the user's reception check intention is sensed (operation S41), the recipient mobile communication terminal 30 allows a screen for user authentication to be displayed on the display unit 35 (operation S43). For example, the recipient mobile communication terminal 30 displays a window on which a user password is to be input, as illustrated in FIG. 6B.

As a result of determining based on the password input by the user, when a user has an authority (operation S45), the recipient mobile communication terminal 30 displays a credit card bill received from the
data server 20 on the display unit 35 (operation S47). In this case, it is assumed that the credit card bill is comprised of markup data and thus, the recipient mobile communication terminal 30 displays the received credit card bill using the browser driven in operation S21, as illustrated in FIG. 6C.

As described above, when the recipient mobile communication terminal 30 senses a user's reception check intention through user's key button input etc., the recipient mobile communication terminal 30 may display the message data on the display unit 35. However, when it is set so that an operation of a user's reception check is not necessary, the recipient mobile communication terminal 30 may display message data reception alarm (operation S40) and simultaneously, may display the message data on the display unit 35 (operation S47).

By the way, payment details of the use of a credit card and a reply event for changing setting of additional information due to the use of a credit card may be included in the message data transmitted from the data server 20, for example, in the credit card bill. Such reply event may comprise 'adjusting of a monthly use limit' for adjusting a month available amount, 'changing of a payment date' for changing a credit card use payment date, 'revolving request' that only a portion of the amount of use of a credit card is firstly paid and the other portion thereof is paid on the next month, 'request of a product of thanks due to accumulated points' to select and request a product of thanks due to accumulated points, 'credit card updating request' to request updating of a credit card at the expiration time of the use of a credit card, and 'survey response' to respond to a predetermined survey investigation.

In this way, after the message data including the reply event is displayed, if the user selects one of reply events included in the message data (operation S49) and then, requests transmission of the reply event (operation S51), the recipient mobile communication terminal 30 transmits a reply event response signal to the data server 20 (operation
S53).

For example, if the user selects a reply event for changing a payment date in the state where a screen of FIG. 6C is displayed, the recipient mobile communication terminal 30 allows a screen of FIG. 6D to be displayed, and if the user selects a payment date to be changed, the recipient mobile communication terminal 30 transmits a event response signal including the payment date selected by the user to the data server 20.

Here, the reply event response signal may be transmitted using a GET method or a POST method used to transmit data at a HTTP.

The data server 20 processes the reply event response (operation S55), and then notifies the result of processing the reply event response to the recipient mobile communication terminal 30 (operation S57). Here, the data server 20 may also transmit the reply event response signal to the transmitter 10 so that processing of a corresponding reply event response signal can be performed at the transmitter 10. In other words, in the above embodiment, payment date changing processing may be performed at the transmitter 10.

The recipient mobile communication terminal 30 which receives the result of processing the reply event response may display a normal processing message of FIG. 6E on a screen.

In this way, desired information can be changed or a predetermined request can be processed based on the reply event included in the credit card bill transmitted from the data server 20 using the recipient mobile communication terminal 30 so that user’s conveniences using the recipient mobile communication terminal 30 are increased.

Hereinafter, an operation of controlling a system for transmitting/receiving a message according to another embodiment of the present invention will be described with reference to FIGS. 7A and 7B.
The present embodiment is a modified embodiment of the embodiment previously described with reference to FIGS. 4A and 4B and is a specified embodiment of a processing operation in the case where a message data is comprised of a plurality of layers in a markup data format. Thus, when describing the present embodiment, the same portions as the embodiment of FIGS. 4A and 4B will be omitted.

An encryption/decoding operation and compression and release operations of the operations of FIGS. 4A and 4B are omitted in FIGS. 7A and 7B. However, these operations may be included in the present embodiment.

First, operations S1' to S29' are the same as operations S1 through S29 of FIGS. 4A and 4B.

A data server 20 which determines that a recipient mobile communication terminal 30 requesting the message data has an authority (operation S27'), the data server 20 determines whether the message data is comprised of a plurality of layers (operation S61).

In other words, the data server 20 determines whether the message data is comprised of at least one lower layer and an upper layer including a path of the lower layer or not. Whether the message data is comprised of a plurality of layers may be determined by checking whether connection information about the lower layer is included in the upper layer or not.

When the message data is comprised of a plurality of layers, the data server 20 combines the plurality of layers as a single layer (operation S63).

In this way, if the plurality of layers are combined as one layer, in data transmission/reception through a wireless communication section between the recipient mobile communication terminal 30 and the data server 20, all of related data can be transmitted through one connection so that the entire transmission time of the message data can be reduced.

A method of transmitting all of the plurality of layers to the recipient
mobile communication terminal 30 at one time using the data server 20 may include a method of sequentially transmitting the upper layer and the lower layer through one connection with the recipient mobile communication terminal 30 other than a method of combining the plurality of layers as a single layer as described above.

For example, when the message data is a markup data drawn up in a hypertext markup language (HTML), if an address of the lower layer is included in the upper layer by a markup tag \(<a>\) element, the data server 20 may transmit corresponding lower layers to the recipient mobile communication terminal 30 subsequently to the upper layer.

The following operations S67 through S73 are the same as operations S33 through S39 of FIG. 4B and thus, a description thereof will be omitted.

Hereinafter, an operation of controlling a system for transmitting/receiving a message according to another embodiment of the present invention will be described with reference to FIGS. 8A and 8B.

The present embodiment is a modified embodiment of the embodiment previously described with reference to FIGS. 5A and 5B and is a specified embodiment of the case where a recipient mobile communication terminal 30 which receives message data from the data server 20 notifies the reception state of the message data to a user only if predetermined conditions are satisfied. Thus, when describing the present embodiment, the same portions as the embodiment of FIGS. 5A and 5B will be omitted.

First, a message transmission center 40 which transmits a wakeup message to the recipient mobile communication terminal 30 checks time (operation S81) and determines whether the current time reaches a reception alarm time or not (operation S82). Here, the reception alarm time may be set to a specific time or to a predetermined time range. The set, specific time or time range may be defined based on
predetermined setting information which is generated by the transmitter 10 or the data server 20 and is transmitted.

As a result of determination, when the current time reaches the reception alarm time, the message transmission center 40 transmits a reception alarm operation message to the recipient mobile communication terminal 30 (operation S83).

The recipient mobile communication terminal 30 which receives the message data from the data server 20 according to the wake up message of the message transmission center 40 notifies the reception state of the message data only when the recipient mobile communication terminal 30 receives the reception alarm operation message from the message transmission center 40 (operation S85).

Operations S85 through S94 to be performed after the recipient mobile communication terminal 30 notifies the reception state of the message data to the user are the same as operations S40 through S57 of FIG. 5B and thus, a description thereof will be omitted.

In this way, since the time for notifying the reception state of the message data in the recipient mobile communication terminal 30 is adjusted, noise can be prevented from occurring at the night time due to an alarm function due to the reception of the message data.

In addition, a transmission time of the message data and time for notifying the reception of the message data to the user actually are set to be different from each other so that the utility of a channel of a wireless communication network can be improved. For example, when the same message data is transmitted to a plurality of recipient mobile communication terminals, the message data is previously transmitted to the mobile communication terminal at a time when there are small communication traffics and then, the recipient mobile communication terminal 30 notifies the reception state of the message data to the user at a specific time.

In the above-described embodiment, the message transmission
center 40 takes charge in checking the current time and determining whether the current time is a reception alarm time or not. However, the present embodiment may be modified in such a way that, when the transmitter 10 or the data server 20 checks the current time and determines whether the current time is the reception alarm time or not and as a result of determination, when the current time corresponds to the reception alarm time, a request is made to the message transmission center 40 so that the reception alarm operation message can be transmitted to the recipient mobile communication terminal 30.

In addition, the recipient mobile communication terminal 30 may change the alarm time to be changed according to user's selection. In this case, time checking and determining of the reception alarm time are performed by the recipient mobile communication terminal 30.

Meanwhile, the present invention is not limited to the above-described specific embodiments but may be modified and corrected in various ways within the scope of the invention.

In particular, data to be transmitted between the data server 20 and the recipient mobile communication terminal 30 does not need to be comprised of markup data. The data may also be in a format in which transmission and interpretation of information can be performed between the data server 20 and the recipient mobile communication terminal 30.

In addition, data to be transmitted to the recipient mobile communication terminal 30 from the data server 20 may be the detailed statement of the use of a mobile communication, the detailed statement of the use of a wired communication, the detailed statements of various kinds of public charges, an advertisement message or newsletters etc. as well as the credit card bill according to the function of the data server 20.

While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in
form and details may be made therein without departing from the spirit and scope of the present invention as defined by the following claims.

**Industrial Applicability**

According to the present invention, message data such as markup data etc. in which predetermined information such as a bill, advertisement contents, and survey etc. are included, can be easily transmitted to a mobile communication terminal from a system or other computer terminal provided to a company which wants to provide a bill or advertisement or survey etc. to customers such as a credit card company, a mobile communication company or an advertising company etc.

Furthermore, the limitation of the size of a message to be transmitted by a transmitter of the message data is small, and even though a recipient mobile communication terminal does not connect to a data communication network previously, the recipient mobile communication terminal can receive the message data.

In addition, the recipient mobile communication terminal notifies the message data to the user after receiving all of the message data so that a user's standby time can be minimized, and reply response to a transmitter terminal which transmits the message data can be performed using a reply event included in the message data. Thus, bi-directional communication is possible (not provision of one-sided information between a transmitter and a recipient of the message data).

In particular, by using a reply response signal, a company can receive customers' dissatisfaction etc., and a customer having a mobile communication terminal which is a recipient terminal can correct the set contents related to the contents included in the message data immediately after receiving the message data so that user's conveniences are increased.
What is claimed is:

1. A system for transmitting/receiving a message, the system comprising:

   a transmitter transmitting message data including predetermined information and information about at least one recipient mobile communication terminal to receive the message data to a data server;

   a data server receiving the message data and the recipient mobile communication terminal information from the transmitter and storing them and requesting a message transmission center in such a way that a wake up message including address information of the message data can be transmitted to a recipient mobile communication terminal;

   a message transmission center generating the wake up message according to a wake up message transmission request to transmit the wake up message to the recipient mobile communication terminal; and

   a recipient mobile communication terminal connecting to the data server based on the address information of the message data included in the wake up message to request download of corresponding message data if the wake up message is received from the message transmission center, and if the message data is downloaded from the data server according to the request, the recipient mobile communication terminal notifying reception of the message data to the user, interpreting the downloaded message data and displaying the interpreted message on a display unit according to user's selection.

2. The system of claim 1, wherein the recipient mobile communication terminal transmits a reply event response signal to the data server if the user selects a reply event included in the message data displayed on the display unit and requests transmission of the reply event.
3. The system of claim 2, wherein the reply event is included in the message data by at least one of the transmitter and the data server.

4. The system of claim 2, wherein the data server performs response processing of the received reply event response signal to transmit the result of processing to the recipient mobile communication terminal if the reply event response signal is received from the recipient mobile communication terminal.

5. The system of claim 2, wherein the data server transmits the received reply event response signal to the transmitter if the reply event response signal is received from the recipient mobile communication terminal, and the transmitter performs response processing of the received reply event response signal received from the data server to transmit the result of processing to the recipient mobile communication terminal through the data server.

6. The system of claim 1, wherein the transmitter is at least one of a computer which is capable of communicating with the data server through a wired data communication network, a mobile communication terminal which is capable of communicating with the data server through a mobile communication network, and a system for requesting the amount of use of a predetermined service.

7. The system of claim 1, wherein the message transmission center generates the wake up message according to the request from the data server and then transmits the generated wake up message to the recipient mobile communication terminal and checks time, and if the current time is a predetermined reception alarm time, the message transmission center transmits a reception alarm operation message to the recipient mobile communication terminal, and the recipient mobile communication terminal temporarily stores the message data
downloaded from the data server and notifies reception of the message data to the user if the reception alarm operation message is received from the message transmission center.

8. The system of claim 1, wherein the mobile communication terminal temporarily stores the message data downloaded from the data server and checks the current time, and if the current time is a predetermined reception alarm time, the recipient mobile communication terminal notifies reception of the message data to the user.

9. The system of claim 1, wherein the message data is a markup data drawn up in a markup language.

10. The system of claim 9, wherein, when the markup data is comprised of a plurality of layers, if the data server receives request of download of the markup data from the recipient mobile communication terminal, the data server transmits the markup data to the recipient mobile communication terminal at one time using one of a method of transmitting the markup data after generating the plurality of layers as one single layer and a method of sequentially transmitting the plurality of layers.

11. The system of claim 1, wherein communication between the transmitter and the data server and communication between the data server and the recipient mobile communication terminal are performed in the state where the message data is encrypted using a unique encryption key of each terminal.

12. A method for transmitting/receiving a message, the method comprising:

(a) transmitting message data including predetermined information
and information about at least one recipient mobile communication terminal to receive the message data to a data server, using a transmitter;

(b) receiving the message data and the recipient mobile communication terminal information from the transmitter and storing them and requesting a message transmission center in such a way that a wake up message including address information of the message data can be transmitted to a recipient mobile communication terminal, using the data server;

(c) generating the wake up message according to a wake up message transmission request to transmit the wake up message to the recipient mobile communication terminal, using the message transmission center; and

(d) if the wake up message is received from the message transmission center, connecting to the data server based on the address information of the message data included in the wake up message to request download of corresponding message data, and if the message data is downloaded from the data server according to the request, notifying reception of the message data to the user, interpreting the downloaded message data and displaying the interpreted message on a display unit according to user's selection using the recipient mobile communication terminal.

13. The method of claim 12, further comprising, if the user selects a reply event included in the message data displayed on the display unit and requests transmission of the reply event, transmitting a reply event response signal to the data server, using the recipient mobile communication terminal.

14. The method of claim 13, wherein the reply event is included in the message data by at least one of the transmitter and the
data server.

15. The method of claim 13, further comprising, if the reply event response signal is received from the recipient mobile communication terminal, performing response processing of the received reply event response signal to transmit the result of processing to the recipient mobile communication terminal, using the data server.

16. The method of claim 13, further comprising, if the reply event response signal is received from the recipient mobile communication terminal, transmitting the received reply event response signal to the transmitter using the data server, and performing response processing of the received reply event response signal received from the data server to transmit the result of processing to the recipient mobile communication terminal through the data server, using the transmitter.

17. The method of claim 12, wherein the operation (c) further comprise generating the wake up message according to the request from the data server and then transmitting the generated wake up message to the recipient mobile communication terminal and checking time, and if the current time is a predetermined reception alarm time, transmitting a reception alarm operation message to the recipient mobile communication terminal, using the message transmission center, and the operation (d) comprises temporarily storing the message data downloaded from the data server and notifying reception of the message data to the user if the reception alarm operation message is received from the message transmission center using the recipient mobile communication terminal.

18. The method of claim 12, wherein the operation (d) comprises temporarily storing the message data downloaded from the
data server and checking the current time, and if the current time is a predetermined reception alarm time, notifying reception of the message data to the user using the recipient mobile communication terminal.

19. The method of claim 12, wherein the message data is a markup data drawn up in a markup language.

20. The system of claim 19, wherein, when the markup data is comprised of a plurality of layers, if the data server receives request of download of the markup data from the recipient mobile communication terminal, the data server transmits the markup data to the recipient mobile communication terminal at one time using one of a method of transmitting the markup data after generating the plurality of layers as one single layer and a method of sequentially transmitting the plurality of layers.
FIG. 1

DATA SERVER

IP Network

MESSAGE TRANSMISSION CENTER

SS7 Network

EXCHANGE

PDSN

BSC/PCF

RECIPIENT MOBILE COMMUNICATION TERMINAL
FIG. 6A

DETAILS OF USE OF CREDIT CARD OF SEPTEMBER HAVE BEEN RECEIVED

FIG. 6B

PLEASE ENTER PASSWORD FOR CHECKING RECEIVED INFORMATION

PREVIOUS  CONFIRM  MENU
FIG. 6C

- DETAILS OF USE OF CREDIT CARD OF SEPTEMBER
- TOTAL AMOUNT: 450,000

- SETTING CHANGING
  - CHANGING OF PAYMENT DATE
  - REQUEST OF PRODUCT OF THANKS DUE TO ACCUMULATED POINTS
  - ADJUSTING OF MONTHLY USE LIMIT

FIG. 6D

- CHANGING OF PAYMENT DATE
  - 5
  - 10
  - 15
  - 20
  - 25
  - END OF THE MONTH
FIG. 6E

CHANGING OF PAYMENT DATE HAS BEEN SUCCEEDED

PREVIOUS CONFIRM MENU
# INTERNATIONAL SEARCH REPORT

## A. CLASSIFICATION OF SUBJECT MATTER

**H04Q 7/20(2006.01)**

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

- IPC 8 H04Q

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

- Korean Utility models and applications for Utility models since 1975
- Japanese Utility models and applications for Utility models since 1975

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

- eKIPASS(KIPO internal) & Keyword: SMS, URL and data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>X</td>
<td>US 7 082 459 B2 (SOON-JIN KIM et al.) 25 July 2006 See the whole document</td>
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☐ Further documents are listed in the continuation of Box C. ❌ See patent family annex.

* Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
  - "E" earlier application or patent but published on or before the international filing date
  - "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
  - "O" document referring to an oral disclosure, use, exhibition or other means
  - "P" document published prior to the international filing date but later than the priority date claimed

**"T"** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

**"X"** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

**"Y"** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

**"R"** document member of the same patent family

Date of the actual completion of the international search

23 APRIL 2008 (23.04.2008)

Date of mailing of the international search report

24 APRIL 2008 (24.04.2008)

Name and mailing address of the ISA/KR

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Authorized officer

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Telephone No. 82-42-481-5696

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