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Fujisaki

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(54) **COMMUNICATION DEVICE**

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This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

(63) Continuation of application No. 17/065,538, filed on Oct. 8, 2020, now Pat. No. 11,184,470, which is a continuation of application No. 16/784,286, filed on Feb. 7, 2020, now Pat. No. 10,805,445, which is a continuation of application No. 16/355,850, filed on Mar. 18, 2019, now Pat. No. 10,560,561, which is a continuation of application No. 15/456,765, filed on Mar. 13, 2017, now Pat. No. 10,237,385, which is a continuation of application No. 14/732,821, filed on Jun. 8, 2015, now Pat. No. 9,596,338, which is a continuation of application No. 14/258,027, filed on Apr. 22, 2014, now Pat. No. 9,077,807, which is a continuation of application No. 13/857,153, filed on Apr. 5, 2013, now Pat. No. 8,774,862, which is a continuation of application No. 13/417,257, filed on
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See application file for complete search history.

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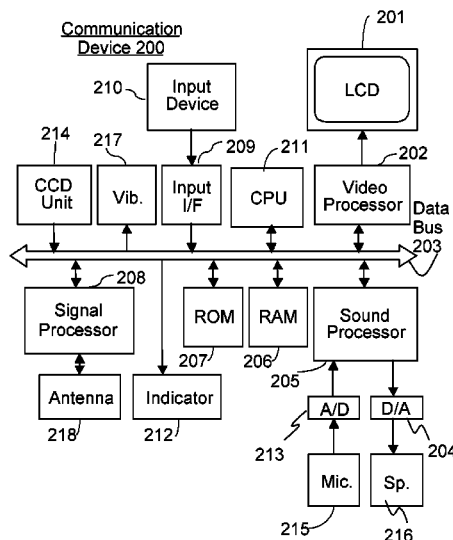(Continued)

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(57) **ABSTRACT**

The mobile communication device comprising a wireless voice communication implementer, a route displaying implementer, and a multiple language implementer.

18 Claims, 1 Drawing Sheet

Related U.S. Application Data

Mar. 11, 2012, now Pat. No. 8,447,354, which is a continuation of application No. 13/225,570, filed on Sep. 6, 2011, now Pat. No. 8,364,201, which is a continuation of application No. 10/710,600, filed on Jul. 23, 2004, now Pat. No. 8,090,402.

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Communication
Device 200

201

LCD

210 — Input Device

214   217   209   211   202

CCD Unit   Vib.   Input I/F   CPU   Video Processor   Data Bus

203

208

Signal Processor   ROM   RAM   Sound Processor

207   206   205

Antenna   Indicator   A/D   D/A

218   212   213   204

Mic.   Sp.

215   216

1
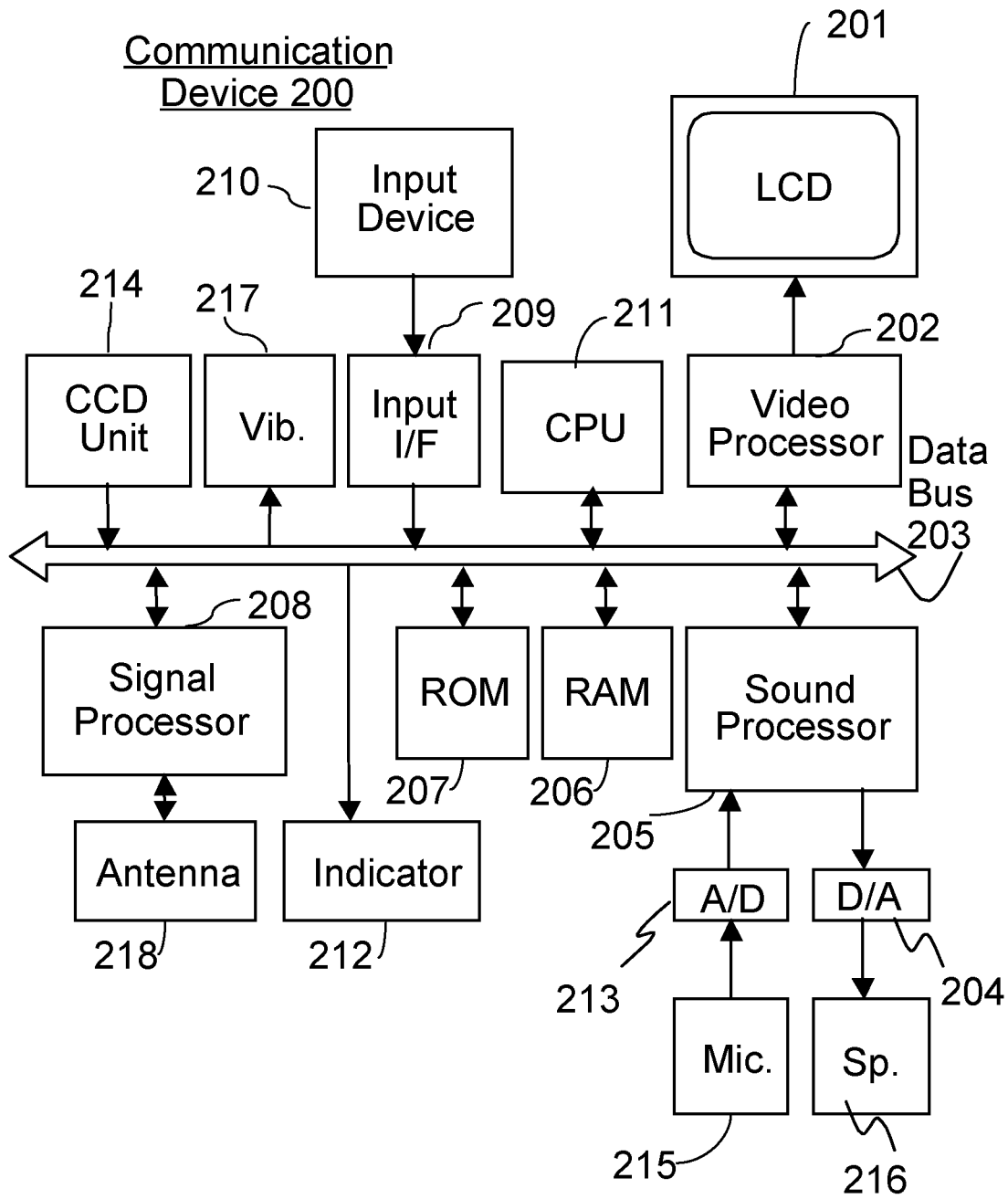
COMMUNICATION DEVICE

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. Ser. No. 17/065,538 filed 2020 Oct. 8, which is a continuation of U.S. Ser. No. 16/784,286 filed 2020 Feb. 7, which is a continuation of U.S. Ser. No. 16/355,850 filed 2019 Mar. 18, which is a continuation of U.S. Ser. No. 15/456,765 filed 2017 Mar. 13, which is a continuation of U.S. Ser. No. 14/732,821 filed 2015 Jun. 8, which is a continuation of U.S. Ser. No. 14/258,027 filed 2014 Apr. 22, which is a continuation of U.S. Ser. No. 13/857,153 filed 2013 Apr. 5, which is a continuation of U.S. Ser. No. 13/417,257 filed 2012 Mar. 11, which is a continuation of U.S. Ser. No. 13/225,570 filed 2011 Sep. 6, which is a continuation of U.S. Ser. No. 10/710,600 filed 2004 Jul. 23, now U.S. Pat. No. 8,090,402, which claims the benefit of U.S. Provisional Application No. 60/481,426 filed 2003 Sep. 26, all of which are hereby incorporated herein by reference in their entirety.

BACKGROUND OF INVENTION

The invention relates to communication device and more particularly to the communication device which is capable to communicate with another communication device in a wireless fashion.

U.S. Patent Publication No. 20030119562 is introduced as a prior art of the present invention of which the summary is the following: "There are provided a task display switching method, a portable apparatus and a portable communications apparatus which, when a plurality of application software are activated and processed in parallel, make it possible to switch a display between each of the application software with ease. According to the task display switching method, the portable apparatus and the portable communications apparatus of the present invention, in a portable apparatus capable of processing a plurality of tasks in parallel and of displaying a plurality of display regions for displaying data, an icon associated with a task displayed on a first display region is generated automatically or manually, and the generated icon is displayed in a second display region. When any icon thus generated is selected from a plurality of icons displayed on the second display region, the task associated with the selected icon is restored and displayed in the first display region." However, this prior art does not disclose the mobile communication device comprising a wireless voice communication implementer, a route displaying implementer, and a multiple language implementer.

For the avoidance of doubt, the number of the prior arts introduced herein (and/or in IDS) may be of a large one, however, applicant has no intent to hide the more relevant prior art(s) in the less relevant ones.

SUMMARY OF INVENTION

It is an object of the present invention to provide a device capable to implement a plurality of functions.

It is another object of the present invention to provide merchandise to merchants attractive to the customers in the U.S.

It is another object of the present invention to provide mobility to the users of communication device.

It is another object of the present invention to provide more convenience to the customers in the U.S.

2

It is another object of the present invention to provide more convenience to the users of communication device or any tangible thing in which the communication device is fixedly or detachably (i.e., removably) installed.

It is another object of the present invention to overcome the shortcomings associated with the foregoing prior art.

It is another object of the present invention to overcome the shortcomings associated with the foregoing prior art.

The present invention introduces the mobile communication device comprising a wireless voice communication implementer, a route displaying implementer, and a multiple language implementer.

BRIEF DESCRIPTION OF DRAWINGS

The above and other aspects, features, and advantages of the invention will be better understood by reading the following more particular description of the invention, presented in conjunction with the following drawing, wherein:

FIG. 1 is a block diagram illustrating an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

The following description is of the best presently contemplated mode of carrying out the present invention. This description is not to be taken in a limiting sense but is made merely for the purpose of describing the general principles of the invention. For example, each description of random access memory in this specification illustrate(s) only one function or mode in order to avoid complexity in its explanation, however, such description does not mean that only one function or mode can be implemented at a time. In other words, more than one function or mode can be implemented simultaneously by way of utilizing the same random access memory. In addition, the figure number is cited after the elements in parenthesis in a manner for example 'RAM 206 (FIG. 1)'. It is done so merely to assist the readers to have a better understanding of this specification, and must not be used to limit the scope of the claims in any manner since the figure numbers cited are not exclusive. There are only few data stored in each storage area described in this specification. This is done so merely to simplify the explanation and, thereby, to enable the reader of this specification to understand the content of each function with less confusion. Therefore, more than few data (hundreds and thousands of data, if necessary) of the same kind, not to mention, are preferred to be stored in each storage area to fully implement each function described herein. The scope of the invention should be determined by referencing the appended claims.

FIG. 1 is a simplified block diagram of the Communication Device 200 utilized in the present invention. Referring to FIG. 1, Communication Device 200 includes CPU 211 which controls and administers the overall function and operation of Communication Device 200. CPU 211 uses RAM 206 to temporarily store data and/or to perform calculation to perform its function, and to implement the present invention, modes, functions, and systems explained hereinafter. Video Processor 202 generates analog and/or digital video signals which are displayed on LCD 201. ROM 207 stores the data and programs which are essential to operate Communication Device 200. Wireless signals are received by Antenna 218 and processed by Signal Processor 208. Input signals are input by Input Device 210, such as a dial pad, a joystick, and/or a keypad, and the signals are transferred via Input Interface 209 and Data Bus 203 to CPU 211. Indicator 212 is an LED lamp which is designed to

output different colors (e.g., red, blue, green, etc). Analog audio data is input to Microphone **215**. A/D **213** converts the analog audio data into a digital format. Speaker **216** outputs analog audio data which is converted into an analog format from digital format by D/A **204**. Sound Processor **205** produces digital audio signals that are transferred to D/A **204** and also processes the digital audio signals transferred from A/D **213**. CCD Unit **214** captures video image which is stored in RAM **206** in a digital format. Vibrator **217** vibrates the entire device by the command from CPU **211**.

As another embodiment, LCD **201** or LCD **201**/Video Processor **202** may be separated from the other elements described in FIG. **1**, and be connected in a wireless fashion to be wearable and/or head-mountable.

When Communication Device **200** is in the voice communication mode, the analog audio data input to Microphone **215** is converted to a digital format by A/D **213** and transmitted to another device via Antenna **218** in a wireless fashion after being processed by Signal Processor **208**, and the wireless signal representing audio data which is received via Antenna **218** is output from Speaker **216** after being processed by Signal Processor **208** and converted to analog signal by D/A **204**. For the avoidance of doubt, the definition of Communication Device **200** in this specification includes so-called 'PDA'. The definition of Communication Device **200** also includes in this specification any device which is mobile and/or portable and which is capable to send and/or receive audio data, text data, image data, video data, and/or other types of data in a wireless fashion via Antenna **218**. The definition of Communication Device **200** further includes any micro device embedded or installed into devices and equipments (e.g., VCR, TV, tape recorder, heater, air conditioner, fan, clock, micro wave oven, dish washer, refrigerator, oven, washing machine, dryer, door, window, automobile, motorcycle, and modem) to remotely control these devices and equipments. The size of Communication Device **200** is irrelevant. Communication Device **200** may be installed in houses, buildings, bridges, boats, ships, submarines, airplanes, and spaceships, and firmly fixed therein.

This paragraph illustrate(s) the elements of Communication Device **200**. The elements of Communication Device **200** described in this paragraph is identical to the ones described in FIG. **1**, except Communication Device **200** has new element, i.e., LED **219**. Here, LED **219** receives infra red signals from other wireless devices, which are transferred to CPU **211** via Data Bus **203**. LED **219** also sends infra red signals in a wireless fashion which are composed by CPU **211** and transferred via Data Bus **203**. As the second embodiment, LED **219** may be connected to Signal Processor **208**. Here, LED **219** transfers the received infra red signals to Signal Processor **208**, and Signal Processor **208** processes and converts the signals to a CPU readable format which are transferred to CPU **211** via Data Bus **203**. The data produced by CPU **211** are processed by Signal Processor **208** and transferred to another device via LED **219** in a wireless fashion. The task of LED **219** is as same as that of Antenna **218** described in FIG. **1** except that LED **219** utilizes infra red signals for implementing wireless communication in the second embodiment. For the avoidance of doubt, the reference to FIG. **1** (e.g., referring to FIG. **1** in parenthesis) automatically refers to this paragraph in this specification.

This paragraph illustrate(s) the data stored in Host H. In the present embodiment, Host H includes Host Information Storage Area H00*a* which stores various types of data to assist and/or co-operate with Communication Device **200** to

implement all modes, functions, and systems described in this specification. As another embodiment, Host H may be composed of a plurality of computers, i.e., one master computer and a plurality of slave computers, wherein the master computer is connected to the plurality of slave computers. As another embodiment, Host H may also be composed of a plurality of master computers by way of utilizing peer-to-peer connection.

<<Voice Recognition System>>

Communication Device **200** (FIG. **1**) has the function to operate the device by the user's voice or convert the user's voice into a text format (i.e., the voice recognition). The voice recognition function can be performed in terms of software by using Area **261**, the voice recognition working area, of RAM **206** (FIG. **1**) which is specifically allocated to perform such function, or can also be performed in terms of hardware circuit where such space is specifically allocated in Area **282** of Sound Processor **205** (FIG. **1**) for the voice recognition system.

This paragraph illustrates how the voice recognition function is activated. CPU **211** (FIG. **1**) periodically checks the input status of Input Device **210** (FIG. **1**) (S1). If CPU **211** detects a specific signal input from Input Device **210** (S2) the voice recognition system is activated. As another embodiment, the voice recognition system can also be activated by entering predetermined phrase, such as 'start voice recognition system' via Microphone **215** (FIG. **1**).

<<Voice Recognition—Dialing/Auto-Off During Call Function>>

This paragraph illustrates the operation of the voice recognition in the present invention. Once the voice recognition system is activated (S1) the analog audio data is input from Microphone **215** (FIG. **1**) (S2). The analog audio data is converted into digital data by A/D **213** (FIG. **1**) (S3). The digital audio data is processed by Sound Processor **205** (FIG. **1**) to retrieve the text and numeric information therefrom (S4). Then the numeric information is retrieved (S5) and displayed on LCD **201** (FIG. **1**) (S6). If the retrieved numeric information is not correct (S7), the user can input the correct numeric information manually by using Input Device **210** (FIG. **1**) (S8). Once the sequence of inputting the numeric information is completed and after the confirmation process is over (S9), the entire numeric information is displayed on LCD **201** and the sound is output from Speaker **216** under control of CPU **211** (S10). If the numeric information is correct (S11), Communication Device **200** (FIG. **1**) initiates the dialing process by utilizing the numeric information (S12). The dialing process continues until Communication Device **200** is connected to another device (S13). Once CPU **211** detects that the line is connected it automatically deactivates the voice recognition system (S14).

CPU **211** (FIG. **1**) checks the status of Communication Device **200** periodically (S1) and remains the voice recognition system offline during call (S2). If the connection is severed, i.e., user hangs up, then CPU **211** reactivates the voice recognition system (S3).

<<Voice Recognition Tag Function>>

The following paragraphs describe the method of inputting the numeric information in a convenient manner.

In this embodiment, RAM **206** includes Table #1 and Table #2. Audio information #1 corresponds to tag 'Scott.' Namely audio information, such as wave data, which represents the sound of 'Scott' (sounds like 'S-ko-t') is registered in Table #1, which corresponds to tag 'Scott'. In the same manner audio information #2 corresponds to tag 'Carol'; audio information #3 corresponds to tag 'Peter';

audio information #4 corresponds to tag 'Amy'; and audio information #5 corresponds to tag 'Brian.' Tag 'Scott' corresponds to numeric information '(916) 411-2526'; tag 'Carol' corresponds to numeric information '(418) 675-6566'; tag 'Peter' corresponds to numeric information '(220) 890-1567'; tag 'Amy' corresponds to numeric information '(615) 125-3411'; and tag 'Brian' corresponds to numeric information '(042) 645-2097.' Once the audio data is processed as described in S4 hereinbefore, CPU **211** scans Table #1 (S1). If the retrieved audio data matches with one of the audio information registered in Table #1 (S2), CPU **211** scans Table #2 (S3) and retrieves the corresponding numeric information from Table #2 (S4).

This paragraph illustrates another embodiment of the present invention. Here, RAM **206** includes Table #A instead of Table #1 and Table #2 described above. In this embodiment, audio info #1 (i.e., wave data which represents the sound of 'Scot') directly corresponds to numeric information '(916) 411-2526.' In the same manner audio info #2 corresponds to numeric information '(410) 675-6566'; audio info #3 corresponds to numeric information '(220) 890-1567'; audio info #4 corresponds to numeric information '(615) 125-3411'; and audio info #5 corresponds to numeric information '(042) 645-2097.' Once the audio data is processed as described in S4 hereinbefore, CPU **211** scans Table #A (S1). If the retrieved audio data matches with one of the audio information registered in Table #A (S2), it retrieves the corresponding numeric information therefrom (S3).

As another embodiment, RAM **206** may contain only Table #2 and tag can be retrieved from the voice recognition system explained hereinbefore. Namely, once the audio data is processed by CPU **211** (FIG. **1**) as described in S4 hereinbefore and retrieves the text data therefrom and detects one of the tags registered in Table #2 (e.g., 'Scot'), CPU **211** retrieves the corresponding numeric information (e.g., '(916) 411-2526') from the same table.

<<Voice Recognition Noise Filtering Function>>

The following paragraphs describe the method of minimizing the undesired effect of the background noise when utilizing the voice recognition system.

In this embodiment, RAM **206** (FIG. **1**) includes Area **255** and Area **256**. Sound audio data which represents background noise is stored in Area **255**, and sound audio data which represents the beep, ringing sound and other sounds which are emitted from the Communication Device **200** are stored in Area **256**.

This paragraph describes the method to utilize the data stored in Area **255** and Area **256** described hereinbefore. When the voice recognition system is activated as described hereinbefore, the analog audio data is input from Microphone **215** (FIG. **1**) (S1). The analog audio data is converted into digital data by A/D **213** (FIG. **1**) (S2). The digital audio data is processed by Sound Processor **205** (FIG. **1**) (S3) and compared to the data stored in Area **255** and Area **256** (S4). Such comparison can be done by either Sound Processor **205** or CPU **211** (FIG. **1**). If the digital audio data matches to the data stored in Area **255** and/or Area **256**, the filtering process is initiated and the matched portion of the digital audio data is deleted as background noise. Such sequence of process is done before retrieving text and numeric information from the digital audio data.

This paragraph describes the method of updating Area **255**. When the voice recognition system is activated as described hereinbefore, the analog audio data is input from Microphone **215** (FIG. **1**) (S1). The analog audio data is converted into digital data by A/D **213** (FIG. **1**) (S2). The digital audio data is processed by Sound Processor **205** (FIG.

1) or CPU **211** (FIG. **1**) (S3) and the background noise is captured (S4). CPU **211** (FIG. **1**) scans Area **255** and if the captured background noise is not registered in Area **255**, it updates the sound audio data stored therein (S5).

This paragraph describes another embodiment of the present invention. CPU **211** (FIG. **1**) routinely checks whether the voice recognition system is activated (S1). If the system is activated (S2), the beep, ringing sound, and other sounds which are emitted from Communication Device **200** are automatically turned off in order to minimize the miss recognition process of the voice recognition system (S3).

<<Voice Recognition Auto-Off Function>>

The voice recognition system can be automatically turned off to avoid glitch. When the voice recognition system is activated (S1), CPU **211** (FIG. **1**) automatically sets a timer (S2). The value of timer (i.e., the length of time until the system is deactivated) can be set manually by the user. The timer is incremented periodically (S3), and if the incremented time equals to the predetermined value of time as set in S2 (S4), the voice recognition system is automatically deactivated (S5).

<<Voice Recognition Email Function (1)>>

This paragraph illustrates the first embodiment of the function of typing and sending e-mails by utilizing the voice recognition system. Once the voice recognition system is activated (S1), the analog audio data is input from Microphone **215** (FIG. **1**) (S2). The analog audio data is converted into digital data by A/D **213** (FIG. **1**) (S3). The digital audio data is processed by Sound Processor **205** (FIG. **1**) or CPU **211** (FIG. **1**) to retrieve the text and numeric information therefrom (S4). The text and numeric information are retrieved (S5) and are displayed on LCD **201** (FIG. **1**) (S6). If the retrieved information is not correct (S7), the user can input the correct text and/or numeric information manually by using the Input Device **210** (FIG. **1**) (S8). If inputting the text and numeric information is completed (S9) and CPU **211** detects input signal from Input Device **210** to send the e-mail (S10), the dialing process is initiated (S11). The dialing process is repeated until Communication Device **200** is connected to Host H (S12), and the e-mail is sent to the designated address (S13).

<<Voice Recognition—Speech-to-Text Function>>

The next paragraph illustrates the speech-to-text function of Communication Device **200** (FIG. **1**).

Once Communication Device **200** receives a transmitted data from another device via Antenna **218** (FIG. **1**) (S1), Signal Processor **208** (FIG. **1**) processes the data (e.g., wireless signal error check and decompression) (S2), and the transmitted data is converted into digital audio data (S3). Such conversion can be rendered by either CPU **211** (FIG. **1**) or Signal Processor **208**. The digital audio data is transferred to Sound Processor **205** (FIG. **1**) via Data Bus **203** and text and numeric information are retrieved therefrom (S4). CPU **211** designates the predetermined font and color to the text and numeric information (S5) and also designates a tag to such information (S6). After these tasks are completed the tag and the text and numeric information are stored in RAM **206** and displayed on LCD **201** (S7).

This paragraph illustrates how the text and numeric information as well as the tag are displayed. On LCD **201** the text and numeric information **702** ('XXXXXXXXX') are displayed with the predetermined font and color as well as with the tag **701** ('John').

<<Audio/Video Data Capturing System>>

The following paragraphs illustrate the audio/video capturing system of Communication Device **200** (FIG. **1**).

Assuming that Device A, a Communication Device **200**, captures audio/video data and transfers such data to Device B, another Communication Device **200**, via a host (not shown). Primarily video data is input from CCD Unit **214** (FIG. **1**) and audio data is input from Microphone **215** of (FIG. **1**) of Device A.

In this embodiment, RAM **206** (FIG. **1**) includes Area **267** which stores video data, Area **268** which stores audio data, and Area **265** which is a work area utilized for the process explained hereinafter.

In this embodiment, the video data input from CCD Unit **214** (FIG. **1**) (Sla) is converted from analog data to digital data (S2*a*) and is processed by Video Processor **202** (FIG. **1**) (S3*a*). Area **265** is used as work area for such process. The processed video data is stored in Area **267** of RAM **206** (S4*a*) and is displayed on LCD **201** (FIG. **1**) (S5*a*). The audio data input from Microphone **215** (FIG. **1**) (S1*b*) is converted from analog data to digital data by A/D **213** (FIG. **1**) (S2*b*) and is processed by Sound Processor **205** (FIG. **1**) (S3*b*). Area **265** is used as work area for such process. The processed audio data is stored in Area **268** of RAM **206** (S4*b*) and is transferred to Sound Processor **205** and is output from Speaker **216** (FIG. **1**) via D/A **204** (FIG. **1**) (S5*b*). The sequences of Sla through S5*a* and S1*b* through S5*b* are continued until a specific signal indicating to stop such sequence is input from Input Device **210** (FIG. **1**) or by the voice recognition system (S6).

This paragraph illustrates the sequence to transfer the video data and the audio data via Antenna **218** (FIG. **1**) in a wireless fashion. CPU **211** (FIG. **1**) of Device A initiates a dialing process (S1) until the line is connected to a host (not shown) (S2). As soon as the line is connected, CPU **211** reads the video data and the audio data stored in Area **267** and Area **268** (S3) and transfer them to Signal Processor **208** (FIG. **1**) where the data are converted into a transferring data (S4). The transferring data is transferred from Antenna **218** (FIG. **1**) in a wireless fashion (S5). The sequence of S1 through S5 is continued until a specific signal indicating to stop such sequence is input from Input Device **210** (FIG. **1**) or via the voice recognition system (S6). The line is disconnected thereafter (S7).

This paragraph illustrates the basic structure of the transferred data which is transferred from Device A as described in S4 and S5 hereinbefore. Transferred data **610** is primarily composed of Header **611**, video data **612**, audio data **613**, relevant data **614**, and Footer **615**. Video data **612** corresponds to the video data stored in Area **267** of RAM **206**, and audio data **613** corresponds to the audio data stored in Area **268** of RAM **206**. Relevant Data **614** includes various types of data, such as the identification numbers of Device A (i.e., transferor device) and Device B (i.e., the transferee device), a location data which represents the location of Device A, email data transferred from Device A to Device B, etc. Header **611** and Footer **615** represent the beginning and the end of Transferred Data **610** respectively.

This paragraph illustrates the data contained in RAM **206** (FIG. **1**) of Device B. RAM **206** includes Area **269** which stores video data, Area **270** which stores audio data, and Area **266** which is a work area utilized for the process explained hereinafter.

In this embodiment, CPU **211** (FIG. **1**) of Device B initiates a dialing process (S1) until Device B is connected to a host (not shown) (S2). Transferred Data **610** is received by Antenna **218** (FIG. **1**) of Device B (S3) and is converted by Signal Processor **208** (FIG. **1**) into data readable by CPU **211** (S4). Video data and audio data are retrieved from Transferred Data **610** and stored into Area **269** and Area **270**

of RAM **206** respectively (S5). The video data stored in Area **269** is processed by Video Processor **202** (FIG. **1**) (S6*a*). The processed video data is converted into an analog data (S7*a*) and displayed on LCD **201** (FIG. **1**) (S8*a*). S7*a* may not be necessary depending on the type of LCD **201** used. The audio data stored in Area **270** is processed by Sound Processor **205** (FIG. **1**) (S6*b*). The processed audio data is converted into analog data by D/A **204** (FIG. **1**) (S7*b*) and output from Speaker **216** (FIG. **1**) (S8*b*). The sequences of S6*a* through S8*a* and S6*b* through S8*b* are continued until a specific signal indicating to stop such sequence is input from Input Device **210** (FIG. **1**) or via the voice recognition system (S9).

<<Caller ID System>>

The following paragraphs illustrate the caller ID system of Communication Device **200** (FIG. **1**).

In this embodiment, RAM **206** includes Table C. Each phone number corresponds to a specific color and sound. For example Phone #1 corresponds to Color A and Sound E; Phone #2 corresponds to Color B and Sound F; Phone #3 corresponds to Color C and Sound G; and Phone #4 corresponds to color D and Sound H.

In this embodiment, the user of Communication Device **200** selects or inputs a phone number (S1) and selects a specific color (S2) and a specific sound (S3) designated for that phone number by utilizing Input Device **210** (FIG. **1**). Such sequence can be repeated until there is a specific input signal from Input Device **210** ordering to do otherwise (S4).

In this embodiment, CPU **211** (FIG. **1**) periodically checks whether it has received a call from other communication devices (S1). If it receives a call (S2), CPU **211** scans Table C to see whether the phone number of the caller device is registered in the table (S3). If there is a match (S4), the designated color is output from Indicator **212** (FIG. **1**) and the designated sound is output from Speaker **216** (FIG. **1**) (S5). For example if the incoming call is from Phone #1, Color A is output from Indicator **212** and Sound E is output from Speaker **216**.

<<Call Blocking Function>>

The following paragraphs illustrate the so-called 'call blocking' function of Communication Device **200** (FIG. **1**).

In this embodiment, RAM **206** (FIG. **1**) includes Area **273** and Area **274**. Area **273** stores phone numbers that should be blocked. In this embodiment, Phone #1, Phone #2, and Phone #3 are blocked. Area **274** stores a message data, preferably a wave data, stating that the phone can not be connected.

This paragraph illustrates the operation of Communication Device **200**. When Communication Device **200** receives a call (S1), CPU **211** (FIG. **1**) scans Area **273** of RAM **206** (S2). If the phone number of the incoming call matches one of the phone numbers stored in Area **273** (S3), CPU **211** sends the message data stored in Area **274** of RAM **206** to the caller device (S4) and disconnects the line (S5).

This paragraph illustrates the method of updating Area **273** of RAM **206**. Assuming that the phone number of the incoming call does not match any of the phone numbers stored in Area **273** of RAM **206** (see S3 hereinbefore). In that case, Communication Device **200** is connected to the caller device. However, the user of Communication Device **200** may decide to have such number 'blocked' after all. If that is the case, the user dials '999' while the line is connected. Technically CPU **211** (FIG. **1**) periodically checks the signals input from Input Device **210** (FIG. **1**) (S1). If the input signal represents a numerical data '999' from Input Device **210** (S2), CPU **211** adds the phone number of the pending call to Area **273** (S3) and sends the

message data stored in Area **274** of RAM **206** to the caller device (S**4**). The line is disconnected thereafter (S**5**).

The following paragraphs illustrate another embodiment of the present invention.

In this embodiment, Host H (not shown) includes Area **403** and Area **404**. Area **403** stores phone numbers that should be blocked to be connected to Communication Device **200**. In this embodiment, Phone #1, Phone #2, and Phone #3 are blocked for Device A; Phone #4, Phone #5, and Phone #6 are blocked for Device B; and Phone #7, Phone #8, and Phone #9 are blocked for Device C. Area **404** stores a message data stating that the phone can not be connected.

This paragraph illustrates the operation of Host H (not shown). Assuming that the caller device is attempting to connect to Device B, Communication Device **200**. Host H periodically checks the signals from all Communication Device **200** (S**1**). If Host H detects a call for Device B (S**2**), it scans Area **403** (S**3**) and checks whether the phone number of the incoming call matches one of the phone numbers stored therein for Device B (S**4**). If the phone number of the incoming call does not match any of the phone numbers stored in Area **403**, the line is connected to Device B (S**5**b). On the other hand, if the phone number of the incoming call matches one of the phone numbers stored in Area **403**, the line is 'blocked,' i.e., not connected to Device B (S**5**a) and Host H sends the massage data stored in Area **404** to the caller device (S**6**).

This paragraph illustrates the method of updating Area **403** of Host H. Assuming that the phone number of the incoming call does not match any of the phone numbers stored in Area **403** (see S**4** described hereinbefore). In that case, Host H allows the connection between the caller device and Communication Device **200**, however, the user of Communication Device **200** may decide to have such number 'blocked' after all. If that is the case, the user simply dials '999' while the line is connected. Technically Host H periodically checks the signals input from Input Device **210** (FIG. **1**) (S**1**). If the input signal represents '999' from Input Device **210** (FIG. **1**) (S**2**), Host H adds the phone number of the pending call to Area **403** (S**3**) and sends the message data stored in Area **404** to the caller device (S**4**). The line is disconnected thereafter (S**5**).

As another embodiment of the method illustrated in the previous paragraph, Host H may delegate some of its tasks to Communication Device **200**. Namely, Communication Device **200** periodically checks the signals input from Input Device **210** (FIG. **1**). If the input signal represents a numeric data '999' from Input Device **210**, Communication Device **200** sends to Host H a block request signal as well as with the phone number of the pending call. Host H, upon receiving the block request signal from Communication Device **200**, adds the phone number of the pending call to Area **403** and sends the message data stored in Area **404** to the caller device. The line is disconnected thereafter.

<<Navigation System>>

The following paragraphs illustrate the navigation system of Communication Device **200** (FIG. **1**).

In this embodiment, RAM **206** (FIG. **1**) includes Area **275**, Area **276**, Area **277**, and Area **295**. Area **275** stores a plurality of map data, two-dimensional (2D) image data, which are designed to be displayed on LCD **201** (FIG. **1**). Area **276** stores a plurality of object data, three-dimensional (3D) image data, which are also designed to be displayed on LCD **201**. The object data are primarily displayed by a method so-called 'texture mapping' which is explained in details hereinafter. Here, the object data include the three-dimensional data of various types of objects that are dis-

played on LCD **201**, such as bridges, houses, hotels, motels, inns, gas stations, restaurants, streets, traffic lights, street signs, trees, etc. Area **277** stores a plurality of location data, i.e., data representing the locations of the objects stored in Area **276**. Area **277** also stores a plurality of data representing the street address of each object stored in Area **276**. In addition, Area **277** stores the current position data of Communication Device **200** and the Destination Data which are explained in details hereafter. The map data stored in Area **275** and the location data stored in Area **277** are linked each other. Area **295** stores a plurality of attribution data attributing to the map data stored in Area **275** and location data stored in Area **277**, such as road blocks, traffic accidents, and road constructions, and traffic jams. The attribution data stored in Area **295** is updated periodically by receiving an updated data from a host (not shown).

In this embodiment, Video Processor **202** (FIG. **1**) includes texture mapping processor **290**. Texture mapping processor **290** produces polygons in a three-dimensional space and 'pastes' textures to each polygon. The concept of such method is described in the following patents and the references cited thereof: U.S. Pat. Nos. 5,870,101, 6,157, 384, 5,774,125, 5,375,206, and/or 5,925,127.

In this embodiment, the voice recognition system is activated when CPU **211** (FIG. **1**) detects a specific signal input from Input Device **210** (FIG. **1**) (S**1**). After the voice recognition system is activated, the input current position mode starts and the current position of Communication Device **200** is input by voice recognition system (S**2**). The current position can also be input from Input Device **210**. As another embodiment of the present invention, the current position can automatically be detected by the method so-called 'global positioning system' or 'GPS' and input the current data therefrom. After the process of inputting the current data is completed, the input destination mode starts and the destination is input by the voice recognition system explained above or by the Input Device **210** (S**3**), and the voice recognition system is deactivated after the process of inputting the Destination Data is completed by utilizing such system (S**4**).

This paragraph illustrates the sequence of the input current position mode described in S**2** described hereinbefore. When analog audio data is input from Microphone **215** (FIG. **1**) (S**1**), such data is converted into digital audio data by A/D **213** (FIG. **1**) (S**2**). The digital audio data is processed by Sound Processor **205** (FIG. **1**) to retrieve text and numeric data therefrom (S**3**). The retrieved data is displayed on LCD **201** (FIG. **1**) (S**4**). The data can be corrected by repeating the sequence of S**1** through S**4** until the correct data is displayed (S**5**). If the correct data is displayed, such data is registered as current position data (S**6**). As stated above, the current position data can be input manually by Input Device **210** (FIG. **1**) and/or can be automatically input by utilizing the method so-called 'global positioning system' or 'GPS' as described hereinbefore.

This paragraph illustrates the sequence of the input destination mode described in S**3** described hereinbefore. When analog audio data is input from Microphone **215** (FIG. **1**) (S**1**), such data is converted into digital audio data by A/D **213** (FIG. **1**) (S**2**). The digital audio data is processed by Sound Processor **205** (FIG. **1**) to retrieve text and numeric data therefrom (S**3**). The retrieved data is displayed on LCD **201** (FIG. **1**) (S**4**). The data can be corrected by repeating the sequence of S**1** through S**4** until the correct data is displayed on LCD **201** (S**5**). If the correct data is displayed, such data is registered as Destination Data (S**6**).

This paragraph illustrates the sequence of displaying the shortest route from the current position to the destination. CPU 211 (FIG. 1) retrieves both the current position data and the Destination Data which are input by the method described hereinbefore from Area 277 of RAM 206 (FIG. 1). By utilizing the location data of streets, bridges, traffic lights and other relevant data, CPU 211 calculates the shortest route to the destination (S1). CPU 211 then retrieves the relevant two-dimensional map data which should be displayed on LCD 201 from Area 275 of RAM 206 (S2).

As another embodiment of the present invention, by way of utilizing the location data stored in Area 277, CPU 211 may produce a three-dimensional map by composing the three dimensional objects (by method so-called 'texture mapping' as described above) which are stored in Area 276 of RAM 206. The two-dimensional map and/or the three dimensional map is displayed on LCD 201 (FIG. 1) (S3).

As another embodiment of the present invention, the attribution data stored in Area 295 of RAM 206 may be utilized. Namely if any road block, traffic accident, road construction, and/or traffic jam is included in the shortest route calculated by the method mentioned above, CPU 211 (FIG. 1) calculates the second shortest route to the destination. If the second shortest route still includes road block, traffic accident, road construction, and/or traffic jam, CPU 211 calculates the third shortest route to the destination. CPU 211 calculates repeatedly until the calculated route does not include any road block, traffic accident, road construction, and/or traffic jam. The shortest route to the destination is highlighted by a significant color (such as red) to enable the user of Communication Device 200 to easily recognize such route on LCD 201 (FIG. 1).

As another embodiment of the present invention, an image which is similar to the one which is observed by the user in the real world may be displayed on LCD 201 (FIG. 1) by utilizing the three-dimensional object data. In order to produce such image, CPU 211 (FIG. 1) identifies the present location and retrieves the corresponding location data from Area 277 of RAM 206. Then CPU 211 retrieves a plurality of object data which correspond to such location data from Area 276 of RAM 206 and displays a plurality of objects on LCD 201 based on such object data in a manner the user of Communication Device 200 may observe from the current location.

This paragraph illustrates the sequence of updating the shortest route to the destination while Communication Device 200 is moving. By way of periodically and automatically inputting the current position by the method so-called 'global positioning system' or 'GPS' as described hereinbefore, the current position is continuously updated (S1). By utilizing the location data of streets and traffic lights and other relevant data, CPU 211 (FIG. 1) recalculates the shortest route to the destination (S2). CPU 211 then retrieves the relevant two-dimensional map data which should be displayed on LCD 201 from Area 275 of RAM 206 (S3). Instead, by way of utilizing the location data stored in Area 277, CPU 211 may produce a three-dimensional map by composing the three dimensional objects by method so-called 'texture mapping' which are stored in Area 276 of RAM 206. The two-dimensional map and/or the three-dimensional map is displayed on LCD 201 (FIG. 1) (S4). The shortest route to the destination is re-highlighted by a significant color (such as red) to enable the user of Communication Device 200 to easily recognize the updated route on LCD 201.

This paragraph illustrates the method of finding the shortest location of the desired facility, such as restaurant, hotel,

gas station, etc. The voice recognition system is activated in the manner described hereinbefore (S1). By way of utilizing the voice recognition system, a certain type of facility is selected from the options displayed on LCD 201 (FIG. 1). The prepared options can be a) restaurant, b) lodge, and c) gas station (S2). Once one of the options is selected, CPU 211 (FIG. 1) calculates and inputs the current position by the method described hereinbefore (S3). From the data selected in S2, CPU 211 scans Area 277 of RAM 206 and searches the location of the facilities of the selected category (such as restaurant) which is the closest to the current position (S4). CPU 211 then retrieves the relevant two-dimensional map data which should be displayed on LCD 201 from Area 275 of RAM 206 (S5). Instead, by way of utilizing the location data stored in 277, CPU 211 may produce a three-dimensional map by composing the three dimensional objects by method so-called 'texture mapping' which are stored in Area 276 of RAM 206. The two-dimensional map and/or the three dimensional map is displayed on LCD 201 (FIG. 1) (S6). The shortest route to the destination is re-highlighted by a significant color (such as red) to enable the user of Communication Device 200 to easily recognize the updated route on LCD 201. The voice recognition system is deactivated thereafter (S7).

This paragraph illustrates the method of displaying the time and distance to the destination. CPU 211 (FIG. 1) calculates the current position wherein the source data can be input from the method described hereinbefore (S1). The distance is calculated from the method described hereinbefore (S2). The speed is calculated from the distance which Communication Device 200 has proceeded within specific period of time (S3). The distance to the destination and the time left are displayed on LCD 201 (FIG. 1) (S4 and S5).

This paragraph illustrates the method of warning and giving instructions when the user of Communication Device 200 deviates from the correct route. By way of periodically and automatically inputting the current position by the method so-called 'global positioning system' or 'GPS' as described hereinbefore, the current position is continuously updated (S1). If the current position deviates from the correct route (S2), a warning is given from Speaker 216 (FIG. 1) and/or on LCD 201 (FIG. 1) (S3). The method is repeated for a certain period of time. If the deviation still exists after such period of time has passed, CPU 211 (FIG. 1) initiates the sequence described hereinbefore and calculates the shortest route to the destination and display it on LCD 201. The details of such sequence is as same as the one explained hereinbefore.

This paragraph illustrates the overall operation of Communication Device 200 regarding the navigation system and the communication system. When Communication Device 200 receives data from Antenna 218 (FIG. 1) (S1), CPU 211 (FIG. 1) determines whether the data is navigation data, i.e., data necessary to operate the navigation system (S2). If the data received is a navigation data, the navigation system described hereinbefore is performed (S3). On the other hand, if the data received is a communication data (S4), the communication system, i.e., the system necessary for wireless communication which is mainly described in FIG. 1 is performed (S5).

<<Auto Time Adjust Function>>

The following paragraphs illustrate the automatic time adjust function, i.e., a function which automatically adjusts the clock of Communication Device 200.

This paragraph illustrates the data stored in RAM 206 (FIG. 1). In this embodiment, RAM 206 includes Auto Time Adjust Software Storage Area 2069a, Current Time Data

Storage Area 2069b, and Auto Time Data Storage Area 2069c. Auto Time Adjust Software Storage Area 2069a stores software program to implement the present function which is explained in details hereinafter, Current Time Data Storage Area 2069b stores the data which represents the current time, and Auto Time Data Storage Area 2069c is a working area assigned for implementing the present function.

This paragraph illustrates a software program stored in Auto Time Adjust Software Storage Area 2069a. First of all, Communication Device 200 is connected to Network NT (e.g., the Internet) via Antenna 218 (FIG. 1) (S1). CPU 211 (FIG. 1) then retrieves an atomic clock data from Network NT (S2) and the current time data from Current Time Data Storage Area 2069b, and compares both data. If the difference between both data is not within the predetermined value X (S3), CPU 211 adjusts the current time data (S4). The method to adjust the current data can be either simply overwrite the data stored in Current Time Data Storage Area 2069b with the atomic clock data retrieved from Network NT or calculate the difference of the two data and add or subtract the difference to or from the current time data stored in Current Time Data Storage Area 2069b by utilizing Auto Time Data Storage Area 2069c as a working area.

This paragraph illustrates another software program stored in Auto Time Adjust Software Storage Area 2069a. When the power of Communication Device 200 is turned on (S1), CPU 211 (FIG. 1) stores a predetermined timer value in Auto Time Data Storage Area 2069c (S2). The timer value is decremented periodically (S3). When the timer value equals to zero (S4), the automatic timer adjust function is activated (S5) and CPU 211 performs the sequence described hereinbefore, and the sequence of S2 through S4 is repeated thereafter.

<<Calculator Function>>

The following paragraphs illustrate the calculator function of Communication Device 200. Communication Device 200 can be utilized as a calculator to perform mathematical calculation by implementing the present function.

This paragraph illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (FIG. 1) (S1). When an input signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step, and the calculator function is activated (S3c) when the calculator function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

This paragraph illustrates the data stored in RAM 206 (FIG. 1). In this embodiment, the data to activate (as described in S3a of the previous paragraph) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous paragraph) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c, and the data to

activate (as described in S3c of the previous paragraph) and to perform the calculator function is stored in Calculator Information Storage Area 20615a.

This paragraph illustrates the data stored in Calculator Information Storage Area 20615a. In this embodiment, Calculator Information Storage Area 20615a includes Calculator Software Storage Area 20615b and Calculator Data Storages Area 20615c. Calculator Software Storage Area 20615b stores the software programs to implement the present function, such as the one explained hereinafter, and Calculator Data Storage Area 20615c stores a plurality of data necessary to execute the software programs stored in Calculator Software Storage Area 20615b and to implement the present function.

This paragraph illustrates the software program stored in Calculator Storage Area 20615b. In this embodiment, one or more of numeric data are input by utilizing Input Device 210 (FIG. 1) or via voice recognition system as well as the arithmetic operators (e.g., '+', '−', and '×'), which are temporarily stored in Calculator Data Storage Area 20615c (S1). By utilizing the data stored in Calculator Data Storage Area 20615c, CPU 211 (FIG. 1) performs the calculation by executing the software program stored in Calculator Software Storage Area 20615b (S2). The result of the calculation is displayed on LCD 201 (FIG. 1) thereafter (S3).

<<Spreadsheet Function>>

The following paragraphs illustrate the spreadsheet function of Communication Device 200. Here, the spreadsheet is composed of a plurality of cells which are aligned in matrix. In other words, the spreadsheet is divided into a plurality of rows and columns in which alphanumeric data is capable to be input. Microsoft Excel is the typical example of the spreadsheet.

This paragraph illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (FIG. 1) (S1). When an input signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step, and the spreadsheet function is activated (S3c) when the spreadsheet function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

This paragraph illustrates the data stored in RAM 206 (FIG. 1). In this embodiment, the data to activate (as described in S3a of the previous paragraph) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous paragraph) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c, and the data to activate (as described in S3c of the previous paragraph) and to perform the spreadsheet function is stored in Spreadsheet Information Storage Area 20616a.

This paragraph illustrates the data stored in Spreadsheet Information Storage Area 20616a. In this embodiment, Spreadsheet Information Storage Area 20616a includes

Spreadsheet Software Storage Area **20616***b* and Spreadsheet Data Storage Area **20616***c*. Spreadsheet Software Storage Area **20616***b* stores the software programs to implement the present function, such as the one explained hereinafter, and Spreadsheet Data Storage Area **20616***c* stores a plurality of data necessary to execute the software programs stored in Spreadsheet Software Storage Area **20616***b* and to implement the present function.

This paragraph illustrates the software program stored in Spreadsheet Software Storage Area **20616***b*. In this embodiment, a certain cell of a plurality of cells displayed on LCD **201** (FIG. **1**) is selected by utilizing Input Device **210** (FIG. **1**) or via voice recognition system. The selected cell is highlighted by a certain manner, and CPU **211** (FIG. **1**) stores the location of the selected cell in Spreadsheet Data Storage Area **20616***c* (S1). One or more of alphanumeric data are input by utilizing Input Device **210** or via voice recognition system into the cell selected in S1, and CPU **211** stores the alphanumeric data in Spreadsheet Data Storage Area **20616***c* (S2). CPU **211** displays the alphanumeric data on LCD **201** thereafter (S3). The sequence of S1 through S3 can be repeated for a numerous amount of times and saved and closed thereafter.

<<Word Processing Function>>

The following paragraphs illustrate the word processing function of Communication Device **200**. By way of implementing such function, Communication Device **200** can be utilized as a word processor which has the similar functions to Microsoft Words. The word processing function primarily includes the following functions: the bold formatting function, the italic formatting function, the image pasting function, the font formatting function, the spell check function, the underlining function, the page numbering function, and the bullets and numbering function. Here, the bold formatting function makes the selected alphanumeric data bold. The italic formatting function makes the selected alphanumeric data italic. The image pasting function pastes the selected image to a document to the selected location. The font formatting function changes the selected alphanumeric data to the selected font. The spell check function fixes spelling and grammatical errors of the alphanumeric data in the document. The underlining function adds underlines to the selected alphanumeric data. The page numbering function adds page numbers to each page of a document at the selected location. The bullets and numbering function adds the selected type of bullets and numbers to the selected paragraphs.

This paragraph illustrates the software program installed in each Communication Device **200** to initiate the present function. First of all, a list of modes is displayed on LCD **201** (FIG. **1**) (S1). When an input signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3*a*) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3*b*) when the game download mode and the game play mode are selected in the previous step of which the details are described hereinafter, and the word processing function is activated (S3*c*) when the word processing function is selected in the previous step. The modes displayed on LCD **201** in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3

for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

This paragraph illustrates the data stored in RAM **206** (FIG. **1**). In this embodiment, the data to activate (as described in S3*a* of the previous paragraph) and to perform the communication mode is stored in Communication Data Storage Area **2061***a*, the data to activate (as described in S3*b* of the previous paragraph) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area **2061***b*/**2061***c* of which the details are described hereinafter, and the data to activate (as described in S3*c* of the previous paragraph) and to perform the word processing function is stored in Word Processing Information Storage Area **20617***a*.

This paragraph illustrates the data stored in Word Processing Information Storage Area **20617***a*. Word Processing Information Storage Area **20617***a* includes Word Processing Software Storage Area **20617***b* and Word Processing Data Storage Area **20617***c*. Word processing Software Storage Area **20617***b* stores the software programs described hereinafter, and Word Processing Data Storage Area **20617***c* stores a plurality of data described hereinafter.

This paragraph illustrates the software programs stored in Word Processing Software Storage Area **20617***b*. Word Processing Software Storage Area **20617***b* stores Alphanumeric Data Input Software **20617***b***1**, Bold Formatting Software **20617***b***2**, Italic Formatting Software **20617***b***3**, Image Pasting Software **20617***b***4**, Font Formatting Software **20617***b***5**, Spell Check Software **20617***b***6**, Underlining Software **20617***b***7**, Page Numbering Software **20617***b***8**, and Bullets And Numbering Software **20617***b***9**. Alphanumeric Data Input Software **20617***b***1** inputs to a document a series of alphanumeric data in accordance to the input signals produced by utilizing Input Device **210** (FIG. **1**) or via voice recognition system. Bold Formatting Software **20617***b***2** implements the bold formatting function which makes the selected alphanumeric data bold of which the sequence is described hereinafter. Italic Formatting Software **20617***b***3** implements the italic formatting function which makes the selected alphanumeric data italic of which the sequence is described hereinafter. Image Pasting Software **20617***b***4** implements the image pasting function which pastes the selected image to a document to the selected location of which the sequence is described hereinafter. Font Formatting Software **20617***b***5** implements the font formatting function which changes the selected alphanumeric data to the selected font of which the sequence is described hereinafter. Spell Check Software **20617***b***6** implements the spell check function which fixes spelling and grammatical errors of the alphanumeric data in a document of which the sequence is described hereinafter. Underlining Software **20617***b***7** implements the underlining function which adds the selected underlines to the selected alphanumeric data of which the sequence is described hereinafter. Page Numbering Software **20617***b***8** implements the page numbering function which adds page numbers at the selected location to each page of a document of which the sequence is described hereinafter. Bullets And Numbering Software **20617***b***9** implements the bullets and numbering function which adds the selected type of bullets and numbers to the selected paragraphs of which the sequence is described hereinafter.

This paragraph illustrates the data stored in Word Processing Data Storage Area **20617***c*. Word Processing Data Storage Area **20617***c* includes Alphanumeric Data Storage Area **20617***c***1**, Bold Formatting Data Storage Area **20617***c***2**, Italic Formatting Data Storage Area **20617***c***3**, Image Data Storage Area **20617***c***4**, Font Formatting Data Storage Area

20617c5, Spell Check Data Storage Area 20617c6, Underlining Data Storage Area 20617c7, Page Numbering Data Storage Area 20617c8, and Bullets And Numbering Data Storage Area 20617c9. Alphanumeric Data Storage Area 20617c1 stores the basic text and numeric data which are not decorated by bold and/or italic (the default font may be courier new). Bold Formatting Data Storage Area 20617c2 stores the text and numeric data which are decorated by bold. Italic Formatting Data Storage Area 20617c3 stores the text and numeric data which are decorated by italic. Image Data Storage Area 20617c4 stores the data representing the location of the image data pasted in a document and the image data itself. Font Formatting Data Storage Area 20617c5 stores a plurality of types of fonts, such as arial, century, courier new, tahoma, and times new roman, of all text and numeric data stored in Alphanumeric Data Storage Area 20617c1. Spell check Data Storage Area 20617c6 stores a plurality of spell check data, i.e., a plurality of correct text and numeric data for purposes of being compared with the alphanumeric data input in a document and a plurality of pattern data for purposes of checking the grammatical errors therein. Underlining Data Storage Area 20617c7 stores a plurality of data representing underlines of different types. Page Numbering Data Storage Area 20617c8 stores the data representing the location of page numbers to be displayed in a document and the page number of each page of a document. Bullets And Numbering Data Storage Area 20617c9 stores a plurality of data representing different types of bullets and numbering and the location which they are added.

This paragraph illustrates the sequence of the software program stored in Alphanumeric Data Input Software 20617b1. A plurality of alphanumeric data is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). The corresponding alphanumeric data is retrieved from Alphanumeric Data Storage Area 20617c1 (S2), and the document including the alphanumeric data retrieved in S2 is displayed on LCD 201 (FIG. 1) (S3).

This paragraph illustrates the sequence of the software program stored in Bold Formatting Software 20617b2. One or more of alphanumeric data are selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, a bold formatting signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (FIG. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (FIG. 1) then retrieves the bold formatting data from Bold Formatting Data Storage Area 20617c2 (S3), and replaces the alphanumeric data selected in S1 with the bold formatting data retrieved in S3 (S4). The document with the replaced bold formatting data is displayed on LCD 201 thereafter (S5).

This paragraph illustrates the sequence of the software program stored in Italic Formatting Software 20617b3. One or more of alphanumeric data are selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, an italic formatting signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (FIG. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (FIG. 1) then retrieves the italic formatting data from Italic Formatting Data Storage Area 20617c3 (S3), and replaces the alphanumeric data selected in S1 with the italic formatting data retrieved in S3 (S4). The document with the replaced italic formatting data is displayed on LCD 201 thereafter (S5).

This paragraph illustrates the sequence of the software program stored in Image Pasting Software 20617b4. The image to be pasted is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Here, the image may be of any type, such as JPEG, GIF, and TIFF. Next the location in a document where the image is to be pasted is selected by utilizing Input Device 210 or via voice recognition system (S2). The data representing the location is stored in Image Pasting Data Storage Area 20617c4. The image is pasted at the location selected in S2 and the image is stored in Image Pasting Data Storage Area 20617c4 (S3). The document with the pasted image is displayed on LCD 201 (FIG. 1) thereafter (S4).

This paragraph illustrates the sequence of the software program stored in Font Formatting Software 20617b5. One or more of alphanumeric data are selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, a font formatting signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (FIG. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (FIG. 1) then retrieves the font formatting data from Italic Formatting Data Storage Area 20617c5 (S3), and replaces the alphanumeric data selected in S1 with the font formatting data retrieved in S3 (S4). The document with the replaced font formatting data is displayed on LCD 201 thereafter (S5).

This paragraph illustrates the sequence of the software program stored in Spell Check Software 20617b6. CPU 211 (FIG. 1) scans all alphanumeric data in a document (S1). CPU 211 then compares the alphanumeric data with the spell check data stored in Spell Check Data Storage Area 20617c6, i.e., a plurality of correct text and numeric data for purposes of being compared with the alphanumeric data input in a document and a plurality of pattern data for purposes of checking the grammatical errors therein (S2). CPU 211 corrects the alphanumeric data and/or corrects the grammatical errors (S3), and the document with the corrected alphanumeric data is displayed on LCD 201 (FIG. 1) (S4).

This paragraph illustrates the sequence of the software program stored in Underlining Software 20617b7. One or more of alphanumeric data are selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, an underlining signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (FIG. 1) or selecting a specific item from a pulldown menu) or via voice recognition system to select the type of the underline to be added (S2). CPU 211 (FIG. 1) then retrieves the underlining data from Underlining Data Storage Area 20617c7 (S3), and adds to the alphanumeric data selected in S1 (S4). The document with underlines added to the selected alphanumeric data is displayed on LCD 201 thereafter (S5).

This paragraph illustrates the sequence of the software program stored in Page Numbering Software 20617b8. A page numbering signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, the location to display the page number is selected by utilizing Input Device 210 or via voice recognition system (S2). CPU 211 (FIG. 1) then stores the location of the page number to be displayed in Page Numbering Storage Area 20617c8, and adds the page number to each page of a document at the selected location (S3). The document with page numbers is displayed on LCD 201 thereafter (S4).

This paragraph illustrates the sequence of the software program stored in Bullets And Numbering Software 20617b9. A paragraph is selected by utilizing input device

210 (FIG. 1) or via voice recognition system (S1). Next, the type of the bullets and/or numbering is selected by utilizing Input Device 210 or via voice recognition system (S2). CPU 211 (FIG. 1) then stores the identification data of the paragraph selected in S1 and the type of the bullets and/or numbering in Bullets And Numbering Data Storage Area 20617c9, and adds the bullets and/or numbering to the selected paragraph of a document (S3). The document with the bullets and/or numbering is displayed on LCD 201 thereafter (S4).

<<Start Up Software Function>>

The following paragraphs illustrate the start up software program function which enables Communication Device 200 to automatically activate (or start up) the registered software programs when the power is on.

This paragraph illustrates the overall sequence of the present function. The user of Communication Device 200 presses the power button of Communication Device 200 (S1). Then the predetermined software programs automatically activate (or start up) without having any instructions from the user of Communication Device 200 (S2).

This paragraph illustrates the storage area included RAM 206 (FIG. 1). RAM 206 includes Start Up Information Storage Area 20621a which is described hereinafter.

This paragraph illustrates the storage areas included in Start Up Information Storage Area 20621a. Start Up Information Storage Area 20621a includes Start Up Software Storage Area 20621b and Start Up Data Storage Area 20621c. Start Up Software Storage Area 20621b stores the software programs necessary to implement the present function, such as the ones described hereinafter. Start Up Data Storage Area 20621c stores the data necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the software programs stored in Start Up Software Storage Area 20621b. Start Up Software Storage Area 20621b stores Power On Detecting Software 20621b1, Start Up Data Storage Area Scanning Software 20621b2, and Start Up Software Activating Software 20621b3. Power On Detecting Software 20621b1 detects whether the power of Communication Device 200 is on of which the sequence is described hereinafter, Start Up Data Storage Area Scanning Software 20621b2 identifies the software programs which are automatically activated of which the sequence is described hereinafter, and Start Up Software Activating Software 20621b3 activates the identified software programs identified by Start Up Data Storage Area Scanning Software 20621b2 of which the sequence is described hereinafter.

This paragraph illustrates the storage area included in Start Up Data Storage Area 20621c. Start Up Data Storage Area 20621c includes Start Up Software Index Storage Area 20621c1. Here, Start Up Software Index Storage Area 20621c1 stores the software program indexes, wherein a software program index is an unique information assigned to each software program as an identifier (e.g., title of a software program) of which the details are explained hereinafter.

This paragraph illustrates the data stored in Start Up Software Index Storage Area 206211c. Start Up Software Index Storage Area 20621c1 stores the software program indexes of the software programs which are automatically activated by the present function. Here, the software programs may be any software programs explained in this specification. Three software program indexes, i.e., Start Up Software Index 20621c1a, Start Up Software Index 20621c1b, and Start Up Software Index 20621c1c, are stored in Start Up Software Index Storage Area 20621c1 in

the present example. The software program indexes can be created and store in Start Up Software Index Storage Area 20621c1 manually by utilizing input device 210 (FIG. 1) or via voice recognition system.

This paragraph illustrates the sequence of Power On Detecting Software 20621b1 stored in Start Up Software Storage Area 20621b. CPU 211 (FIG. 1) checks the status of the power condition of Communication Device 200 (S1). When the user of Communication Device 200 powers on Communication Device 200 by utilizing input device 210 (FIG. 1), such as by pressing a power button (S2), CPU 211 activates Start Up Data Storage Area Scanning Software 20621b2 of which the sequence is explained hereinafter.

This paragraph illustrates the sequence of Start Up Data Storage Area Scanning Software 20621b2 stored in Start Up Software Storage Area 20621b. CPU 211 (FIG. 1) scans Start Up Software Index Storage Area 20621c1 (S1), and identifies the software programs which are automatically activated (S2). CPU 211 activates Start Up Software Activating Software 20621b3 thereafter of which the sequence is explained hereinafter (S3).

This paragraph illustrates the sequence of Start Up Software Activating Software 20621b3 stored in Start Up Software Storage Area 20621b. CPU 211 (FIG. 1) activates the software programs of which the software program indexes are identified in S2 described hereinbefore (S1).

This paragraph illustrates another embodiment wherein the three software programs stored in Start Up Software Storage Area 20621b (i.e., Power On Detecting Software 20621b1, Start Up Data Storage Area Scanning Software 20621b2, Start Up Software Activating Software 20621b3) is integrated into one software program stored therein. CPU 211 (FIG. 1) checks the status of the power condition of Communication Device 200 (S1). When the user of Communication Device 200 powers on Communication Device 200 by utilizing input device 210 (FIG. 1), such as by pressing a power button (S2), CPU 211 scans Start Up Software Index Storage Area 20621c1 (S3), and identifies the software programs which are automatically activated (S4). CPU 211 activates the software programs thereafter of which the software program indexes are identified in S4 (S5).

As another embodiment, the software programs per se (not the software program indexes described hereinbefore may be stored in a specific storage area which are activated by the present function.

As another embodiment, the present function may be implemented at the time the user of Communication Device 200 logs on instead of at the time the Communication Device 200 is powered as described in S2 described hereinbefore.

<<Stereo Audio Data Output Function>>

The following paragraphs illustrate the stereo audio data output function which enables Communication Device 200 to output audio data from Speakers 216L and 216R in a stereo fashion.

This paragraph illustrates the storage area included in Host Data Storage Area H00c of Host H. In this embodiment, Host Data Storage Area H00c includes Stereo Audio Information Storage Area H22a. Stereo Audio Information Storage Area H22a stores the software programs and data necessary to implement the present function as described in details hereinafter.

This paragraph illustrates the storage areas included in Stereo Audio Information Storage Area H22a. In this embodiment, Stereo Audio Information Storage Area H22a includes Stereo Audio Software Storage Area H22b and

Stereo Audio Data Storage Area H22c. Stereo Audio Software Storage Area H22b stores the software programs necessary to implement the present function, such as the one described hereinafter. Stereo Audio Data Storage Area H22c stores the data necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the stereo audio data stored in Stereo Audio Data Storage Area H22c. A plurality of stereo audio data are stored in Stereo Audio Data Storage Area H22c. In this embodiment, three stereo audio data, i.e., Stereo Audio Data H22c1, Stereo Audio Data H22c2, and Stereo Audio Data H22c3 are stored therein.

This paragraph illustrates the components of the stereo audio data stored in Stereo Audio Data Storage Area H22c. This paragraph describes the components of Stereo Audio Data H22c1 as an example. In this embodiment, Stereo Audio Data H22c1 includes Left Speaker Audio Data H22c1L, Right Speaker Audio Data H22c1R, and Stereo Audio Data Output Timing Data H22c1T. Left Speaker Audio Data H22c1L is an audio data which is designed to be output from Speaker 216L. Right Speaker Audio Data H22c1R is an audio data which is designed to be output from Speaker 216R. Stereo Audio Data Output Timing Data H22c1T is a timing data which is utilized to synchronize the output of both Left Speaker Audio Data H22c1L and Right Speaker Audio Data H22c1R from Speaker 216R and Speaker 216L respectively.

This paragraph illustrates the sequence of the software program stored in Stereo Audio Software Storage Area H22b. In this embodiment, the software program stored in Stereo Audio Software Storage Area H22b extracts one of the stereo audio data stored in Stereo Audio Data Storage Area H22c and creates Transferred Stereo Audio Data TSAD for purposes of transferring the extracted stereo audio data to Communication Device 200 (S1).

This paragraph illustrates the components of Transferred Stereo Audio Data TSAD created by the software program stored in Stereo Audio Software Storage Area H22b. In this embodiment, Transferred Stereo Audio Data TSAD is composed of Header TSAD1, Com Device ID TSAD2, Host ID TSAD3, Transferred Stereo Audio Data TSAD4, and Footer TSAD5. Com Device ID TSAD2 indicates the identification of Communication Device 200, Host ID TSAD3 indicates the identification of Host H, and Transferred Stereo Audio Data TSAD4 is the stereo audio data extracted in the manner described hereinbefore. Header TSAD1 and Footer TSAD5 indicate the beginning and the end of Transferred Stereo Audio Data TSAD.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1) of Communication Device 200. In this embodiment, RAM 206 includes Stereo Audio Information Storage Area 20622a. Stereo Audio Information Storage Area 20622a stores the software programs and data necessary to implement the present function as described in details hereinafter.

This paragraph illustrates the storage areas included in Stereo Audio Information Storage Area 20622a. In this embodiment, Stereo Audio Information Storage Area 20622a includes Stereo Audio Software Storage Area 20622b and Stereo Audio Data Storage Area 20622c. Stereo Audio Software Storage Area 20622b stores the software programs necessary to implement the present function, such as the ones described hereinafter. Stereo Audio Data Storage Area 20622c stores the data necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the stereo audio data stored in Stereo Audio Data Storage Area 20622c. A plurality of

stereo audio data are stored in Stereo Audio Data Storage Area 20622c. In this embodiment, three stereo audio data, i.e., Stereo Audio Data 20622c1, Stereo Audio Data 20622c2, and Stereo Audio Data 20622c3 are stored therein.

This paragraph illustrates the components of the stereo audio data stored in Stereo Audio Data Storage Area 20622c. This paragraph describes the components of Stereo Audio Data 20622c1 as an example. In this embodiment, Stereo Audio Data 20622c1 includes Left Speaker Audio Data 20622c1L, Right Speaker Audio Data 20622c1R, and Stereo Audio Data Output Timing Data 20622c1T. Left Speaker Audio Data 20622c1L is an audio data which is designed to be output from Speaker 216L. Right Speaker Audio Data 20622c1R is an audio data which is designed to be output from Speaker 216R. Stereo Audio Data Output Timing Data 20622c1T is a timing data which is utilized to synchronize the output of both Left Speaker Audio Data 20622c1L and Right Speaker Audio Data 20622c1R from Speaker 216R and Speaker 216L respectively.

The downloaded stereo audio data are stored in specific area(s) of Stereo Audio Data Storage Area 20622c.

This paragraph illustrates the sequence of selecting and preparing to output the stereo audio data from Speakers 216L and 216R in a stereo fashion. In this embodiment, a list of stereo audio data is displayed on LCD 201 (FIG. 1) (S1). The user of Communication Device 200 selects one stereo audio data by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2). Assuming Stereo Audio Data 20622c1 is selected in S2, CPU 211 (FIG. 1) retrieves Left Speaker Audio Data 20622c1L (S3), Right Speaker Audio Data 20622c1R (S4), and Stereo Audio Data Output Timing Data 20622c1T from Stereo Audio Data Storage Area 20622c (S5).

This paragraph illustrates the sequence of outputting the stereo audio data from Speakers 216L and 216R in a stereo fashion. In this embodiment, the user of Communication Device 200 inputs a specific signal to output the stereo audio data by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Assuming Audio Data 20622c1 is selected in S2 described hereinbefore, CPU 211 outputs Left Speaker Audio Data 20622c1L and Right Speaker Audio Data 20622c1R from Speakers 216L and 216R respectively in a stereo fashion in accordance with Stereo Audio Data Output Timing Data 20622c1T (S2).

<<SOS Calling Function>>

The following paragraphs illustrate the SOS calling function which enables Communication Device 200 to notify the police department the current location of Communication Device 200 and the personal information of the user of Communication 200 when a 911 call is dialed from Communication Device 200.

This paragraph illustrates the storage area included in Host Information Storage Area H00a. Host Information Storage Area H00a includes SOS Calling Information Storage Area H29a of which the data stored therein are described hereinafter.

This paragraph illustrates the storage areas included in SOS Calling Information Storage Area H29a. SOS Calling Information Storage Area H29a includes SOS Calling Data Storage Area H29b and SOS Calling Software Storage Area H29c. SOS Calling Data Storage Area H29b stores the data necessary to implement the present function, such as the ones described hereinafter. SOS Calling Software Storage Area H29c stores the software programs necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the storage area included in SOS Calling Data Storage Area H29b. SOS Calling Data Storage Area H29b includes Police Department Location Data Storage Area H29b1 of which the data stored therein are described hereinafter.

This paragraph illustrates the data stored in Police Department Location Data Storage Area H29b1. Police Department Location Data Storage Area H29b1 includes three columns, i.e., Police Dept ID, Location Data, and Phone #. Police Dept ID represents the identification of a police department (e.g., NYPD). Location Data represents the geographical location data (in x, y, z format) of the police department of the corresponding Police Dept ID. Phone # represents the phone number of the police department of the corresponding Police Dept ID. In the present example, H29PD #1 is an identification of the police department of which the geographical location is H29LD #1 and of which the phone number is H29PN #1; H29PD #2 is an identification of the police department of which the geographical location is H29LD #2 and of which the phone number is H29PN #2; H29PD #3 is an identification of the police department of which the geographical location is H29LD #3 and of which the phone number is H29PN #3; and H29PD #4 is an identification of the police department of which the geographical location is H29LD #4 and of which the phone number is H29PN #4.

The data and/or the software programs necessary to implement the present function on the side of Communication Device 200 as described hereinafter may be downloaded from Host H.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1) of Communication Device 200. RAM 206 includes SOS Calling Information Storage Area 20629a of which the details are described hereinafter.

This paragraph illustrates the storage areas included in SOS Calling Information Storage Area 20629a. SOS Calling Information Storage Area 20629a includes SOS Calling Data Storage Area 20629b and SOS Calling Software Storage Area 20629c. SOS Calling Data Storage Area 20629b includes data necessary to implement the present function, such as the ones described hereinafter. SOS Calling Software Storage Area 20629c stores the software programs necessary to implement the present function, such as the one described hereinafter.

This paragraph illustrates storage areas included in SOS Calling Data Storage Area 20629b. SOS Calling Data Storage Area 20629b includes GPS Data Storage Area 20629b1 and User Data Storage Area 20629b2. GPS Data Storage Area 20629b1 stores the data regarding the current geographical location produced by the method so-called GPS as described hereinbefore. User Data Storage Area 20629b2 stores the data regarding the personal information of the user of Communication Device 200 as described hereinafter.

This paragraph illustrates the data stored in User Data Storage Area 20629b2. User Data Storage Area 20629b2 includes User Data 20629UD which includes data regarding the personal information of the user of Communication Device 200. In the present example, User Data 20629UD comprises Name, Age, Sex, Race, Blood Type, Home Address, and SSN. Name represents the name of the user of Communication Device 200; Age represents the age of the user of Communication Device 200; Sex represents the sex of the user of Communication Device 200; Race represents the race of the user of Communication Device 200; Blood Type represents the blood type of the user of Communication Device 200; Home Address represents the home address

of the user of Communication Device 200; and SSN represents the social security number of the user of Communication Device 200.

This paragraph illustrates the software program stored in SOS Calling Software Storage Area 20629c. When the user of Communication Device 200 inputs 911 by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1), CPU 211 (FIG. 1) calculates the GPS data, i.e., the current geographical location data by utilizing the method so-called GPS as described hereinbefore (S2), and stores the GPS data in GPS Data Storage Area 20629b1 (S3). CPU 211 then retrieves User Data 20629UD from User Data Storage Area 20629b2 and the GPS data from GPS Data Storage Area 20629b1 (S4), and composes SOS Data 20629SOS therefrom (S5), which is sent thereafter to Host H (S6).

This paragraph illustrates the elements of SOS Data 20629SOS. SOS Data 20629SOS comprises Connection Request 20629CR, GPS Data 20629GD, and User Data 20629UD. Connection Request 20629CR represents a request to Host H to forward the 911 call to a police department. GPS Data 20629GD is a data retrieved from GPS Data Storage Area 20629b1 as described in S4 described hereinbefore. User Data 20629UD is a data retrieved from User Data Storage Area 20629b2 as described in S4 described hereinbefore.

This paragraph illustrates the software program stored in SOS Calling Software Storage Area H29c of Host H. Host H periodically checks the incoming call (S1). If the incoming call is SOS Data 20629SOS (S2), Host H initiates the SOS calling process as described hereinafter (S3).

This paragraph illustrates the software program stored in SOS Calling Software Storage Area H29c of Host H. Host H retrieves GPS Data 20629GD from SOS Data 20629SOS (S1), and selects the closest police department by comparing GPS Data 20629GD and the data stored in column Location Data of Police Department Location Data Storage Area H29b1 of Host H (S2). Host H then retrieves the corresponding phone number stored in column Phone # and connects the line between the corresponding police department and Communication Device 200 in order to initiate a voice communication therebetween (S3). Host H forwards to the police department thereafter GPS Data 20629GD and User Data 20629UD retrieved in S1 (S4).

As another embodiment, User Data 20629UD stored in User Data Storage Area 20629b2 may be stored in SOS Calling Data Storage Area H29b of Host H. In this embodiment, SOS Data 20629SOS primarily comprises Connection Request 20629CR and GPS Data 20629GD, and User Data 20629UD is retrieved from SOS Calling Data Storage Area H29b of Host H, which is sent to the police department in S4 described hereinbefore.

<<Audiovisual Playback Function>>

The following paragraphs illustrate the audiovisual playback function which enables Communication Device 200 to playback audiovisual data, such as movies, soap operas, situation comedies, news, and any type of TV programs.

This paragraph illustrates the information stored in RAM 206 (FIG. 1). RAM 206 includes Audiovisual Playback Information Storage Area 20632a of which the information stored therein are described hereinafter.

The data and/or the software programs necessary to implement the present function may be downloaded to Communication Device 200 from Host H.

This paragraph illustrates the data and software programs stored in Audiovisual Playback Information Storage Area 20632a. Audiovisual Playback Information Storage Area 20632a includes Audiovisual Playback Data Storage Area

20632*b* and Audiovisual Playback Software Storage Area 20632*c*. Audiovisual Playback Data Storage Area 20632*b* stores the data necessary to implement the present function, such as the ones described hereinafter. Audiovisual Playback Software Storage Area 20632*c* stores the software programs necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the data stored in Audiovisual Playback Data Storage Area 20632*b*. Audiovisual Playback Data Storage Area 20632*b* includes Audiovisual Data Storage Area 20632*b1* and Message Data Storage Area 20632*b2*. Audiovisual Data Storage Area 20632*b1* stores a plurality of audiovisual data described hereinafter. Message Data Storage Area 20632*b2* stores a plurality of message data described hereinafter.

This paragraph illustrates the audiovisual data stored in Audiovisual Data Storage Area 20632*b1*. Audiovisual Data Storage Area 20632*b1* stores a plurality of audiovisual data wherein the audiovisual data stored therein in the present example are: Audiovisual Data 20632*b1a*, Audiovisual Data 20632*b1b*, Audiovisual Data 20632*b1c*, and Audiovisual Data 20632*b1d*, all of which are primarily composed of video data and audio data. Audiovisual Data 20632*b1a* is a movie, Audiovisual Data 20632*b1b* is a soap opera, Audiovisual Data 20632*b1c* is a situation comedy, Audiovisual Data 20632*b1d* is TV news in the present embodiment. As another embodiment, Audiovisual Data 20632*b1d* may be an audiovisual data taken via CCD Unit 214 (FIG. 1) and Microphone 215 (FIG. 1).

This paragraph illustrates the data stored in Message Data Storage Area 20632*b2*. Message Data Storage Area 20632*b2* includes Start Message Text Data 20632*b2a*, Stop Message Text Data 20632*b2b*, Pause Message Text Data 20632*b2c*, Resume Message Text Data 20632*b2c1*, Slow Replay Message Text Data 20632*b2d*, Forward Message Text Data 20632*b2e*, Rewind Message Text Data 20632*b2f*, Next Message Text Data 20632*b2g*, and Previous Message Text Data 20632*b2h*. Start Message Text Data 20632*b2a* is a text data which is displayed on LCD 201 (FIG. 1) and which indicates that the playback of an audiovisual data is initiated. Stop Message Text Data 20632*b2b* is a text data which is displayed on LCD 201 and which indicates that the playback process of an audiovisual data is stopped. Pause Message Text Data 20632*b2c* is a text data which is displayed on LCD 201 and which indicates that the playback process of an audiovisual data is paused. Resume Message Text Data 20632*b2c1* is a text data which is displayed on LCD 201 and which indicates that the playback process of an audiovisual data is resumed from the point it is paused. Slow Replay Message Text Data 20632*b2d* is a text data which is displayed on LCD 201 and which indicates that the playback process of an audiovisual data is implemented in a slow motion. Fast-Forward Message Text Data 20632*b2e* is a text data which is displayed on LCD 201 and which indicates that an audiovisual data is fast-forwarded. Fast-Rewind Message Text Data 20632*b2f* is a text data which is displayed on LCD 201 and which indicates that an audiovisual data is fast-rewinded. Next Message Text Data 20632*b2g* is a text data which is displayed on LCD 201 and which indicates that the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632*b1* is initiated. Previous Message Text Data 20632*b2h* is a text data which is displayed on LCD 201 and which indicates that the playback process of the previous audiovisual data stored in Audiovisual Data Storage Area 20632*b1* is initiated.

This paragraph illustrates the software programs stored in Audiovisual Playback Software Storage Area 20632*c*. Audiovisual Playback Software Storage Area 20632*c* includes Audiovisual Start Software 20632*c1*, Audiovisual Stop Software 20632*c2*, Audiovisual Pause Software 20632*c3*, Audiovisual Resume Software 20632*c3a*, Audiovisual Slow Replay Software 20632*c4*, Audiovisual Fast-Forward Software 20632*c5*, Audiovisual Fast-Rewind Software 20632*c6*, Audiovisual Next Software 20632*c7*, and Audiovisual Previous Software 20632*c8*. Audiovisual Start Software 20632*c1* is a software program which initiates the playback process of an audiovisual data. Audiovisual Stop Software 20632*c2* is a software program which stops the playback process of an audiovisual data. Audiovisual Pause Software 20632*c3* is a software program which pauses the playback process of an audiovisual data. Audiovisual Resume Software 20632*c3a* is a software program which resumes the playback process of the audiovisual data from the point it is paused by Audiovisual Pause Software 20632*c3*. Audiovisual Slow Replay Software 20632*c4* is a software program which implements the playback process of an audiovisual data in a slow motion. Audiovisual Fast-Forward Software 20632*c5* is a software program which fast-forwards an audiovisual data. Audiovisual Fast-Rewind Software 20632*c6* is a software program which fast-rewinds an audiovisual data. Audiovisual Next Software 20632*c7* is a software program which initiates the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632*b1*. Audiovisual Previous Software 20632*c8* is a software program which initiates the playback process of the previous audiovisual data stored in Audiovisual Data Storage Area 20632*b1*.

This paragraph illustrates the messages displayed on LCD 201 (FIG. 1). Eight types of messages are displayed on LCD 201, i.e., 'Start', 'Stop', 'Pause', 'Resume', 'Slow Reply', 'Fast-Forward', 'Fast-Rewind', 'Next', and 'Previous'. 'Start' is Start Message Text Data 20632*b2a*, 'Stop' is Stop Message Text Data 20632*b2b*, 'Pause' is Pause Message Text Data 20632*b2c*, 'Resume' is Resume Message Text Data 20632*b2c1*, 'Slow Reply' is Slow Replay Message Text Data 20632*b2d*, 'Fast-Forward' is Fast-Forward Message Text Data 20632*b2e*, 'Fast-Rewind' is Fast-Rewind Message Text Data 20632*b2f*, 'Next' is Next Message Text Data 20632*b2g*, 'Previous' is Previous Message Text Data 20632*b2h* described hereinbefore.

This paragraph illustrates Audiovisual Selecting Software 20632*c9* stored in Audiovisual Playback Software Storage Area 20632*c* in preparation of executing the software programs described hereinafter. CPU 211 (FIG. 1) retrieves the identifications of the audiovisual data stored in Audiovisual Data Storage Area 20632*b1* (S1). CPU 211 then displays a list of the identifications on LCD 201 (FIG. 1) (S2). A particular audiovisual data is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S3).

The following paragraphs illustrate the software programs stored in Audiovisual Playback Software Storage Area 20632*c*. Nine types of input signals can be input by utilizing Input Device 210 (FIG. 1) or via voice recognition system, i.e., the audiovisual playback signal, the audiovisual stop signal, the audiovisual pause signal, the audiovisual resume signal, the audiovisual slow replay signal, the audiovisual fast-forward signal, the audiovisual fast-rewind signal, the audiovisual next signal, and the audiovisual previous signal. The audiovisual playback signal indicates to initiate the playback process of the audiovisual data selected in S3 described hereinbefore. The audiovisual stop signal indicates to stop the playback process of the audiovisual data

selected in S3 described hereinbefore. The audiovisual pause signal indicates to pause the playback process of the audiovisual data selected in S3 described hereinbefore. The audiovisual resume signal indicates to resume the playback process of the audiovisual data selected in S3 described hereinbefore from the point the audio data is paused. The audiovisual slow replay signal indicates to implement the playback process of the audiovisual data selected in S3 described hereinbefore in a slow motion. The audiovisual fast-forward signal indicates to fast-forward the audiovisual data selected in S3 described hereinbefore. The audiovisual fast-rewind signal indicates to fast-rewind the audiovisual data selected in S3 described hereinbefore. The audiovisual next signal indicates to initiate the playback process of the next audiovisual data of the audiovisual data selected in S3 described hereinbefore both of which are stored in Audiovisual Data Storage Area 20632b1. The audiovisual previous signal indicates to initiate the playback process of the previous audiovisual data of the audiovisual data selected in S3 described hereinbefore both of which are stored in Audiovisual Data Storage Area 20632b1.

This paragraph illustrates Audiovisual Start Software 20632c1 stored in Audiovisual Playback Software Storage Area 20632c which initiates the playback process of the audiovisual data selected in S3 described hereinbefore. The audiovisual playback signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then initiates the playback process (i.e., outputs the audio data from Speaker 216 (FIG. 1) and display the video data on LCD 201 (FIG. 1)) of the audiovisual data selected in S3 described hereinbefore (S2), and retrieves Start Message Text Data 20632b2a from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Stop Software 20632c2 stored in Audiovisual Playback Software Storage Area 20632c which stops the playback process of the audiovisual data selected in S3 described hereinbefore. The audiovisual stop signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then stops the playback process of the audiovisual data selected in S3 described hereinbefore (S2), and retrieves Stop Message Text Data 20632b2b from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Pause Software 20632c3 stored in Audiovisual Playback Software Storage Area 20632c which pauses the playback process of the audiovisual data selected in S3 described hereinbefore. The audiovisual pause signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then pauses the playback process of the audiovisual data selected in S3 described hereinbefore (S2), and retrieves Pause Message Text Data 20632b2c from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3) When the playback process is paused in S2, the audio data included in the audiovisual data is refrained from being output from Speaker 216 (FIG. 1) and a still image composing the video data included in the audiovisual data is displayed on LCD 201 (FIG. 1).

This paragraph illustrates Audiovisual Resume Software 20632c3a stored in Audiovisual Playback Software Storage Area 20632c which resumes the playback process of the audiovisual data selected in S3 described hereinbefore from the point the audiovisual data is paused in S2 described hereinbefore. The audiovisual resume signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then resumes the playback process of the audiovisual data selected in S3 described hereinbefore (S2) from the point it is paused in S2 described hereinbefore, and retrieves Resume Message Text Data 20632b2c1 from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3) When the playback process is resumed in S2, the audio data included in the audiovisual data is resumed to be output from Speaker 216 (FIG. 1) and the video data included in the audiovisual data is resumed to be displayed on LCD 201 (FIG. 1).

This paragraph illustrates Audiovisual Slow Replay Software 20632c4 stored in Audiovisual Playback Software Storage Area 20632c which implements the playback process of the audiovisual data selected in S3 described hereinbefore in a slow motion. The audiovisual slow replay signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then initiates the playback process of the audiovisual data selected in S3 described hereinbefore in a slow motion (S2), and retrieves Slow Replay Message Text Data 20632b2d from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Fast-Forward Software 20632c5 stored in Audiovisual Playback Software Storage Area 20632c which fast-forwards the audiovisual data selected in S3 described hereinbefore. The audiovisual fast-forward signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then fast-forwards the audiovisual data selected in S3 described hereinbefore (S2), and retrieves Fast-Forward Message Text Data 20632b2e from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Fast-Rewind Software 20632c6 stored in Audiovisual Playback Software Storage Area 20632c which fast-rewinds the audiovisual data selected in S3 described hereinbefore. The audiovisual fast-rewind signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then fast-rewinds the audiovisual data selected in S3 described hereinbefore (S2), and retrieves Fast-Rewind Message Text Data 20632b2f from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Next Software 20632c7 stored in Audiovisual Playback Software Storage Area 20632c which initiates the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632b1. The audiovisual next signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then initiates the playback process of the next audiovisual data of the audiovisual data selected in S3 described hereinbefore both of which are stored in Audiovisual Data Storage Area 20632b1 (S2), and retrieves Next Message Text Data 20632b2g from Message Data Storage Area 20632b2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audiovisual Previous Software 20632c8 is a software program which initiates the playback process of the previous audiovisual data stored in Audiovisual Data Storage Area 20632b1. The audiovisual previous signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then initiates the playback process of the previous audiovisual data of the audiovisual data selected in S3 described here-

inbefore both of which are stored in Audiovisual Data Storage Area 20632*b*1 (S2), and retrieves Previous Message Text Data 20632*b*2*h* from Message Data Storage Area 20632*b*2 and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

As another embodiment, the audiovisual data stored in Audiovisual Data Storage Area 20632*b*1 may be stored in Host H and retrieved therefrom when the software programs described hereinbefore are executed. In this embodiment, the audio data is temporarily stored in RAM **206** (FIG. **1**) and is erased from the portion which is playbacked.

<<Audio Playback Function>>

The following paragraphs illustrate the audio playback function which enables Communication Device **200** to playback audio data, such as jazz music, rock music, classic music, pops music, and any other types of audio data.

This paragraph illustrates the information stored in RAM **206** (FIG. **1**). In this embodiment, RAM **206** includes Audio Playback Information Storage Area 20633*a* of which the information stored therein are described hereinafter.

The data and/or the software programs necessary to implement the present function may be downloaded to Communication Device **200** from Host H.

This paragraph illustrates the data and software programs stored in Audio Playback Information Storage Area 20633*a*. In this embodiment, Audio Playback Information Storage Area 20633*a* includes Audio Playback Data Storage Area 20633*b* and Audio Playback Software Storage Area 20633*c*. Audio Playback Data Storage Area 20633*b* stores the data necessary to implement the present function, such as the ones described hereinafter. Audio Playback Software Storage Area 20633*c* stores the software programs necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the data stored in Audio Playback Data Storage Area 20633*b*. In this embodiment, Audio Playback Data Storage Area 20633*b* includes Audio Data Storage Area 20633*b*1 and Message Data Storage Area 20633*b*2. Audio Data Storage Area 20633*b*1 stores a plurality of audio data described hereinafter. Message Data Storage Area 20633*b*2 stores a plurality of message data described hereinafter.

This paragraph illustrates the audio data stored in Audio Data Storage Area 20633*b*1. In this embodiment, Audio Data Storage Area 20633*b*1 stores a plurality of audio data wherein the audio data stored therein in the present example are: Audio Data 20633*b*1*a*, Audio Data 20633*b*1*b*, Audio Data 20633*b*1*c*, and Audio Data 20633*b*1*d*, all of which are primarily composed of video data and audio data. Audio Data 20633*b*1*a* is a jazz music, Audio Data 20633*b*1*b* is a rock music, Audio Data 20633*b*1*c* is a classic music, Audio Data 20633*b*1*d* is a pops music in the present embodiment. As another embodiment, Audio Data 20633*b*1*d* may be an audio data taken via CCD Unit **214** (FIG. **1**) and Microphone **215** (FIG. **1**).

This paragraph illustrates the data stored in Message Data Storage Area 20633*b*2. In this embodiment, Message Data Storage Area 20633*b*2 includes Start Message Text Data 20633*b*2*a*, Stop Message Text Data 20633*b*2*b*, Pause Message Text Data 20633*b*2*c*, Resume Message Text Data 20633*b*2*c*1, Slow Replay Message Text Data 20633*b*2*d*, Forward Message Text Data 20633*b*2*e*, Rewind Message Text Data 20633*b*2*f*, Next Message Text Data 20633*b*2*g*, and Previous Message Text Data 20633*b*2*h*. Start Message Text Data 20633*b*2*a* is a text data which is displayed on LCD **201** (FIG. **1**) and which indicates that the playback of an audio data is initiated. Stop Message Text Data 20633*b*2*b*

is a text data which is displayed on LCD **201** and which indicates that the playback process of an audio data is stopped. Pause Message Text Data 20633*b*2*c* is a text data which is displayed on LCD **201** and which indicates that the playback process of an audio data is paused. Resume Message Text Data 20633*b*2*c*1 is a text data which is displayed on LCD **201** and which indicates that the playback process of an audio data is resumed from the point it is paused. Slow Replay Message Text Data 20633*b*2*d* is a text data which is displayed on LCD **201** and which indicates that the playback process of an audio data is implemented in a slow motion. Fast-Forward Message Text Data 20633*b*2*e* is a text data which is displayed on LCD **201** and which indicates that an audio data is fast-forwarded. Fast-Rewind Message Text Data 20633*b*2*f* is a text data which is displayed on LCD **201** and which indicates that an audio data is fast-rewinded. Next Message Text Data 20633*b*2*g* is a text data which is displayed on LCD **201** and which indicates that the playback process of the next audio data stored in Audio Data Storage Area 20633*b*1 is initiated. Previous Message Text Data 20633*b*2*h* is a text data which is displayed on LCD **201** and which indicates that the playback process of the previous audio data stored in Audio Data Storage Area 20633*b*1 is initiated.

This paragraph illustrates the software programs stored in Audio Playback Software Storage Area 20633*c*. In this embodiment, Audio Playback Software Storage Area 20633*c* includes Audio Start Software 20633*c*1, Audio Stop Software 20633*c*2, Audio Pause Software 20633*c*3, Audio Resume Software 20633*c*3*a*, Audio Slow Replay Software 20633*c*4, Audio Fast-Forward Software 20633*c*5, Audio Fast-Rewind Software 20633*c*6, Audio Next Software 20633*c*7, and Audio Previous Software 20633*c*8. Audio Start Software 20633*c*1 is a software program which initiates the playback process of an audio data. Audio Stop Software 20633*c*2 is a software program which stops the playback process of an audio data. Audio Pause Software 20633*c*3 is a software program which pauses the playback process of an audio data. Audio Resume Software 20633*c*3*a* is a software program which resumes the playback process of the audio data from the point it is paused by Audio Pause Software 20633*c*3. Audio Slow Replay Software 20633*c*4 is a software program which implements the playback process of an audio data in a slow motion. Audio Fast-Forward Software 20633*c*5 is a software program which fast-forwards an audio data. Audio Fast-Rewind Software 20633*c*6 is a software program which fast-rewinds an audio data. Audio Next Software 20633*c*7 is a software program which initiates the playback process of the next audio data stored in Audio Data Storage Area 20633*b*1. Audio Previous Software 20633*c*8 is a software program which initiates the playback process of the previous audio data stored in Audio Data Storage Area 20633*b*1.

This paragraph illustrates the messages displayed on LCD **201** (FIG. **1**). In this embodiment, eight types of messages are displayed on LCD **201**, i.e., 'Start', 'Stop', 'Pause', 'Resume', 'Slow Reply', 'Fast-Forward', 'Fast-Rewind', 'Next', and 'Previous'. 'Start' is Start Message Text Data 20633*b*2*a*, 'Stop' is Stop Message Text Data 20633*b*2*b*, 'Pause' is Pause Message Text Data 20633*b*2*c*, 'Resume' is Resume Message Text Data 20633*b*2*c*1, 'Slow Reply' is Slow Replay Message Text Data 20633*b*2*d*, 'Fast-Forward' is Fast-Forward Message Text Data 20633*b*2*e*, 'Fast-Rewind' is Fast-Rewind Message Text Data 20633*b*2*f*, 'Next' is Next Message Text Data 20633*b*2*g*, 'Previous' is Previous Message Text Data 20633*b*2*h* described hereinbefore.

This paragraph illustrates Audio Selecting Software **20633c9** stored in Audio Playback Software Storage Area **20633c** in preparation of executing the software programs described hereinafter. In this embodiment, CPU **211** (FIG. **1**) retrieves the identifications of the audio data stored in Audio Data Storage Area **20633b1** (S1). CPU **211** then displays a list of the identifications on LCD **201** (FIG. **1**) (S2). A particular audio data is selected by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S3).

This paragraph and the following paragraphs illustrate the software programs stored in Audio Playback Software Storage Area **20633c**. As described in each drawing figure hereinafter, eight types of input signals can be input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, i.e., the audio playback signal, the audio stop signal, the audio pause signal, the audio resume signal, the audio slow replay signal, the audio fast-forward signal, the audio fast-rewind signal, the audio next signal, and the audio previous signal. The audio playback signal indicates to initiate the playback process of the audio data selected in S3 described hereinbefore. The audio stop signal indicates to stop the playback process of the audio data selected in S3 described hereinbefore. The audio pause signal indicates to pause the playback process of the audio data selected in S3 described hereinbefore. The audio resume signal indicates to resume the playback process of the audio data selected in S3 described hereinbefore from the point the audio data is paused. The audio slow replay signal indicates to implement the playback process of the audio data selected in S3 described hereinbefore in a slow motion. The audio fast-forward signal indicates to fast-forward the audio data selected in S3 described hereinbefore. The audio fast-rewind signal indicates to fast-rewind the audio data selected in S3 described hereinbefore. The audio next signal indicates to initiate the playback process of the next audio data of the audio data selected in S3 described hereinbefore both of which are stored in Audio Data Storage Area **20633b1**. The audio previous signal indicates to initiate the playback process of the previous audio data of the audio data selected in S3 described hereinbefore both of which are stored in Audio Data Storage Area **20633b1**.

This paragraph illustrates Audio Start Software **20633c1** stored in Audio Playback Software Storage Area **20633c** which initiates the playback process of the audio data selected in S3 described hereinbefore. In this embodiment, the audio playback signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then initiates the playback process (i.e., outputs the audio data from Speaker **216** (FIG. **1**)) of the audio data selected in S3 described hereinbefore (S2), and retrieves Start Message Text Data **20633b2a** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Stop Software **20633c2** stored in Audio Playback Software Storage Area **20633c** which stops the playback process of the audio data selected in S3 described hereinbefore. In this embodiment, the audio stop signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then stops the playback process of the audio data selected in S3 described hereinbefore (S2), and retrieves Stop Message Text Data **20633b2b** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Pause Software **20633c3** stored in Audio Playback Software Storage Area **20633c** which pauses the playback process of the audio data selected

in S3 described hereinbefore. In this embodiment, the audio pause signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then pauses the playback process of the audio data selected in S3 described hereinbefore (S2), and retrieves Pause Message Text Data **20633b2c** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3) When the playback process is paused in S2, the audio data included in the audio data is refrained from being output from Speaker **216** (FIG. **1**).

This paragraph illustrates Audio Resume Software **20633c3a** stored in Audio Playback Software Storage Area **20633c** which resumes the playback process of the audio data selected in S3 described hereinbefore from the point the audiovisual data is paused in S2 described hereinbefore. In this embodiment, the audio resume signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then resumes the playback process of the audio data selected in S3 described hereinbefore from the point the audiovisual data is paused in S2 described hereinbefore (S2), and retrieves Resume Message Text Data **20633b2c1** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Slow Replay Software **20633c4** stored in Audio Playback Software Storage Area **20633c** which implements the playback process of the audio data selected in S3 described hereinbefore in a slow motion. In this embodiment, the audio slow replay signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then initiates the playback process of the audio data selected in S3 described hereinbefore in a slow motion (S2), and retrieves Slow Replay Message Text Data **20633b2d** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Fast-Forward Software **20633c5** stored in Audio Playback Software Storage Area **20633c** which fast-forwards the audio data selected in S3 described hereinbefore. In this embodiment, the audio fast-forward signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then fast-forwards the audio data selected in S3 described hereinbefore (S2), and retrieves Fast-Forward Message Text Data **20633b2e** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Fast-Rewind Software **20633c6** stored in Audio Playback Software Storage Area **20633c** which fast-rewinds the audio data selected in S3 described hereinbefore. In this embodiment, the audio fast-rewind signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then fast-rewinds the audio data selected in S3 described hereinbefore (S2), and retrieves Fast-Rewind Message Text Data **20633b2f** from Message Data Storage Area **20633b2** and displays the data on LCD **201** (FIG. **1**) for a specified period of time (S3).

This paragraph illustrates Audio Next Software **20633c7** stored in Audio Playback Software Storage Area **20633c** which initiates the playback process of the next audio data stored in Audio Data Storage Area **20633b1**. In this embodiment, the audio next signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then initiates the playback process of the next audio data of the audio data selected in S3 described hereinbefore both of which are stored in Audio Data Storage Area

20633*b*1 (S2), and retrieves Next Message Text Data 20633*b*2*g* from Message Data Storage Area 20633*b*2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

This paragraph illustrates Audio Previous Software 20633*c*8 is a software program which initiates the playback process of the previous audio data stored in Audio Data Storage Area 20633*b*1. In this embodiment, the audio previous signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then initiates the playback process of the previous audio data of the audio data selected in S3 described hereinbefore both of which are stored in Audio Data Storage Area 20633*b*1 (S2), and retrieves Previous Message Text Data 20633*b*2*h* from Message Data Storage Area 20633*b*2 and displays the data on LCD 201 (FIG. 1) for a specified period of time (S3).

As another embodiment, the audio data stored in Audio Data Storage Area 20633*b*1 may be stored in Host H and retrieved therefrom when the software programs described hereinbefore are executed. In this embodiment, the audio data is temporarily stored in RAM 206 (FIG. 1) and is erased from the portion which is playbacked.

<<Digital Camera Function>>

The following paragraphs illustrate the digital camera function which enables Communication Device 200 to take digital photos by utilizing CCD Unit 214 (FIG. 1).

This paragraph illustrates the storage area included in RAM 206 (FIG. 1). In this embodiment, RAM 206 includes Digital Camera Information Storage Area 20646*a* of which the data and the software programs stored therein are described hereinafter.

The data and software programs stored in Digital Camera Information Storage Area 20646*a* may be downloaded from Host H.

This paragraph illustrates the storage areas included in Digital Camera Information Storage Area 20646*a*. In this embodiment, Digital Camera Information Storage Area 20646*a* includes Digital Camera Data Storage Area 20646*b* and Digital Camera Software Storage Area 20646*c*. Digital Camera Data Storage Area 20646*b* stores the data necessary to implement the present function, such as the ones described hereinafter. Digital Camera Software Storage Area 20646*c* stores the software programs necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Digital Camera Data Storage Area 20646*b*. In this embodiment, Digital Camera Data Storage Area 20646*b* includes Photo Data Storage Area 20646*b*1 and Digital Camera Function Data Storage Area 20646*b*2. Photo Data Storage Area 20646*b*1 stores the data described hereinafter. Digital Camera Function Data Storage Area 20646*b*2 stores the data stored hereinafter.

This paragraph illustrates the data stored in Photo Data Storage Area 20646*b*1. In this embodiment, Photo Data Storage Area 20646*b*1 comprises two columns, i.e., 'Photo ID' and 'Photo Data'. Column 'Photo ID' stores the identifications of the photo data, and column 'Photo Data' stores a plurality of photo data taken by implementing the present function. In the example described in the present drawing, Photo Data Storage Area 20646*b*1 stores the following data: 'Photo ID' Photo #1 of which the 'Photo Data' is 46PD1; 'Photo ID' Photo #2 of which the 'Photo Data' is 46PD2; 'Photo ID' Photo #3 of which the 'Photo Data' is 46PD3; 'Photo ID' Photo #4 of which the 'Photo Data' is 46PD4; and 'Photo ID' Photo #5 of which the 'Photo Data' is 46PD5.

This paragraph illustrates the storage areas included in Digital Camera Function Data Storage Area 20646*b*2. In this embodiment, Digital Camera Function Data Storage Area 20646*b*2 includes Quality Data Storage Area 20646*b*2*a*, Multiple Photo Shooting Number Data Storage Area 20646*b*2*b*, and Strobe Data Storage Area 20646*b*2*c*. Quality Data Storage Area 20646*b*2*a* stores the data selected in S2 described hereinafter. Multiple Photo Shooting Number Data Storage Area 20646*b*2*b* stores the data selected in S2 described hereinafter. Strobe Data Storage Area 20646*b*2*c* stores the data selected in S2 described hereinafter.

This paragraph illustrates the software programs stored in Digital Camera Software Storage Area 20646*c*. In this embodiment, Digital Camera Software Storage Area 20646*c* stores Quality Selecting Software 20646*c*1, Multiple Photo Shooting Software 20646*c*2, Trimming Software 20646*c*3, Digital Zooming Software 20646*c*4, Strobe Software 20646*c*5, Digital Camera Function Selecting Software 20646*c*6, Multiple Photo Shooting Number Selecting Software 20646*c*7, Strobe On/Off Selecting Software 20646*c*8, Photo Data Shooting Software 20646*c*9, and Multiple Photo Shooting Software 20646*c*10. Quality Selecting Software 20646*c*1 is the software program described hereinafter. Multiple Photo Shooting Software 20646*c*2 is the software program described hereinafter. Trimming Software 20646*c*3 is the software program described hereinafter. Digital Zooming Software 20646*c*4 is the software program described hereinafter. Strobe Software 20646*c*5 is the software program described hereinafter. Digital Camera Function Selecting Software 20646*c*6 is the software program described hereinafter. Multiple Photo Shooting Number Selecting Software 20646*c*7 is the software program described hereinafter. Strobe On/Off Selecting Software 20646*c*8 is the software program described hereinafter. Photo Data Shooting Software 20646*c*9 is the software program described hereinafter.

This paragraph illustrates Digital Camera Function Selecting Software 20646*c*6 stored in Digital Camera Software Storage Area 20646*c* which administers the overall flow of displaying the functions and selecting the option for each function. In this embodiment, a list of functions is displayed on LCD 201 (FIG. 1) (S1). The items displayed on LCD 201 are 'Quality', 'Multiple Photo', and 'Strobe'. A function is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2), and the relevant software program is activated thereafter (S3). In the present embodiment, Quality Selecting Software 20646*c*1 described hereinafter is activated when 'Quality' displayed on LCD 201 is selected in S2. Multiple Photo Shooting Number Selecting Software 20646*c*7 described hereinafter is activated when 'Multiple Photo' is selected in S2. Strobe On/Off Selecting Software 20646*c*8 described hereinafter is activated when 'Strobe' is selected in S2.

This paragraph illustrates Quality Selecting Software 20646*c*1 stored in Digital Camera Software Storage Area 20646*c* which selects the quality of the photo data taken by implementing the present function. In this embodiment, a list of options is displayed on LCD 201 (FIG. 1) (S1). The options displayed on LCD 201 are 'High', 'STD', and 'Low' in the present embodiment. One of the options is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2). The resolution of the photo data taken is high if 'High' is selected; the resolution of the photo taken is standard if 'STD' is selected; and the resolution of the photo taken is low if 'Low' is selected. The selected option is stored as the quality data in Quality Data Storage Area 20646*b*2*a* (S3).

This paragraph illustrates Multiple Photo Shooting Number Selecting Software 20646c7 stored in Digital Camera Software Storage Area 20646c which selects the number of photos taken by a single photo shooting signal. In this embodiment, a list of options is displayed on LCD 201 (FIG. 1) (S1). The options displayed on LCD 201 are figures from '1' through '10'. Only one photo is taken by a photo shooting signal if '1' is selected; two photos are taken by a photo shooting signal if '2' is selected; three photos are taken by a photo shooting signal if '3' is selected; four photos are taken by a photo shooting signal if '4' is selected; five photos are taken by a photo shooting signal if '5' is selected; six photos are taken by a photo shooting signal if '6' is selected; seven photos are taken by a photo shooting signal if '7' is selected; eight photos are taken by a photo shooting signal if '8' is selected; nine photos are taken by a photo shooting signal if '9' is selected; and ten photos are taken by a photo shooting signal if '10' is selected. A digit from '1' through '10' is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2). The selected digital is stored as the multiple photo shooting number data in Multiple Photo Shooting Number Data Storage Area 20646b2b (S3).

This paragraph illustrates Strobe On/Off Selecting Software 20646c8 stored in Digital Camera Software Storage Area 20646c which selects Flash Light Unit 220 (not shown) to be activated or not when a photo is taken. In this embodiment, a list of options is displayed on LCD 201 (FIG. 1) (S1). The options displayed on LCD 201 are 'On' and 'Off'. Flash Light Unit 220 is activated at the time photo is taken if 'On' is selected; and Flash Light Unit 220 is not activated at the time photo is taken if 'Off' is selected. One of the two options is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2). The selected option is stored as the strobe data in Strobe Data Storage Area 20646b2c (S3).

This paragraph illustrates Photo Data Shooting Software 20646c9 stored in Digital Camera Software Storage Area 20646c which takes photo(s) in accordance with the options selected hereinbefore. In this embodiment, a photo shooting signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Here, the photo shooting signal indicates CPU 211 (FIG. 1) to input photo data to CCD Unit 214 (FIG. 1) and store the data in Photo Data Storage Area 20646b1. CPU 211 then retrieves the quality data from Quality Data Storage Area 20646b2a (S2). The photo data is input via CCD Unit 214 (S3), and the data is stored in Photo Data Storage Area 20646b1 with new photo ID in accordance with the quality data retrieved in S2 (S4).

This paragraph illustrates Multiple Photo Shooting Software 20646c2 stored in Digital Camera Software Storage Area 20646c which takes photo(s) in accordance with the options selected hereinbefore. In this embodiment, a photo shooting signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) retrieves the multiple photo shooting number data from Multiple Photo Shooting Number Data Storage Area 20646b2b (S2). CPU 211 then takes photos in accordance with the multiple photo shooting number data retrieved in S2 (S3). Namely, only one photo is taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '1'; two photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '2'; three photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '3'; four photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '4';

five photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '5'; six photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '6'; seven photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '7'; eight photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '8'; nine photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '9'; and ten photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '10'.

This paragraph illustrates Strobe Software 20646c5 stored in Digital Camera Software Storage Area 20646c which takes photo(s) in accordance with the options selected hereinbefore. In this embodiment, a photo shooting signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) retrieves the strobe data from Strobe Data Storage Area 20646b2c (S2). If the strobe data is 'On' (S3), CPU 211 activates Flash Light Unit 220 (not shown) each time a photo is taken (S4). In other words, Strobe Software 20646c5 is harmonized with Multiple Photo Shooting Software 20646c2 described hereinbefore. Namely, Flash Light Unit 220 is activated for one time if one photo is taken by a single photo shooting signal. Flash Light Unit 220 is activated for two times if two photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for three times if three photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for four times if four photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for five times if five photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for six times if six photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for seven times if seven photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for eight times if eight photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for nine times if nine photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for ten times if ten photos are taken by a single photo shooting signal.

This paragraph illustrates one embodiment of the zooming function which zooms the photo data stored in Photo Data Storage Area 20646b1. In this embodiment, a certain photo selected by the user of Communication Device 200 is displayed on LCD 201 (FIG. 1). Assuming that the user intends to zoom Object 206460bj, the object displayed on LCD 201, to a larger size. The user selects Area 46ARa which includes Object 206460bj by utilizing Input Device 210 (FIG. 1) or via voice recognition system, and the selected area is zoomed to fit the size of LCD 201. The zoomed photo is replaced with the original photo.

This paragraph illustrates the operation performed in RAM 206 (FIG. 1) to implement the zooming function described hereinbefore. A certain photo data selected by the user of Communication Device 200 is stored in Area 20646ARa of RAM 206. Here, the size of the photo data is as same as that of Area 20646ARa. In this embodiment, Display Area 20646DA is the area which is displayed on LCD 201 (FIG. 1). Area 46ARa is the area which is selected by the user of Communication Device 200. Object 206460bj is the object included in the photo data. Area 46ARa which includes Object 206460bj is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system, and the photo data stored in Area 20646ARa is zoomed to the size in which the size of Area 46ARa equals to that of Display

Area 20646DA. The zoomed photo data is replaced with the original photo data and stored in Photo Data Storage Area 20646b1. The portion of the photo data which does not fit Area 20646ARa is cropped.

This paragraph illustrates Digital Zooming Software 20646c4 stored in Digital Camera Software Storage Area 20646c which implements the operation described hereinbefore. In this embodiment, CPU 211 (FIG. 1) displays a list of the photo IDs representing the photo data stored in Photo Data Storage Area 20646b1 as well as the thumbnails (S1). A certain photo data is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2), and the selected photo data is displayed on LCD 201 (FIG. 1) as described hereinbefore (S3). Area 46ARa described hereinbefore is selected by utilizing Input Device 210 or via voice recognition system (S4). When a zooming signal is input by utilizing Input Device 210 or via voice recognition system (S5), CPU 211 (FIG. 1) implements the process described hereinbefore and replaces the original photo data with the zoomed photo data, which is stored in Photo Data Storage Area 20646b1 (S6).

This paragraph illustrates one embodiment of the trimming function which trims the photo data stored in Photo Data Storage Area 20646b1 and thereby moves the selected object to the center of the photo data. In this embodiment, a certain photo selected by the user of Communication Device 200 is displayed on LCD 201 (FIG. 1). Point 20646PTa adjacent to Object 206460bj is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system, and the photo is centered at Point 20646PTa. The trimmed photo is replaced with the original photo.

This paragraph illustrates the operation performed in RAM 206 (FIG. 1) to implement the trimming function described hereinbefore. In this embodiment, Display Area 20646DA is the portion of the photo data which is displayed on LCD 201 (FIG. 1). Object 206460bj is the object included in the photo data. Point 20646PTa is the point selected by the user of Communication Device 200 adjacent to Object 206460bj which is centered by the present function. In this embodiment, a certain photo data selected by the user of Communication Device 200 is stored in Area 20646ARb of RAM 206. Here, the size of the photo data is as same as that of Area 20646ARb. Point 20646PTa is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system, and the photo data is centered at Point 20646PTa by sliding the entire photo data to the right. The trimmed photo data is replaced with the original photo data and stored in Photo Data Storage Area 20646b1. The portion of the photo data which does not fit Area 20646ARa is cropped.

This paragraph illustrates Trimming Software 20646c3 stored in Digital Camera Software Storage Area 20646c which implements the operation described hereinbefore. In this embodiment, CPU 211 (FIG. 1) displays a list of the photo IDs representing the photo data stored in Photo Data Storage Area 20646b1 as well as the thumbnails (S1). A certain photo data is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S2), and the selected photo data is displayed on LCD 201 (FIG. 1) as described hereinbefore (S3). Point 20646PTa described hereinbefore is selected by utilizing Input Device 210 or via voice recognition system (S4). When a trimming signal is input by utilizing Input Device 210 or via voice recognition system (S5), CPU 211 (FIG. 1) centers the photo data at Point 20646PTa and replaces the original photo data with the trimmed photo data, which is stored in Photo Data Storage Area 20646b1 (S6).

<<Multiple Language Displaying Function>>

The following paragraphs illustrate the multiple language displaying function wherein a language is selected from a plurality of languages, such as English, Japanese, French, and German, which is utilized to operate Communication Device 200.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1). In the present embodiment, RAM 206 includes Multiple Language Displaying Info Storage Area 20654a of which the data and the software programs stored therein are described hereinafter.

The data and/or the software programs stored in Multiple Language Displaying Info Storage Area 20654a may be downloaded from Host H.

This paragraph illustrates the storage areas included in Multiple Language Displaying Info Storage Area 20654a. In the present embodiment, Multiple Language Displaying Info Storage Area 20654a includes Multiple Language Displaying Data Storage Area 20654b and Multiple Language Displaying Software Storage Area 20654c. Multiple Language Displaying Data Storage Area 20654b stores the data necessary to implement the present function, such as the ones described hereinafter. Multiple Language Displaying Software Storage Area 20654c stores the software programs necessary to implement the present function, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Multiple Language Displaying Data Storage Area 20654b. In the present embodiment, Multiple Language Displaying Data Storage Area 20654b includes Language Tables Storage Area 20654b1, Language Type Data Storage Area 20654b2, Language Item Data Storage Area 20654b3, and Selected Language Table ID Storage Area 20654b4. Language Tables Storage Area 20654b1 stores the data described hereinafter. Language Type Data Storage Area 20654b2 stores the data described hereinafter. Language Item Data Storage Area 20654b3 stores the data described hereinafter. Selected Language Table ID Storage Area 20654b4 stores the language table ID selected in S4s described hereinafter.

This paragraph illustrates the storage areas included in Language Tables Storage Area 20654b1. In the present embodiment, Language Tables Storage Area 20654b1 includes Language Table #1 Storage Area 20654b1a, Language Table #2 Storage Area 20654b1b, Language Table #3 Storage Area 20654b1c, and Language Table #4 Storage Area 20654b1d. Language Table #1 Storage Area 20654b1a stores the data described hereinafter. Language Table #2 Storage Area 20654b1b stores the data described hereinafter. Language Table #3 Storage Area 20654b1c stores the data described hereinafter. Language Table #4 Storage Area 20654b1d stores the data described hereinafter.

This paragraph illustrates the data stored in Language Table #1 Storage Area 20654b1a. In the present embodiment, Language Table #1 Storage Area 20654b1a comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the language item IDs, and each language item ID represents the identification of the corresponding language text data.

Column 'Language Text Data' stores the language text data, and each language text data represents the English text data displayed on LCD 201 (FIG. 1). In the present embodiment, Language Table #1 Storage Area 20654b1a stores the following data: the language item ID 'Language Item #1' and the corresponding language text data 'Open file'; the language item ID 'Language Item #2' and the corresponding language text data 'Close file'; the language item ID 'Language Item #3' and the corresponding language text data

'Delete'; the language item ID 'Language Item #4' and the corresponding language text data 'Copy'; the language item ID 'Language Item #5' and the corresponding language text data 'Cut'; the language item ID 'Language Item #6' and the corresponding language text data 'Paste'; the language item ID 'Language Item #7' and the corresponding language text data 'Insert'; the language item ID 'Language Item #8' and the corresponding language text data 'File'; the language item ID 'Language Item #9' and the corresponding language text data 'Edit'; the language item ID 'Language Item #10' and the corresponding language text data 'View'; the language item ID 'Language Item #11' and the corresponding language text data 'Format'; the language item ID 'Language Item #12' and the corresponding language text data 'Tools'; the language item ID 'Language Item #13' and the corresponding language text data 'Window'; the language item ID 'Language Item #14' and the corresponding language text data 'Help'; the language item ID 'Language Item #15' and the corresponding language text data 'My Network'; the language item ID 'Language Item #16' and the corresponding language text data 'Trash'; the language item ID 'Language Item #17' and the corresponding language text data 'Local Disk'; the language item ID 'Language Item #18' and the corresponding language text data 'Save'; the language item ID 'Language Item #19' and the corresponding language text data 'Yes'; the language item ID 'Language Item #20' and the corresponding language text data 'No'; and the language item ID 'Language Item #21' and the corresponding language text data 'Cancel'.

This paragraph illustrates the data stored in Language Table #1 Storage Area 20654b1b. In the present embodiment, Language Table #1 Storage Area 20654b1b comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the language item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the Japanese text data displayed on LCD 201 (FIG. 1). In the present embodiment, Language Table #1 Storage Area 20654b1b stores the following data: the language item ID 'Language Item #1' and the corresponding language text data meaning 'Open file' in Japanese; the language item ID 'Language Item #2' and the corresponding language text data meaning 'Close file' in Japanese; the language item ID 'Language Item #3' and the corresponding language text data meaning 'Delete' in Japanese; the language item ID 'Language Item #4' and the corresponding language text data meaning 'Copy' in Japanese; the language item ID 'Language Item #5' and the corresponding language text data meaning 'Cut' in Japanese; the language item ID 'Language Item #6' and the corresponding language text data meaning 'Paste' in Japanese; the language item ID 'Language Item #7' and the corresponding language text data meaning 'Insert' in Japanese; the language item ID 'Language Item #8' and the corresponding language text data meaning 'File' in Japanese; the language item ID 'Language Item #9' and the corresponding language text data meaning 'Edit' in Japanese; the language item ID 'Language Item #10' and the corresponding language text data meaning 'View' in Japanese; the language item ID 'Language Item #11' and the corresponding language text data meaning 'Format' in Japanese; the language item ID 'Language Item #12' and the corresponding language text data meaning 'Tools' in Japanese; the language item ID 'Language Item #13' and the corresponding language text data meaning 'Window' in Japanese; the language item ID 'Language Item #14' and the corresponding language text

data meaning 'Help' in Japanese; the language item ID 'Language Item #15' and the corresponding language text data meaning 'My Network' in Japanese; the language item ID 'Language Item #16' and the corresponding language text data meaning 'Trash' in Japanese; the language item ID 'Language Item #17' and the corresponding language text data meaning 'Local Disk' in Japanese; the language item ID 'Language Item #18' and the corresponding language text data meaning 'Save' in Japanese; the language item ID 'Language Item #19' and the corresponding language text data meaning 'Yes' in Japanese; the language item ID 'Language Item #20' and the corresponding language text data meaning 'No' in Japanese; and the language item ID 'Language Item #21' and the corresponding language text data meaning 'Cancel' in Japanese.

This paragraph illustrates the data stored in Language Table #1 Storage Area 20654b1c. In the present embodiment, Language Table #1 Storage Area 20654b1c comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the language item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the French text data displayed on LCD 201 (FIG. 1). In the present embodiment, Language Table #1 Storage Area 20654b1c stores the following data: the language item ID 'Language Item #1' and the corresponding language text data 'French #1' meaning 'Open file' in French; the language item ID 'Language Item #2' and the corresponding language text data 'French #2' meaning 'Close file' in French; the language item ID 'Language Item #3' and the corresponding language text data 'French #3' meaning 'Delete' in French; the language item ID 'Language Item #4' and the corresponding language text data 'French #4' meaning 'Copy' in French; the language item ID 'Language Item #5' and the corresponding language text data 'French #5' meaning 'Cut' in French; the language item ID 'Language Item #6' and the corresponding language text data 'French #6' meaning 'Paste' in French; the language item ID 'Language Item #7' and the corresponding language text data 'French #7' meaning 'Insert' in French; the language item ID 'Language Item #8' and the corresponding language text data 'French #8' meaning 'File' in French; the language item ID 'Language Item #9' and the corresponding language text data 'French #9' meaning 'Edit' in French; the language item ID 'Language Item #10' and the corresponding language text data 'French #10' meaning 'View' in French; the language item ID 'Language Item #11' and the corresponding language text data 'French #11' meaning 'Format' in French; the language item ID 'Language Item #12' and the corresponding language text data 'French #12' meaning 'Tools' in French; the language item ID 'Language Item #13' and the corresponding language text data 'French #13' meaning 'Window' in French; the language item ID 'Language Item #14' and the corresponding language text data 'French #14' meaning 'Help' in French; the language item ID 'Language Item #15' and the corresponding language text data 'French #15' meaning 'My Network' in French; the language item ID 'Language Item #16' and the corresponding language text data 'French #16' meaning 'Trash' in French; the language item ID 'Language Item #17' and the corresponding language text data 'French #17' meaning 'Local Disk' in French; the language item ID 'Language Item #18' and the corresponding language text data 'French #18' meaning 'Save' in French; the language item ID 'Language Item #19' and the corresponding language text data 'French #19' meaning 'Yes' in French; the

language item ID 'Language Item #20' and the corresponding language text data 'French #20' meaning 'No' in French; and the language item ID 'Language Item #21' and the corresponding language text data 'French #21' meaning 'Cancel' in French.

This paragraph illustrates the data stored in Language Table #1 Storage Area 20654b1d. In the present embodiment, Language Table #1 Storage Area 20654b1d comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the language item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the German text data displayed on LCD 201 (FIG. 1). In the present embodiment, Language Table #1 Storage Area 20654b1d stores the following data: the language item ID 'Language Item #1' and the corresponding language text data 'German #1' meaning 'Open file' in German; the language item ID 'Language Item #2' and the corresponding language text data 'German #2' meaning 'Close file' in German; the language item ID 'Language Item #3' and the corresponding language text data 'German #3' meaning 'Delete' in German; the language item ID 'Language Item #4' and the corresponding language text data 'German #4' meaning 'Copy' in German; the language item ID 'Language Item #5' and the corresponding language text data 'German #5' meaning 'Cut' in German; the language item ID 'Language Item #6' and the corresponding language text data 'German #6' meaning 'Paste' in German; the language item ID 'Language Item #7' and the corresponding language text data 'German #7' meaning 'Insert' in German; the language item ID 'Language Item #8' and the corresponding language text data 'German #8' meaning 'File' in German; the language item ID 'Language Item #9' and the corresponding language text data 'German #9' meaning 'Edit' in German; the language item ID 'Language Item #10' and the corresponding language text data 'German #10' meaning 'View' in German; the language item ID 'Language Item #11' and the corresponding language text data 'German #11' meaning 'Format' in German; the language item ID 'Language Item #12' and the corresponding language text data 'German #12' meaning 'Tools' in German; the language item ID 'Language Item #13' and the corresponding language text data 'German #13' meaning 'Window' in German; the language item ID 'Language Item #14' and the corresponding language text data 'German #14' meaning 'Help' in German; the language item ID 'Language Item #15' and the corresponding language text data 'German #15' meaning 'My Network' in German; the language item ID 'Language Item #16' and the corresponding language text data 'German #16' meaning 'Trash' in German; the language item ID 'Language Item #17' and the corresponding language text data 'German #17' meaning 'Local Disk' in German; the language item ID 'Language Item #18' and the corresponding language text data 'German #18' meaning 'Save' in German; the language item ID 'Language Item #19' and the corresponding language text data 'German #19' meaning 'Yes' in German; the language item ID 'Language Item #20' and the corresponding language text data 'German #20' meaning 'No' in German; and the language item ID 'Language Item #21' and the corresponding language text data 'German #21' meaning 'Cancel' in German.

This paragraph illustrates data stored in Language Type Data Storage Area 20654b2. In the present embodiment, Language Type Data Storage Area 20654b2 comprises two columns, i.e., 'Language Table ID' and 'Language Type Data'. Column 'Language Table ID' stores the language

table ID, and each language table ID represents the identification of the storage areas included in Language Tables Storage Area 20654b1. Column 'Language Type Data' stores the language type data, and each language type data represents the type of the language utilized in the language table of the corresponding language table ID. In the present embodiment, Language Type Data Storage Area 20654b2 stores the following data: the language table ID 'Language Table #1' and the corresponding language type data 'English'; the language table ID 'Language Table #2' and the corresponding language type data 'Japanese'; the language table ID 'Language Table #3' and the corresponding language type data 'French'; and the language table ID 'Language Table #4' and the corresponding language type data 'German'. Here, the language table ID 'Language Table #1' is an identification of Language Table #1 Storage Area 20654b1a; the language table ID 'Language Table #2' is an identification of Language Table #2 Storage Area 20654b1b; the language table ID 'Language Table #3' is an identification of Language Table #3 Storage Area 20654b1c; and the language table ID 'Language Table #4' is an identification of Language Table #4 Storage Area 20654b1d.

This paragraph illustrates the data stored in Language Item Data Storage Area 20654b3. In the present embodiment, Language Item Data Storage Area 20654b3 comprises two columns, i.e., 'Language Item ID' and 'Language Item Data'. Column 'Language Item ID' stores the language item IDs, and each language item ID represents the identification of the corresponding language item data. Column 'Language Item Data' stores the language item data, and each language item data represents the content and/or the meaning of the language text data displayed on LCD 201 (FIG. 1). In the present embodiment, Language Item Data Storage Area 20654b3 stores the following data: the language item ID 'Language Item #1' and the corresponding language item data 'Open file'; the language item ID 'Language Item #2' and the corresponding language item data 'Close file'; the language item ID 'Language Item #3' and the corresponding language item data 'Delete'; the language item ID 'Language Item #4' and the corresponding language item data 'Copy'; the language item ID 'Language Item #5' and the corresponding language item data 'Cut'; the language item ID 'Language Item #6' and the corresponding language item data 'Paste'; the language item ID 'Language Item #7' and the corresponding language item data 'Insert'; the language item ID 'Language Item #8' and the corresponding language item data 'File'; the language item ID 'Language Item #9' and the corresponding language item data 'Edit'; the language item ID 'Language Item #10' and the corresponding language item data 'View'; the language item ID 'Language Item #11' and the corresponding language item data 'Format'; the language item ID 'Language Item #12' and the corresponding language item data 'Tools'; the language item ID 'Language Item #13' and the corresponding language item data 'Window'; the language item ID 'Language Item #14' and the corresponding language item data 'Help'; the language item ID 'Language Item #15' and the corresponding language item data 'My Network'; the language item ID 'Language Item #16' and the corresponding language item data 'Trash'; the language item ID 'Language Item #17' and the corresponding language item data 'Local Disk'; the language item ID 'Language Item #18' and the corresponding language item data 'Save'; the language item ID 'Language Item #19' and the corresponding language item data 'Yes'; the language item ID 'Language Item #20' and the corresponding language item data 'No'; and the language item ID 'Language Item #21' and the corresponding lan-

guage item data 'Cancel'. Primarily, the data stored in column 'Language Item Data' are same as the ones stored in column 'Language Text Data' of Language Table #1 Storage Area 20654*b*1*a*.

This paragraph illustrates the software program stored in Multiple Language Displaying Software Storage Area 20654*c*. In the present embodiment, Multiple Language Displaying Software Storage Area 20654*c* stores Language Selecting Software 20654*c*1, Selected Language Displaying Software 20654*c*2, Language Text Data Displaying Software For Word Processor 20654*c*3*a*, Language Text Data Displaying Software For Word Processor 20654*c*3*b*, and Language Text Data Displaying Software For Explorer 20654*c*4. Language Selecting Software 20654*c*1 is the software program described hereinafter. Selected Language Displaying Software 20654*c*2 is the software program described hereinafter. Language Text Data Displaying Software For Word Processor 20654*c*3*a* is the software program described hereinafter. Language Text Data Displaying Software For Word Processor 20654*c*3*b* is the software program described hereinafter. Language Text Data Displaying Software For Explorer 20654*c*4 is the software program described hereinafter.

<<Multiple Language Displaying Function—Utilizing English>>

This paragraph illustrates Language Selecting Software 20654*c*1 stored in Multiple Language Displaying Software Storage Area 20654*c* which selects the language utilized to operate Communication Device 200 from a plurality of languages. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654*b*2 (S1), and Displays a list of available languages on LCD 201 (FIG. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S3). Assume that 'English' is selected in S3. CPU 211 then identifies the language table ID corresponding to the language type data in Language Type Data Storage Area 20654*b*2, and stores the language table ID (Language Table #1) in Selected Language Table ID Storage Area 20654*b*4 (S4).

This paragraph illustrates Selected Language Displaying Software 20654*c*2 stored in Multiple Language Displaying Software Storage Area 20654*c* which displays and operates with the language selected in S3 described hereinbefore (i.e., English). In the present embodiment, when Communication Device 200 is powered on (S1), CPU 211 (FIG. 1) of Communication Device 200 retrieves the selected language table ID (Language Table #1) from Selected Language Table ID Storage Area 20654*b*4 (S2). CPU 211 then identifies the storage area corresponding to the language table ID selected in S2 (Language Table #1 Storage Area 20654*b*1*a*) in Language Tables Storage Area 20654*b*1 (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

This paragraph illustrates Language Text Data Displaying Software For Word Processor 20654*c*3*a* stored in Multiple Language Displaying Software Storage Area 20654*c* which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 executes a word processor in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201

(FIG. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #8' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'File' at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item #9' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Edit' at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item #10' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'View' at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item #11' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Format' at the predetermined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item #12' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Tools' at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item #13' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Window' at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item #14' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Help' at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (FIG. 1) or via voice recognition system thereafter (S9).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654*c*3*a* is implemented. In the present embodiment, the word processor described hereinbefore is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 described hereinbefore are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the present embodiment, 20154MBF is the language text data processed in S2 of the previous paragraph; 20154MBE is the language text data processed in S3 of the previous paragraph; 20154MBV is the language text data processed in S4 of the previous paragraph; 20154MBF is the language text data processed in S5 of the previous paragraph; 20154MBT is the language text data processed in S6 of the previous paragraph; 20154MBW is the language text data processed in S7 of the previous paragraph; and 20154MBH is the language text data processed in S8 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Word Processor 20654*c*3*b* stored in Multiple Language Displaying Software Storage Area 20654*c* which displays a prompt on LCD 201 (FIG. 1) at the time a word processor is closed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 initiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #18' in Language Table #1 Storage Area 20654*b*1*a* and displays the corresponding language text data 'Save' at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item #19' in Language Table #1 Storage Area 20654*b*1*a* and

displays the corresponding language text data 'Yes' at the predetermined location in the word processor (S3). CPU **211** identifies the language item ID 'Language Item #20' in Language Table #1 Storage Area **20654***b1a* and displays the corresponding language text data 'No' at the predetermined location in the word processor (S4). CPU **211** identifies the language item ID 'Language Item #21' in Language Table #1 Storage Area **20654***b1a* and displays the corresponding language text data 'Cancel' at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 described hereinbefore is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, assuming that the user of Communication Device **200** intends to save the data (S6), and the data are saved in a predetermined location in RAM **206** (FIG. **1**) (S7). The word processor is closed thereafter (S8).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Word Processor **20654***c3b* is implemented. In the present embodiment, Prompt **20154**Pr is displayed on LCD **201** (FIG. **1**) at the time Language Text Data Displaying Software For Word Processor **20654***c3a* is closed. In the present embodiment, Prompt **20154**Pr is primarily composed of **20154**PrS, **20154**PrY, **20154**PrN, and **20154**PrC. In the present embodiment, **20154**PrS is the language text data processed in S2 of the previous paragraph; **20154**PrY is the language text data processed in S3 of the previous paragraph; **20154**PrN is the language text data processed in S4 of the previous paragraph; and **20154**PrC is the language text data processed in S5 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Explorer **20654***c4* stored in Multiple Language Displaying Software Storage Area **20654***c* which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** executes Windows Explorer like software program in response to the signal input by the user of Communication Device **200** indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD **201** (FIG. **1**), the steps of S2 through S4 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #15' in Language Table #1 Storage Area **20654***b1a* and displays the corresponding language text data 'My Network' at the predetermined location in the Windows Explorer like software program (S2). CPU **211** identifies the language item ID 'Language Item #16' in Language Table #1 Storage Area **20654***b1a* and displays the corresponding language text data 'Trash' at the predetermined location in the Windows Explorer like software program (S3). CPU **211** identifies the language item ID 'Language Item #17' in Language Table #1 Storage Area **20654***b1a* and displays the corresponding language text data 'Local Disk' at the predetermined location in the Windows Explorer like software program (S4).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Explorer **20654***c4* is executed. In the present embodiment, **20154**LD, **20154**MN, and **20154**Tr are displayed on LCD **201** (FIG. **1**) at the time Language Text Data Displaying Software For Explorer **20654***c4* is executed. In the present embodiment, **20154**LD is the language text data processed in S4 of the previous paragraph; **20154**MN is the language text data

processed in S2 of the previous paragraph; and **20154**Tr is the language text data processed in S3 of the previous paragraph.

<<Multiple Language Displaying Function—Utilizing Japanese>>

This paragraph illustrates Language Selecting Software **20654***c1* stored in Multiple Language Displaying Software Storage Area **20654***c* which selects the language utilized to operate Communication Device **200** from a plurality of languages. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** retrieves the language type data from Language Type Data Storage Area **20654***b2* (S1), and Displays a list of available languages on LCD **201** (FIG. **1**) (S2). In the present example, the following languages are displayed on LCD **201**: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S3). Assume that 'Japanese' is selected in S3. CPU **211** then identifies the language table ID corresponding to the language type data in Language Type Data Storage Area **20654***b2*, and stores the language table ID (Language Table #2) in Selected Language Table ID Storage Area **20654***b4* (S4).

This paragraph illustrates Selected Language Displaying Software **20654***c2* stored in Multiple Language Displaying Software Storage Area **20654***c* which displays and operates with the language selected in S3 described hereinbefore (i.e., Japanese). In the present embodiment, when Communication Device **200** is powered on (S1), CPU **211** (FIG. **1**) of Communication Device **200** retrieves the selected language table ID (Language Table #2) from Selected Language Table ID Storage Area **20654***b4* (S2). CPU **211** then identifies the storage area corresponding to the language table ID selected in S2 (Language Table #2 Storage Area **20654***b1b*) in Language Tables Storage Area **20654***b1* (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

This paragraph illustrates Language Text Data Displaying Software For Word Processor **20654***c3a* stored in Multiple Language Displaying Software Storage Area **20654***c* which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** executes a word processor in response to the signal input by the user of Communication Device **200** indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD **201** (FIG. **1**), the following steps of S2 through S8 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #8' in Language Table #2 Storage Area **20654***b1b* and displays the corresponding language text data indicating 'File' in Japanese at the predetermined location in the word processor (S2). CPU **211** identifies the language item ID 'Language Item #9' in Language Table #2 Storage Area **20654***b1b* and displays the corresponding language text data indicating 'Edit' in Japanese at the predetermined location in the word processor (S3). CPU **211** identifies the language item ID 'Language Item #10' in Language Table #2 Storage Area **20654***b1b* and displays the corresponding language text data indicating 'View' in Japanese at the predetermined location in the word processor (S4). CPU **211** identifies the language item ID 'Language Item #11' in Language Table #2 Storage Area **20654***b1b* and displays the corresponding language text data indicating 'Format' in Japanese at the predetermined location in the word processor (S5). CPU **211** identifies the language item ID 'Language Item #12' in Language Table #2 Storage Area **20654***b1b* and

displays the corresponding language text data indicating 'Tools' in Japanese at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item #13' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Window' in Japanese at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item #14' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Help' in Japanese at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (FIG. 1) or via voice recognition system thereafter (S9).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3a is implemented. In the present embodiment, the word processor described hereinbefore is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 described hereinbefore are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the present embodiment, 20154MBF is the language text data processed in S2 of the previous paragraph; 20154MBE is the language text data processed in S3 of the previous paragraph; 20154MBV is the language text data processed in S4 of the previous paragraph; 20154MBF is the language text data processed in S5 of the previous paragraph; 20154MBT is the language text data processed in S6 of the previous paragraph; 20154MBW is the language text data processed in S7 of the previous paragraph; and 20154MBH is the language text data processed in S8 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Word Processor 20654c3b stored in Multiple Language Displaying Software Storage Area 20654c which displays a prompt on LCD 201 (FIG. 1) at the time a word processor is closed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 initiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #18' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Save' in Japanese at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item #19' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Yes' in Japanese at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item #20' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'No' in Japanese at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item #21' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Cancel' in Japanese at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 described hereinbefore is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system, assuming that the user of Communication Device 200 intends to save the data (S6), and the data are saved in a

predetermined location in RAM 206 (FIG. 1) (S7). The word processor is closed thereafter (S8).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3b is implemented. In the present embodiment, Prompt 20154Pr is displayed on LCD 201 (FIG. 1) at the time Language Text Data Displaying Software For Word Processor 20654c3a is closed. In the present embodiment, Prompt 20154Pr is primarily composed of 20154PrS, 20154PrY, 20154PrN, and 20154PrC. In the present embodiment, 20154PrS is the language text data processed in S2 of the previous paragraph; 20154PrY is the language text data processed in S3 of the previous paragraph; 20154PrN is the language text data processed in S4 of the previous paragraph; and 20154PrC is the language text data processed in S5 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Explorer 20654c4 stored in Multiple Language Displaying Software Storage Area 20654c which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (FIG. 1), the following steps of S2 through S4 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #15' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'My Network' in Japanese at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item #16' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Trash' in Japanese at the predetermined location in the Windows Explorer like software program (S3). CPU 211 identifies the language item ID 'Language Item #17' in Language Table #2 Storage Area 20654b1b and displays the corresponding language text data indicating 'Local Disk' in Japanese at the predetermined location in the Windows Explorer like software program (S4).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. In the present embodiment, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (FIG. 1) at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. In the present embodiment, 20154LD is the language text data processed in S4 of the previous paragraph; 20154MN is the language text data processed in S2 of the previous paragraph; and 20154Tr is the language text data processed in S3 of the previous paragraph.

<<Multiple Language Displaying Function—Utilizing French>>

This paragraph illustrates Language Selecting Software 20654c1 stored in Multiple Language Displaying Software Storage Area 20654c which selects the language utilized to operate Communication Device 200 from a plurality of languages. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654b2 (S1), and Displays a list of available languages on LCD 201 (FIG. 1)

(S2). In the present example, the following languages are displayed on LCD **201**: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S3). Assume that 'French' is selected in S3. CPU **211** then identifies the language table ID corresponding to the language type data in Language Type Data Storage Area **20654***b***2**, and stores the language table ID (Language Table #3) in Selected Language Table ID Storage Area **20654***b***4** (S4).

This paragraph illustrates Selected Language Displaying Software **20654***c***2** stored in Multiple Language Displaying Software Storage Area **20654***c* which displays and operates with the language selected in S3 described hereinbefore (i.e., French). In the present embodiment, when Communication Device **200** is powered on (S1), CPU **211** (FIG. **1**) of Communication Device **200** retrieves the selected language table ID (Language Table #3) from Selected Language Table ID Storage Area **20654***b***4** (S2). CPU **211** then identifies the storage area corresponding to the language table ID selected in S2 (Language Table #3 Storage Area **20654***b***1***c*) in Language Tables Storage Area **20654***b***1** (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

This paragraph illustrates Language Text Data Displaying Software For Word Processor **20654***c***3***a* stored in Multiple Language Displaying Software Storage Area **20654***c* which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** executes a word processor in response to the signal input by the user of Communication Device **200** indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD **201** (FIG. **1**), the following steps of S2 through S8 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #8' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #8' indicating 'File' in French at the predetermined location in the word processor (S2). CPU **211** identifies the language item ID 'Language Item #9' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #9' indicating 'Edit' in French at the predetermined location in the word processor (S3). CPU **211** identifies the language item ID 'Language Item #10' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #10' indicating 'View' in French at the predetermined location in the word processor (S4). CPU **211** identifies the language item ID 'Language Item #11' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #11' indicating 'Format' in French at the predetermined location in the word processor (S5). CPU **211** identifies the language item ID 'Language Item #12' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #12' indicating 'Tools' in French at the predetermined location in the word processor (S6). CPU **211** identifies the language item ID 'Language Item #13' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #13' indicating 'Window' in French at the predetermined location in the word processor (S7). CPU **211** identifies the language item ID 'Language Item #14' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #14' indicating 'Help' in French at the predetermined location in the word processor (S8). Alpha-

numeric data is input to the word processor by utilizing Input Device **210** (FIG. **1**) or via voice recognition system thereafter (S9).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Word Processor **20654***c***3***a* is implemented. In the present embodiment, the word processor described hereinbefore is primarily composed of Menu Bar **20154**MB and Alphanumeric Data Input Area **20154**ADIA wherein the language text data described in S2 through S8 described hereinbefore are displayed on Menu Bar **20154**MB and alphanumeric data are input in Alphanumeric Data Input Area **20154**ADIA. In the present embodiment, **20154**MBF is the language text data processed in S2 of the previous paragraph; **20154**MBE is the language text data processed in S3 of the previous paragraph; **20154**MBV is the language text data processed in S4 of the previous paragraph; **20154**MBF is the language text data processed in S5 of the previous paragraph; **20154**MBT is the language text data processed in S6 of the previous paragraph; **20154**MBW is the language text data processed in S7 of the previous paragraph; and **20154**MBH is the language text data processed in S8 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Word Processor **20654***c***3***b* stored in Multiple Language Displaying Software Storage Area **20654***c* which displays a prompt on LCD **201** (FIG. **1**) at the time a word processor is closed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** initiates the closing process of the word processor in response to the signal input by the user of Communication Device **200** indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #18' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #18' indicating 'Save' in French at the predetermined location in the word processor (S2). CPU **211** identifies the language item ID 'Language Item #19' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #19' indicating 'Yes' in French at the predetermined location in the word processor (S3). CPU **211** identifies the language item ID 'Language Item #20' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #20' indicating 'No' in French at the predetermined location in the word processor (S4). CPU **211** identifies the language item ID 'Language Item #21' in Language Table #3 Storage Area **20654***b***1***c* and displays the corresponding language text data 'French #21' indicating 'Cancel' in French at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 described hereinbefore is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, assuming that the user of Communication Device **200** intends to save the data (S6), and the data are saved in a predetermined location in RAM **206** (FIG. **1**) (S7). The word processor is closed thereafter (S8).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Word Processor **20654***c***3***b* is implemented. In the present embodiment, Prompt **20154**Pr is displayed on LCD **201** (FIG. **1**) at the time Language Text Data Displaying Software For Word Processor **20654***c***3***a* is closed. In the present embodiment, Prompt **20154**Pr is primarily composed of **20154**PrS, **20154**PrY, **20154**PrN, and **20154**PrC. In the present

embodiment, 20154PrS is the language text data processed in S2 of the previous paragraph; 20154PrY is the language text data processed in S3 of the previous paragraph; 20154PrN is the language text data processed in S4 of the previous paragraph; and 20154PrC is the language text data processed in S5 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Explorer 20654*c*4 stored in Multiple Language Displaying Software Storage Area 20654*c* which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (FIG. 1), the following steps of S2 through S4 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #15' in Language Table #3 Storage Area 20654*b*1*c* and displays the corresponding language text data 'French #15' indicating 'My Network' in French at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item #16' in Language Table #3 Storage Area 20654*b*1*c* and displays the corresponding language text data 'French #16' indicating 'Trash' in French at the predetermined location in the Windows Explorer like software program (S3). CPU 211 identifies the language item ID 'Language Item #17' in Language Table #3 Storage Area 20654*b*1*c* and displays the corresponding language text data 'French #17' indicating 'Local Disk' in French at the predetermined location in the Windows Explorer like software program (S4).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654*c*4 is executed. In the present embodiment, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (FIG. 1) at the time Language Text Data Displaying Software For Explorer 20654*c*4 is executed. In the present embodiment, 20154LD is the language text data processed in S4 of the previous paragraph; 20154MN is the language text data processed in S2 of the previous paragraph; and 20154Tr is the language text data processed in S3 of the previous paragraph.

<<Multiple Language Displaying Function—Utilizing German>>

This paragraph illustrates Language Selecting Software 20654*c*1 stored in Multiple Language Displaying Software Storage Area 20654*c* which selects the language utilized to operate Communication Device 200 from a plurality of languages. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654*b*2 (S1), and Displays a list of available languages on LCD 201 (FIG. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S3). Assume that 'German' is selected in S3. CPU 211 then identifies the language table ID corresponding to the language type data in Language Type Data Storage Area 20654*b*2, and stores the language table ID (Language Table #4) in Selected Language Table ID Storage Area 20654*b*4 (S4).

This paragraph illustrates Selected Language Displaying Software 20654*c*2 stored in Multiple Language Displaying Software Storage Area 20654*c* which displays and operates with the language selected in S3 described hereinbefore (i.e., German). In the present embodiment, when Communication Device 200 is powered on (S1), CPU 211 (FIG. 1) of Communication Device 200 retrieves the selected language table ID (Language Table #4) from Selected Language Table ID Storage Area 20654*b*4 (S2). CPU 211 then identifies the storage area corresponding to the language table ID selected in S2 (Language Table #4 Storage Area 20654*b*1*d*) in Language Tables Storage Area 20654*b*1 (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

This paragraph illustrates Language Text Data Displaying Software For Word Processor 20654*c*3*a* stored in Multiple Language Displaying Software Storage Area 20654*c* which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. In the present embodiment, CPU 211 (FIG. 1) of Communication Device 200 executes a word processor in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201 (FIG. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item #8' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #8' indicating 'File' in German at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item #9' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #9' indicating 'Edit' in German at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item #10' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #10' indicating 'View' in German at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item #11' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #11' indicating 'Format' in German at the predetermined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item #12' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #12' indicating 'Tools' in German at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item #13' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #13' indicating 'Window' in German at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item #14' in Language Table #4 Storage Area 20654*b*1*d* and displays the corresponding language text data 'German #14' indicating 'Help' in German at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (FIG. 1) or via voice recognition system thereafter (S9).

This paragraph illustrates the data displayed on LCD 201 (FIG. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654*c*3*a* is implemented. In the present embodiment, the word processor described hereinbefore is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 described hereinbefore are displayed on

Menu Bar **20154**MB and alphanumeric data are input in Alphanumeric Data Input Area **20154**ADIA. In the present embodiment, **20154**MBF is the language text data processed in S2 of the previous paragraph; **20154**MBE is the language text data processed in S3 of the previous paragraph; **20154**MBV is the language text data processed in S4 of the previous paragraph; **20154**MBF is the language text data processed in S5 of the previous paragraph; **20154**MBT is the language text data processed in S6 of the previous paragraph; **20154**MBW is the language text data processed in S7 of the previous paragraph; and **20154**MBH is the language text data processed in S8 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Word Processor **20654**c3b stored in Multiple Language Displaying Software Storage Area **20654**c which displays a prompt on LCD **201** (FIG. **1**) at the time a word processor is closed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** initiates the closing process of the word processor in response to the signal input by the user of Communication Device **200** indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #18' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #18' indicating 'Save' in German at the predetermined location in the word processor (S2). CPU **211** identifies the language item ID 'Language Item #19' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #19' indicating 'Yes' in German at the predetermined location in the word processor (S3). CPU **211** identifies the language item ID 'Language Item #20' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #20' indicating 'No' in German at the predetermined location in the word processor (S4). CPU **211** identifies the language item ID 'Language Item #21' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #21' indicating 'Cancel' in German at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 described hereinbefore is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, assuming that the user of Communication Device **200** intends to save the data (S6), and the data are saved in a predetermined location in RAM **206** (FIG. **1**) (S7). The word processor is closed thereafter (S8).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Word Processor **20654**c3b is implemented. In the present embodiment, Prompt **20154**Pr is displayed on LCD **201** (FIG. **1**) at the time Language Text Data Displaying Software For Word Processor **20654**c3a is closed. In the present embodiment, Prompt **20154**Pr is primarily composed of **20154**PrS, **20154**PrY, **20154**PrN, and **20154**PrC. In the present embodiment, **20154**PrS is the language text data processed in S2 of the previous paragraph; **20154**PrY is the language text data processed in S3 of the previous paragraph; **20154**PrN is the language text data processed in S4 of the previous paragraph; and **20154**PrC is the language text data processed in S5 of the previous paragraph.

This paragraph illustrates Language Text Data Displaying Software For Explorer **20654**c4 stored in Multiple Language Displaying Software Storage Area **20654**c which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories

and the structures thereof is executed. In the present embodiment, CPU **211** (FIG. **1**) of Communication Device **200** executes Windows Explorer like software program in response to the signal input by the user of Communication Device **200** indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD **201** (FIG. **1**), the following steps of S2 through S4 are implemented. Namely, CPU **211** identifies the language item ID 'Language Item #15' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #15' indicating 'My Network' in German at the predetermined location in the Windows Explorer like software program (S2). CPU **211** identifies the language item ID 'Language Item #16' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #16' indicating 'Trash' in German at the predetermined location in the Windows Explorer like software program (S3). CPU **211** identifies the language item ID 'Language Item #17' in Language Table #4 Storage Area **20654**b1d and displays the corresponding language text data 'German #17' indicating 'Local Disk' in German at the predetermined location in the Windows Explorer like software program (S4).

This paragraph illustrates the data displayed on LCD **201** (FIG. **1**) of Communication Device **200** at the time Language Text Data Displaying Software For Explorer **20654**c4 is executed. In the present embodiment, **20154**LD, **20154**MN, and **20154**Tr are displayed on LCD **201** (FIG. **1**) at the time Language Text Data Displaying Software For Explorer **20654**c4 is executed. In the present embodiment, **20154**LD is the language text data processed in S4 of the previous paragraph; **20154**MN is the language text data processed in S2 of the previous paragraph; and **20154**Tr is the language text data processed in S3 of the previous paragraph.

<<Multiple Language Displaying Function—Utilizing Other Languages>>

For the avoidance of doubt, the present function is not limited to select a language, to operate Communication Device **200**, only from the foregoing four languages of English, Japanese, French, and German. The present function is also capable to select a language from Dutch, Chinese, Arabic, Korean, Spanish, Italian, and any other languages existing in this world, in addition to the foregoing four languages.

<<Caller's Information Displaying Function>>

The following paragraphs illustrate the Caller's Information displaying function which displays the Information regarding the caller (e.g., name, phone number, email address, and home address, etc.) on LCD **201** (FIG. **1**) when Communication Device **200** is utilized as a 'TV phone'.

The first set of paragraphs hereinafter illustrate the data and software programs stored in RAM **206** (FIG. **1**) of Caller's Device, a Communication Device **200**, utilized by the caller.

The second set of paragraphs hereinafter illustrate the data and software programs stored in RAM **206** (FIG. **1**) of Callee's Device, a Communication Device **200**, utilized by the callee.

The third set of paragraphs hereinafter illustrate the data and software programs stored in Host H.

This paragraph illustrates the storage area included in RAM **206** (FIG. **1**) of Caller's Device. In the present embodiment, RAM **206** of Caller's Device includes Caller's Information Displaying Information Storage Area **20655**a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Caller's Information Displaying Information Storage Area 20655a. In the present embodiment, Caller's Information Displaying Information Storage Area 20655a includes Caller's Information Displaying Data Storage Area 20655b and Caller's Information Displaying Software Storage Area 20655c. Caller's Information Displaying Data Storage Area 20655b stores the data necessary to implement the present function on the side of Caller's Device, such as the ones described hereinafter. Caller's Information Displaying Software Storage Area 20655c stores the software programs necessary to implement the present function on the side of Caller's Device, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Caller's Information Displaying Data Storage Area 20655b. In the present embodiment, Caller's Information Displaying Data Storage Area 20655b includes Caller's Audiovisual Data Storage Area 20655b1, Callee's Audiovisual Data Storage Area 20655b2, Caller's Personal Data Storage Area 20655b3, Callee's Personal Data Storage Area 20655b4, Caller's Calculated GPS Data Storage Area 20655b5, Callee's Calculated GPS Data Storage Area 20655b6, Caller's Map Data Storage Area 20655b7, Callee's Map Data Storage Area 20655b8, and Work Area 20655b9. Caller's Audiovisual Data Storage Area 20655b1 stores the data described hereinafter. Callee's Audiovisual Data Storage Area 20655b2 stores the data described hereinafter. Caller's Personal Data Storage Area 20655b3 stores the data described hereinafter. Callee's Personal Data Storage Area 20655b4 stores the data described hereinafter. Caller's Calculated GPS Data Storage Area 20655b5 stores the caller's calculated GPS data which represents the current geographic location of Caller's Device in (x, y, z) format. Callee's Calculated GPS Data Storage Area 20655b6 stores the callee's calculated GPS data which represents the current geographic location of Callee's Device in (x, y, z) format. Caller's Map Data Storage Area 20655b7 stores the map data representing the surrounding area of the location indicated by the caller's calculated GPS data. Callee's Map Data Storage Area 20655b8 stores the map data representing the surrounding area of the location indicated by the callee's calculated GPS data. Work Area 20655b9 is a storage area utilized to perform calculation and to temporarily store data.

This paragraph illustrates the storage areas included in Caller's Audiovisual Data Storage Area 20655b1. In the present embodiment, Caller's Audiovisual Data Storage Area 20655b1 includes Caller's Audio Data Storage Area 20655b1a and Caller's Visual Data Storage Area 20655b1b. Caller's Audio Data Storage Area 20655b1a stores the caller's audio data which represents the audio data input via Microphone 215 (FIG. 1) of Caller's Device. Caller's Visual Data Storage Area 20655b1b stores the caller's visual data which represents the visual data input via CCD Unit 214 (FIG. 1) of Caller's Device.

This paragraph illustrates the storage areas included in Callee's Audiovisual Data Storage Area 20655b2. In the present embodiment, Callee's Audiovisual Data Storage Area 20655b2 includes Callee's Audio Data Storage Area 20655b2a and Callee's Visual Data Storage Area 20655b2b. Callee's Audio Data Storage Area 20655b2a stores the callee's audio data which represents the audio data sent from Callee's Device. Callee's Visual Data Storage Area 20655b2b stores the callee's visual data which represents the visual data sent from Callee's Device.

This paragraph illustrates the data stored in Caller's Personal Data Storage Area 20655b3. In the present embodiment, Caller's Personal Data Storage Area 20655b3 com-

prises two columns, i.e., 'Caller's Personal Data' and 'Permitted Caller's Personal Data Flag'. Column 'Caller's Personal Data' stores the caller's personal data which represent the personal data of the caller. Column 'Permitted Caller's Personal Data Flag' stores the permitted caller's personal data flag and each permitted caller's personal data flag represents whether the corresponding caller's personal data is permitted to be displayed on Callee's Device. The permitted caller's personal data flag is represented by either '1' or '0' wherein '1' indicates that the corresponding caller's personal data is permitted to be displayed on Callee's Device, and '0' indicates that the corresponding caller's personal data is not permitted to be displayed on Callee's Device. In the present embodiment, Caller's Personal Data Storage Area 20655b3 stores the following data: the caller's name and the corresponding permitted caller's personal data flag '1'; the caller's phone number and the corresponding permitted caller's personal data flag '1'; the caller's email address and the corresponding permitted caller's personal data flag '1'; the caller's home address and the corresponding permitted caller's personal data flag '1'; the caller's business address and the corresponding permitted caller's personal data flag '0'; the caller's title and the corresponding permitted caller's personal data flag '0'; the caller's hobby and the corresponding permitted caller's personal data flag '0'; the caller's blood type and the corresponding permitted caller's personal data flag '0'; the caller's gender and the corresponding permitted caller's personal data flag '0'; the caller's age and the corresponding permitted caller's personal data flag '0'; and caller's date of birth and the corresponding permitted caller's personal data flag '0'.

This paragraph illustrates the data stored in Callee's Personal Data Storage Area 20655b4. In the present embodiment, Callee's Personal Data Storage Area 20655b4 stores the callee's personal data which represent the personal data of the callee which are displayed on LCD 201 (FIG. 1) of Caller's Device. In the present embodiment, Callee's Personal Data Storage Area 20655b4 stores the callee's name and phone number.

This paragraph illustrates the software programs stored in Caller's Information Displaying Software Storage Area 20655c. In the present embodiment, Caller's Information Displaying Software Storage Area 20655c stores Permitted Caller's Personal Data Selecting Software 20655c1, Dialing Software 20655c2, Caller's Device Pin-pointing Software 20655c3, Map Data Sending/Receiving Software 20655c4, Caller's Audiovisual Data Collecting Software 20655c5, Caller's Information Sending/Receiving Software 20655c6, Callee's Information Sending/Receiving Software 20655c6a, Permitted Callee's Personal Data Displaying Software 20655c7, Map Displaying Software 20655c8, Callee's Audio Data Outputting Software 20655c9, and Callee's Visual Data Displaying Software 20655c10. Permitted Caller's Personal Data Selecting Software 20655c1 is the software program described hereinafter. Dialing Software 20655c2 is the software program described hereinafter. Caller's Device Pin-pointing Software 20655c3 is the software program described hereinafter. Map Data Sending/Receiving Software 20655c4 is the software program described hereinafter. Caller's Audiovisual Data Collecting Software 20655c5 is the software program described hereinafter. Caller's Information Sending/Receiving Software 20655c6 is the software program described hereinafter. Callee's Information Sending/Receiving Software 20655c6a is the software program described hereinafter. Permitted Callee's Personal Data Displaying Software

20655c7 is the software program described hereinafter. Map Displaying Software 20655c8 is the software program described hereinafter. Callee's Audio Data Outputting Software 20655c9 is the software program described hereinafter. Callee's Visual Data Displaying Software 20655c10 is the software program described hereinafter.

This paragraph illustrates the storage area included in RAM 206A (FIG. 1) of Callee's Device. In the present embodiment, RAM 206A of Callee's Device includes Callee's Information Displaying Information Storage Area 20655aA of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Callee's Information Displaying Information Storage Area 20655aA. In the present embodiment, Callee's Information Displaying Information Storage Area 20655aA includes Callee's Information Displaying Data Storage Area 20655bA and Callee's Information Displaying Software Storage Area 20655cA. Callee's Information Displaying Data Storage Area 20655bA stores the data necessary to implement the present function on the side of Callee's Device, such as the ones described hereinafter. Callee's Information Displaying Software Storage Area 20655cA stores the software programs necessary to implement the present function on the side of Callee's Device, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Callee's Information Displaying Data Storage Area 20655bA. In the present embodiment, Callee's Information Displaying Data Storage Area 20655bA includes Caller's Audiovisual Data Storage Area 20655b1A, Callee's Audiovisual Data Storage Area 20655b2A, Caller's Personal Data Storage Area 20655b3A, Callee's Personal Data Storage Area 20655b4A, Caller's Calculated GPS Data Storage Area 20655b5A, Callee's Calculated GPS Data Storage Area 20655b6A, Caller's Map Data Storage Area 20655b7A, Callee's Map Data Storage Area 20655b8A, and Work Area 20655b9A. Caller's Audiovisual Data Storage Area 20655b1A stores the data described hereinafter. Callee's Audiovisual Data Storage Area 20655b2A stores the data described hereinafter. Caller's Personal Data Storage Area 20655b3A stores the data described hereinafter. Callee's Personal Data Storage Area 20655b4A stores the data described hereinafter. Caller's Calculated GPS Data Storage Area 20655b5A stores the caller's calculated GPS data which represents the current geographic location of Caller's Device in (x, y, z) format. Callee's Calculated GPS Data Storage Area 20655b6A stores the callee's calculated GPS data which represents the current geographic location of Callee's Device in (x, y, z) format. Caller's Map Data Storage Area 20655b7A stores the map data representing the surrounding area of the location indicated by the caller's calculated GPS data. Callee's Map Data Storage Area 20655b8A stores the map data representing the surrounding area of the location indicated by the callee's calculated GPS data. Work Area 20655b9A is a storage area utilized to perform calculation and to temporarily store data.

This paragraph illustrates the storage areas included in Caller's Audiovisual Data Storage Area 20655b1A. In the present embodiment, Caller's Audiovisual Data Storage Area 20655b1A includes Caller's Audio Data Storage Area 20655b1aA and Caller's Visual Data Storage Area 20655b1bA. Caller's Audio Data Storage Area 20655b1aA stores the caller's audio data which represents the audio data sent from Caller's Device in a wireless fashion. Caller's Visual Data Storage Area 20655b1bA stores the caller's

visual data which represents the visual data input sent from Caller's Device in a wireless fashion.

This paragraph illustrates the storage areas included in Callee's Audiovisual Data Storage Area 20655b2A. In the present embodiment, Callee's Audiovisual Data Storage Area 20655b2A includes Callee's Audio Data Storage Area 20655b2aA and Callee's Visual Data Storage Area 20655b2bA. Callee's Audio Data Storage Area 20655b2aA stores the callee's audio data which represents the audio data input via Microphone 215 (FIG. 1) of Callee's Device. Callee's Visual Data Storage Area 20655b2bA stores the callee's visual data which represents the visual data input via CCD Unit 214 (FIG. 1) of Callee's Device.

This paragraph illustrates the data stored in Caller's Personal Data Storage Area 20655b3A. In the present embodiment, Caller's Personal Data Storage Area 20655b3A stores the caller's personal data which represent the personal data of the caller which are displayed on LCD 201 (FIG. 1) of Caller's Device. In the present embodiment, Caller's Personal Data Storage Area 20655b3A stores the caller's name, phone number, email address, and home address.

This paragraph illustrates the data stored in Callee's Personal Data Storage Area 20655b4A. In the present embodiment, Callee's Personal Data Storage Area 20655b4A comprises two columns, i.e., 'Callee's Personal Data' and 'Permitted Callee's Personal Data Flag'. Column 'Callee's Personal Data' stores the callee's personal data which represent the personal data of the callee. Column 'Permitted Callee's Personal Data Flag' stores the permitted callee's personal data flag and each permitted callee's personal data flag represents whether the corresponding callee's personal data is permitted to be displayed on Caller's Device. The permitted callee's personal data flag is represented by either '1' or '0' wherein '1' indicates that the corresponding callee's personal data is permitted to be displayed on Caller's Device, and '0' indicates that the corresponding callee's personal data is not permitted to be displayed on Caller's Device. In the present embodiment, Callee's Personal Data Storage Area 20655b4A stores the following data: callee's name and the corresponding permitted callee's personal data flag '1'; the callee's phone number and the corresponding permitted callee's personal data flag '1'; the callee's email address and the corresponding permitted caller's personal data flag '0'; the callee's home address and the corresponding permitted callee's personal data flag '0'; the callee's business address and the corresponding permitted callee's personal data flag '0'; the callee's title and the corresponding permitted callee's personal data flag '0'; the callee's hobby and the corresponding permitted callee's personal data flag '0'; the callee's blood type and the corresponding permitted callee's personal data flag '0'; the callee's gender and the corresponding permitted callee's personal data flag '0'; the callee's age and the corresponding permitted callee's personal data flag '0'; and callee's date of birth and the corresponding permitted callee's personal data flag '0'.

This paragraph illustrates the software programs stored in Callee's Information Displaying Software Storage Area 20655cA. In the present embodiment, Callee's Information Displaying Software Storage Area 20655cA stores Permitted Callee's Personal Data Selecting Software 20655c1A, Dialing Software 20655c2A, Callee's Device Pin-pointing Software 20655c3A, Map Data Sending/Receiving Software 20655c4A, Callee's Audiovisual Data Collecting Software 20655c5A, Callee's Information Sending/Receiving Software 20655c6A, Caller's Information Sending/Receiving

Software **20655***c*6*a*A, Permitted Caller's Personal Data Displaying Software **20655***c*7A, Map Displaying Software **20655***c*8A, Caller's Audio Data Outputting Software **20655***c*9A, and Caller's Visual Data Displaying Software **20655***c*10A. Permitted Callee's Personal Data Selecting Software **20655***c*1A is the software program described hereinafter. Dialing Software **20655***c*2A is the software program described hereinafter. Callee's Device Pin-pointing Software **20655***c*3A is the software program described hereinafter. Map Data Sending/Receiving Software **20655***c*4A is the software program described hereinafter. Callee's Audiovisual Data Collecting Software **20655***c*5A is the software program described hereinafter. Callee's Information Sending/Receiving Software **20655***c*6A is the software program described hereinafter. Caller's Information Sending/Receiving Software **20655***c*6*a*A is the software program described hereinafter. Permitted Caller's Personal Data Displaying Software **20655***c*7A is the software program described hereinafter. Map Displaying Software **20655***c*8A is the software program described hereinafter. Caller's Audio Data Outputting Software **20655***c*9A is the software program described hereinafter. Caller's Visual Data Displaying Software **20655***c*10A is the software program described hereinafter.

This paragraph illustrates the storage area included in Host H. In the present embodiment, Host H includes Caller/Callee Information Storage Area H**55***a* of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Caller/Callee Information Storage Area H**55***a*. In the present embodiment, Caller/Callee Information Storage Area H**55***a* includes Caller/Callee Data Storage Area H**55***b* and Caller/Callee Software Storage Area H**55***c*. Caller/Callee Data Storage Area H**55***b* stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. Caller/Callee Software Storage Area H**55***c* stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Caller/Callee Data Storage Area H**55***b*. In the present embodiment, Caller/Callee Data Storage Area H**55***b* includes Caller's Information Storage Area H**55***b*1, Callee's Information Storage Area H**55***b*2, Map Data Storage Area H**55***b*3, Work Area h**55***b*4, Caller's Calculated GPS Data Storage Area H**55***b*5, and Callee's Calculated GPS Data Storage Area H**55***b*6. Caller's Information Storage Area H**55***b*1 stores the Caller's Information received Caller's Device. Callee's Information Storage Area H**55***b*2 stores the Callee's Information received Callee's Device. Map Data Storage Area H**55***b*3 stores the map data received from Caller's Device and Callee's Device. Work Area H**55***b*4 is a storage area utilized to perform calculation and to temporarily store data. Caller's Calculated GPS Data Storage Area H**55***b*5 stores the caller's calculated GPS data. Callee's Calculated GPS Data Storage Area H**55***b*6 stores the callee's calculated GPS data.

This paragraph illustrates the software programs stored in Caller/Callee Software Storage Area H**55***c*. In the present embodiment, Caller/Callee Software Storage Area H**55***c* stores Dialing Software H**55***c*2, Caller's Device Pin-pointing Software H**55***c*3, Callee's Device Pin-pointing Software H**55***c*3*a*, Map Data Sending/Receiving Software H**55***c*4, Caller's Information Sending/Receiving Software H**55***c*6, and Callee's Information Sending/Receiving Software H**55***c*6*a*. Dialing Software H**55***c*2 is the software program described hereinafter. Caller's Device Pin-pointing Software

H**55***c*3 is the software program described hereinafter. Callee's Device Pin-pointing Software H**55***c*3*a* is the software program described hereinafter. Map Data Sending/Receiving Software H**55***c*4 is the software program described hereinafter. Caller's Information Sending/Receiving Software H**55***c*6 is the software program described hereinafter. Callee's Information Sending/Receiving Software H**55***c*6*a* is the software program described hereinafter.

The following paragraphs primarily illustrate the sequence to output the Caller's Information (which is defined hereinafter) from Callee's Device.

This paragraph illustrates Permitted Caller's Personal Data Selecting Software **20655***c*1 stored in Caller's Information Displaying Software Storage Area **20655***c* of Caller's Device, which selects the permitted caller's personal data to be displayed on LCD **201** (FIG. **1**) of Callee's Device. In the present embodiment, CPU **211** (FIG. **1**) of Caller's Device retrieves all of the caller's personal data from Caller's Personal Data Storage Area **20655***b*3 (S1). CPU **211** then displays a list of caller's personal data on LCD **201** (FIG. **1**) (S2). The caller selects, by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, the caller's personal data permitted to be displayed on Callee's Device (S3). The permitted caller's personal data flag of the data selected in S3 is registered as '1' (S4).

This paragraph illustrates Dialing Software H**55***c*2 stored in Caller/Callee Software Storage Area H**55***c* of Host H, Dialing Software **20655***c*2 stored in Caller's Information Displaying Software Storage Area **20655***c* of Caller's Device, and Dialing Software **20655***c*2A stored in Callee's Information Displaying Software Storage Area **20655***c*A of Callee's Device, which enables to connect between Caller's Device and Callee's Device via Host H in a wireless fashion. In the present embodiment, a connection is established between Caller's Device and Host H (S1). Next, a connection is established between Host H and Callee's Device (S2). As a result, Caller's Device and Callee's Device are able to exchange audiovisual data, text data, and various types of data with each other. The connection is maintained until Caller's Device, Host H, or Callee's Device terminates the connection.

This paragraph illustrates Caller's Device Pin-pointing Software H**55***c*3 stored in Caller/Callee Software Storage Area H**55***c* of Host H and Caller's Device Pin-pointing Software **20655***c*3 stored in Caller's Information Displaying Software Storage Area **20655***c* of Caller's Device, which identifies the current geographic location of Caller's Device. In the present embodiment, CPU **211** (FIG. **1**) of Caller's Device collects the GPS raw data from the near base stations (S1). CPU **211** sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the caller's calculated GPS data by referring to the raw GPS data (S4). Host H stores the caller's calculated GPS data in Caller's Calculated GPS Data Storage Area H**55***b*5 (S5). Host H then retrieves the caller's calculated GPS data from Caller's Calculated GPS Data Storage Area H**55***b*5 (S6), and sends the data to Caller's Device (S7). Upon receiving the caller's calculated GPS data from Host H (S8), CPU **211** stores the data in Caller's Calculated GPS Data Storage Area **20655***b*5 (S9). Here, the GPS raw data are the primitive data utilized to produce the caller's calculated GPS data, and the caller's calculated GPS data is the data representing the location of Caller's Device in (x, y, z) format. The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates another embodiment of the sequence described hereinbefore in which the entire process is performed solely by Caller's Device Pin-pointing Soft-

ware 20655*c*3 stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device collects the raw GPS data from the near base stations (S1). CPU 211 then produces the caller's calculated GPS data by referring to the raw GPS data (S2), and stores the caller's calculated GPS data in Caller's Calculated GPS Data Storage Area 20655*b*5 (S3). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Map Data Sending/Receiving Software H55*c*4 stored in Caller/Callee Software Storage Area H55*c* of Host H and Map Data Sending/Receiving Software 20655*c*4 stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device, which sends and receives the map data. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the caller's calculated GPS data from Caller's Calculated GPS Data Storage Area 20655*b*5 (S1), and sends the data to Host H (S2). Upon receiving the calculated GPS data from Caller's Device (S3), Host H identifies the map data in Map Data Storage Area H55*b*3 (S4). Here, the map data represents the surrounding area of the location indicated by the caller's calculated GPS data. Host H retrieves the map data from Map Data Storage Area H55*b*3 (S5), and sends the data to Caller's Device (S6). Upon receiving the map data from Host H (S7), Caller's Device stores the data in Caller's Map Data Storage Area 20655*b*7 (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Caller's Audiovisual Data Collecting Software 20655*c*5 stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device, which collects the audiovisual data of the caller to be sent to Callee's Device via Antenna 218 (FIG. 1) thereof. CPU 211 (FIG. 1) of Caller's Device retrieves the caller's audiovisual data from CCD Unit 214 and Microphone 215 (S1). CPU 211 then stores the caller's audio data in Caller's Audio Data Storage Area 20655*b*1*a* (S2), and the caller's visual data in Caller's Visual Data Storage Area 20655*b*1*b* (S3). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Caller's Information Sending/Receiving Software H55*c*6 stored in Caller/Callee Software Storage Area H55*c* of Host H and Caller's Information Sending/Receiving Software 20655*c*6 stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device, which sends and receives the Caller's Information (which is defined hereinafter) between Caller's Device and Host H. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the permitted caller's personal data from Caller's Personal Data Storage Area 20655*b*3 (S1). CPU 211 retrieves the caller's calculated GPS data from Caller's Calculated GPS Data Storage Area 20655*b*5 (S2). CPU 211 retrieves the map data from Caller's Map Data Storage Area 20655*b*7 (S3). CPU 211 retrieves the caller's audio data from Caller's Audio Data Storage Area 20655*b*1*a* (S4). CPU 211 retrieves the caller's visual data from Caller's Visual Data Storage Area 20655*b*1*b* (S5). CPU 211 then sends the data retrieved in S1 through S5 (collectively defined as the 'Caller's Information' hereinafter) to Host H (S6). Upon receiving the Caller's Information from Caller's Device (S7), Host H stores the Caller's Information in Caller's Information Storage Area H55*b*1 (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Caller's Information Sending/Receiving Software H55*c*6 stored in Caller/Callee Software Storage Area H55*c* of Host H and Caller's Information

Sending/Receiving Software 20655*c*6*a*A stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device, which sends and receives the Caller's Information between Host H and Callee's Device. In the present embodiment, Host H retrieves the Caller's Information from Caller's Information Storage Area H55*b*1 (S1), and sends the Caller's Information to Callee's Device (S2). CPU 211 (FIG. 1) of Callee's Device receives the Caller's Information from Host H (S3). CPU 211 stores the permitted caller's personal data in Caller's Personal Data Storage Area 20655*b*3A (S4). CPU 211 stores the caller's calculated GPS data in Caller's Calculated GPS Data Storage Area 20655*b*5A (S5). CPU 211 stores the map data in Caller's Map Data Storage Area 20655*b*7A (S6). CPU 211 stores the caller's audio data in Caller's Audio Data Storage Area 20655*b*1*a*A (S7). CPU 211 stores the caller's visual data in Caller's Visual Data Storage Area 20655*b*1*b*A (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Permitted Caller's Personal Data Displaying Software 20655*c*7A stored in Callee's Information Displaying Software Storage Area 20655*c*A of Callee's Device, which displays the permitted caller's personal data on LCD 201 (FIG. 1) of Callee's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the permitted caller's personal data from Caller's Personal Data Storage Area 20655*b*3A (S1). CPU 211 then displays the permitted caller's personal data on LCD 201 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Map Displaying Software 20655*c*8A stored in Callee's Information Displaying Software Storage Area 20655*c*A of Callee's Device, which displays the map representing the surrounding area of the location indicated by the caller's calculated GPS data. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the caller's calculated GPS data from Caller's Calculated GPS Data Storage Area 20655*b*5A (S1). CPU 211 then retrieves the map data from Caller's Map Data Storage Area 20655*b*7A (S2), and arranges on the map data the caller's current location icon in accordance with the caller's calculated GPS data (S3). Here, the caller's current location icon is an icon which represents the location of Caller's Device in the map data. The map with the caller's current location icon is displayed on LCD 201 (FIG. 1) (S4). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Caller's Audio Data Outputting Software 20655*c*9A stored in Caller's Information Displaying Software Storage Area 20655*c* of Caller's Device, which outputs the caller's audio data from Speaker 216 (FIG. 1) of Callee's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the caller's audio data from Caller's Audio Data Storage Area 20655*b*1*a*A (S1). CPU 211 then outputs the caller's audio data from Speaker 216 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Caller's Visual Data Displaying Software 20655*c*10A stored in Callee's Information Displaying Software Storage Area 20655*c*A of Callee's Device, which displays the caller's visual data on LCD 201 (FIG. 1) of Callee's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the caller's visual data from Caller's Visual Data Storage Area 20655*b*1*b*A (S1). CPU 211 then displays the caller's visual data on LCD 201 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

The following paragraphs primarily illustrate the sequence to output the Callee's Information (which is defined hereinafter) from Caller's Device.

This paragraph illustrates Permitted Callee's Personal Data Selecting Software 20655c1A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which selects the permitted callee's personal data to be displayed on LCD 201 (FIG. 1) of Caller's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves all of the callee's personal data from Callee's Personal Data Storage Area 20655b4A (S1). CPU 211 then displays a list of callee's personal data on LCD 201 (FIG. 1) (S2). The callee selects, by utilizing Input Device 210 (FIG. 1) or via voice recognition system, the callee's personal data permitted to be displayed on Caller's Device (S3). The permitted callee's personal data flag of the data selected in S3 is registered as '1' (S4).

This paragraph illustrates Dialing Software H55c2 stored in Caller/Callee Software Storage Area H55c of Host H, Dialing Software 20655c2A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, and Dialing Software 20655c2 stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which enables to connect between Callee's Device and Caller's Device via Host H in a wireless fashion. In the present embodiment, a connection is established between Callee's Device and Host H (S1). Next, a connection is established between Host H and Caller's Device (S2). As a result, Callee's Device and Caller's Device are able to exchange audiovisual data, text data, and various types of data with each other. The sequence described in the present paragraph is not necessarily implemented if the connection between Caller's Device and Callee's Device is established as described hereinbefore. The sequence described in the present paragraph may be implemented if the connection is accidentally terminated by Callee's Device and the connection process is initiated by Callee's Device.

This paragraph illustrates Callee's Device Pin-pointing Software H55c3a stored in Caller/Callee Software Storage Area H55c of Host H and Callee's Device Pin-pointing Software 20655c3A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which identifies the current geographic location of Callee's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device collects the GPS raw data from the near base stations (S1). CPU 211 sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the callee's calculated GPS data by referring to the raw GPS data (S4). Host H stores the callee's calculated GPS data in Callee's Calculated GPS Data Storage Area H55b6 (S5). Host H then retrieves the callee's calculated GPS data from Callee's Calculated GPS Data Storage Area H55b6 (S6), and sends the data to Callee's Device (S7). Upon receiving the callee's calculated GPS data from Host H (S8), CPU 211 stores the data in Callee's Calculated GPS Data Storage Area 20655b6A (S9). Here, the GPS raw data are the primitive data utilized to produce the callee's calculated GPS data, and the callee's calculated GPS data is the data representing the location of Callee's Device in (x, y, z) format. The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates another embodiment of the sequence described hereinbefore in which the entire process is performed solely by Callee's Device Pin-pointing Software 20655c3A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device

collects the raw GPS data from the near base stations (S1). CPU 211 then produces the callee's calculated GPS data by referring to the raw GPS data (S2), and stores the callee's calculated GPS data in Callee's Calculated GPS Data Storage Area 20655b6A (S3). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Map Data Sending/Receiving Software H55c4 stored in Caller/Callee Software Storage Area H55c of Host H and Map Data Sending/Receiving Software 20655c4A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which sends and receives the map data. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the callee's calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6A (S1), and sends the data to Host H (S2). Upon receiving the calculated GPS data from Callee's Device (S3), Host H identifies the map data in Map Data Storage Area H55b3 (S4). Here, the map data represents the surrounding area of the location indicated by the callee's calculated GPS data. Host H retrieves the map data from Map Data Storage Area H55b3 (S5), and sends the data to Callee's Device (S6). Upon receiving the map data from Host H (S7), Callee's Device stores the data in Callee's Map Data Storage Area 20655b8A (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Callee's Audiovisual Data Collecting Software 20655c5A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which collects the audiovisual data of the callee to be sent to Caller's Device via Antenna 218 (FIG. 1) thereof. CPU 211 (FIG. 1) of Callee's Device retrieves the callee's audiovisual data from CCD Unit 214 and Microphone 215 (S1). CPU 211 then stores the callee's audio data in Callee's Audio Data Storage Area 20655b2aA (S2), and the callee's visual data in Callee's Visual Data Storage Area 20655b2bA (S3). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Callee's Information Sending/Receiving Software H55c6a stored in Caller/Callee Software Storage Area H55c of Host H and Callee's Information Sending/Receiving Software 20655c6A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which sends and receives the Callee's Information (which is defined hereinafter) between Callee's Device and Host H. In the present embodiment, CPU 211 (FIG. 1) of Callee's Device retrieves the permitted callee's personal data from Callee's Personal Data Storage Area 20655b4A (S1). CPU 211 retrieves the callee's calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6A (S2). CPU 211 retrieves the map data from Callee's Map Data Storage Area 20655b8A (S3). CPU 211 retrieves the callee's audio data from Callee's Audio Data Storage Area 20655b2aA (S4). CPU 211 retrieves the callee's visual data from Callee's Visual Data Storage Area 20655b2bA (S5). CPU 211 then sends the data retrieved in S1 through S5 (collectively defined as the 'Callee's Information' hereinafter) to Host H (S6). Upon receiving the Callee's Information from Callee's Device (S7), Host H stores the Callee's Information in Callee's Information Storage Area H55b2 (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Callee's Information Sending/Receiving Software H55c6a stored in Caller/Callee Software Storage Area H55c of Host H and Callee's Information Sending/Receiving Software 20655c6a stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which sends and receives the Callee's

Information between Host H and Caller's Device. In the present embodiment, Host H retrieves the Callee's Information from Callee's Information Storage Area H55b2 (S1), and sends the Callee's Information to Caller's Device (S2). CPU 211 (FIG. 1) of Caller's Device receives the Callee's Information from Host H (S3). CPU 211 stores the permitted callee's personal data in Callee's Personal Data Storage Area 20655b4 (S4). CPU 211 stores the callee's calculated GPS data in Callee's Calculated GPS Data Storage Area 20655b6 (S5). CPU 211 stores the map data in Callee's Map Data Storage Area 20655b8 (S6). CPU 211 stores the callee's audio data in Callee's Audio Data Storage Area 20655b2a (S7). CPU 211 stores the callee's visual data in Callee's Visual Data Storage Area 20655b2b (S8). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Permitted Callee's Personal Data Displaying Software 20655c7 stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which displays the permitted callee's personal data on LCD 201 (FIG. 1) of Caller's Device. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the permitted callee's personal data from Callee's Personal Data Storage Area 20655b4 (S1). CPU 211 then displays the permitted callee's personal data on LCD 201 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Map Displaying Software 20655c8 stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which displays the map representing the surrounding area of the location indicated by the callee's calculated GPS data. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the callee's calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6 (S1). CPU 211 then retrieves the map data from Callee's Map Data Storage Area 20655b8 (S2), and arranges on the map data the callee's current location icon in accordance with the callee's calculated GPS data (S3). Here, the callee's current location icon is an icon which represents the location of Callee's Device in the map data. The map with the callee's current location icon is displayed on LCD 201 (FIG. 1) (S4). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Callee's Audio Data Outputting Software 20655c9 stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which outputs the callee's audio data from Speaker 216 (FIG. 1) of Caller's Device. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the callee's audio data from Callee's Audio Data Storage Area 20655b2a (S1). CPU 211 then outputs the caller's audio data from Speaker 216 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

This paragraph illustrates Callee's Visual Data Displaying Software 20655c10 stored in Caller's Information Displaying Software Storage Area 20655c of Caller's Device, which displays the callee's visual data on LCD 201 (FIG. 1) of Caller's Device. In the present embodiment, CPU 211 (FIG. 1) of Caller's Device retrieves the callee's visual data from Callee's Visual Data Storage Area 20655b2b (S1). CPU 211 then displays the callee's visual data on LCD 201 (FIG. 1) (S2). The sequence described in the present paragraph is repeated periodically.

<<Communication Device Remote Controlling Function (by Phone)>>

The following paragraphs illustrate the communication device remote controlling function (by phone) which enables the user of Communication Device 200 to remotely control Communication Device 200 via conventional telephone Phone PH.

This paragraph illustrates the storage areas included in Host H. In this embodiment, Host H includes Communication Device Controlling Information Storage Area H57a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Information Storage Area H57a. In this embodiment, Communication Device Controlling Information Storage Area H57a includes Communication Device Controlling Data Storage Area H57b and Communication Device Controlling Software Storage Area H57c. Communication Device Controlling Data Storage Area H57b stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. Communication Device Controlling Software Storage Area H57c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Data Storage Area H57b. In this embodiment, Communication Device Controlling Data Storage Area H57b includes Password Data Storage Area H57b1, Phone Number Data Storage Area H57b2, Audio Data Storage Area H57b3, and Work Area H57b4. Password Data Storage Area H57b1 stores the data described hereinafter. Phone Number Data Storage Area H57b2 stores the data described hereinafter. Audio Data Storage Area H57b3 stores the data described hereinafter. Work Area H57b4 is utilized as a work area to perform calculation and to temporarily store data.

This paragraph illustrates the data stored in Password Data Storage Area H57b1. In this embodiment, Password Data Storage Area H57b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data, and each password data represents the password set by the user of the corresponding user ID. Here, each password data is composed of alphanumeric data. In this embodiment, Password Data Storage Area H57b1 stores the following data: the user ID 'User #1' and the corresponding password data 'Password Data #1'; the user ID 'User #2' and the corresponding password data 'Password Data #2'; the user ID 'User #3' and the corresponding password data 'Password Data #3'; the user ID 'User #4' and the corresponding password data 'Password Data #4'; and the user ID 'User #5' and the corresponding password data 'Password Data #5'.

This paragraph illustrates the data stored in Phone Number Data Storage Area H57b2. In this embodiment, Phone Number Data Storage Area H57b2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data, and each phone number data represents the phone number of the user of the corresponding user ID. Here, each phone number data is composed of numeric data. In this embodiment, Phone Number Data Storage Area H57b2 stores the following data: the user ID 'User #1' and the corresponding phone number data 'Phone Number Data #1'; the user ID 'User #2' and the corresponding phone number data 'Phone Number Data #2'; the user ID 'User #3' and the corresponding phone number data 'Phone Number Data #3'; the user ID 'User #4'

and the corresponding phone number data 'Phone Number Data #4'; and the user ID 'User #5' and the corresponding phone number data 'Phone Number Data #5'.

This paragraph illustrates the data stored in Audio Data Storage Area H57b3. In this embodiment, Audio Data Storage Area H57b3 comprises two columns, i.e., 'Audio ID' and 'Audio Data'. Column 'Audio ID' stores the audio IDs, and each audio ID represents the identification of the audio data stored in column 'Audio Data'. Column 'Audio Data' stores the audio data, and each audio data represents a message output from a conventional telephone Phone PH. In this embodiment, Audio Data Storage Area H57b3 stores the following data: the audio ID 'Audio #0' and the corresponding audio data 'Audio Data #0'; the audio ID 'Audio #1' and the corresponding audio data 'Audio Data #1'; the audio ID 'Audio #2' and the corresponding audio data 'Audio Data #2'; the audio ID 'Audio #3' and the corresponding audio data 'Audio Data #3'; the audio ID 'Audio #4' and the corresponding audio data 'Audio Data #4'; the audio ID 'Audio #5' and the corresponding audio data 'Audio Data #5'; and the audio ID 'Audio #6' and the corresponding audio data 'Audio Data #6'. 'Audio Data #0' represents the message: 'To deactivate manner mode, press 1. To deactivate manner mode and ring your mobile phone, press 2. To ring your mobile phone, press 3. To change password of your mobile phone, press 4. To lock your mobile phone, press 5. To power off your mobile phone, press 6.' 'Audio Data #1' represents the message: 'The manner mode has been deactivated.' 'Audio Data #2' represents the message: 'The manner mode has been deactivated and your mobile phone has been rung.' 'Audio Data #3' represents the message: 'Your mobile phone has been rung.' 'Audio Data #4' represents the message: 'The password of your mobile phone has been changed.' 'Audio Data #5' represents the message: 'Your mobile phone has been changed.' 'Audio Data #6' represents the message: 'Your mobile phone has been power-offed.' The foregoing audio data may be recorded in either male's voice or female's voice.

This paragraph illustrates the software programs stored in Communication Device Controlling Software Storage Area H57c. In this embodiment, Communication Device Controlling Software Storage Area H57c stores User Authenticating Software H57c1, Menu Introducing Software H57c2, Line Connecting Software H57c3, Manner Mode Deactivating Software H57c4, Manner Mode Deactivating & Ringing Software H57c5, Ringing Software H57c6, Password Changing Software H57c7, Device Locking Software H57c8, and Power Off Software H57c9. User Authenticating Software H57c1 is the software program described hereinafter. Menu Introducing Software H57c2 is the software program described hereinafter. Line Connecting Software H57c3 is the software program described hereinafter. Manner Mode Deactivating Software H57c4 is the software program described hereinafter. Manner Mode Deactivating & Ringing Software H57c5 is the software program described hereinafter. Ringing Software H57c6 is the software program described hereinafter. Password Changing Software H57c7 is the software program described hereinafter. Device Locking Software H57c8 is the software program described hereinafter. Power Off Software H57c9 is the software program described hereinafter.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1). In this embodiment, RAM 206 includes Communication Device Controlling Information Storage Area 20657a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Information Storage Area 20657a. In this embodiment, Communication Device Controlling Information Storage Area 20657a includes Communication Device Controlling Data Storage Area 20657b and Communication Device Controlling Software Storage Area 20657c. Communication Device Controlling Data Storage Area 20657b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter. Communication Device Controlling Software Storage Area 20657c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter.

The data and/or the software programs stored in Communication Device Controlling Information Storage Area 20657a may be downloaded from Host H.

This paragraph illustrates the storage areas included in Communication Device Controlling Data Storage Area 20657b. In this embodiment, Communication Device Controlling Data Storage Area 20657b includes Password Data Storage Area 20657b1 and Work Area 20657b4. Password Data Storage Area 20657b1 stores the data described hereinafter. Work Area 20657b4 is utilized as a work area to perform calculation and to temporarily store data.

This paragraph illustrates the data stored in Password Data Storage Area 20657b1. In this embodiment, Password Data Storage Area 20657b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data set by the user of Communication Device 200. Here, the password data is composed of alphanumeric data. Assuming that the user ID of Communication Device 200 is 'User #1'. In this embodiment, Password Data Storage Area H57b1 stores the following data: the user ID 'User #1' and the corresponding password data 'Password Data #1'.

This paragraph illustrates the data stored in Phone Number Data Storage Area 20657b2. In this embodiment, Phone Number Data Storage Area 20657b2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user ID of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data which represents the phone number of Communication Device 200. Here, the phone number data is composed of numeric data. In this embodiment, Phone Number Data Storage Area H57b2 stores the following data: the user ID 'User #1' and the corresponding phone number data 'Phone Number Data #1'.

This paragraph illustrates the software programs stored in Communication Device Controlling Software Storage Area 20657c. In this embodiment, Communication Device Controlling Software Storage Area 20657c stores Line Connecting Software 20657c3, Manner Mode Deactivating Software 20657c4, Manner Mode Deactivating & Ringing Software 20657c5, Ringing Software 20657c6, Password Changing Software 20657c7, Device Locking Software 20657c8, and Power Off Software 20657c9. Line Connecting Software 20657c3 is the software program described hereinafter. Manner Mode Deactivating Software 20657c4 is the software program described hereinafter. Manner Mode Deactivating & Ringing Software 20657c5 is the software program described hereinafter. Ringing Software 20657c6 is the software program described hereinafter. Password Changing Software 20657c7 is the software program described hereinafter. Device Locking Software 20657c8 is the software

program described hereinafter. Power Off Software 20657c9 is the software program described hereinafter.

The following paragraphs illustrate the software programs which enables the user of Communication Device 200 to remotely control Communication Device 200 via conventional telephone Phone PH.

This paragraph illustrates User Authenticating Software H57c1 stored in Communication Device Controlling Software Storage Area H57c of Host H, which authenticates the user of Communication Device 200 to implement the present function via Phone PH. In this embodiment, Phone PH calls Host H by dialing the predetermined phone number of Host H (S1). Upon receiving the call from Phone PH (S2) and the line is connected therebetween (S3), the user, by utilizing Phone PH, inputs both his/her password data (S4) and the phone number data of Communication Device 200 (S5). Host H initiates the authentication process by referring to Password Data Storage Area H57b1 and Phone Number Data Storage Area H57b2) (S6). The authentication process is completed (and the sequences described hereafter are enabled thereafter) if the password data and the phone number data described in S4 and S5 match with the data stored in Password Data Storage Area H57b1 and Phone Number Data Storage Area H57b2.

This paragraph illustrates Menu Introducing Software H57c2 stored in Communication Device Controlling Software Storage Area H57c of Host H, which introduces the menu via Phone PH. In this embodiment, Host H retrieves Audio Data #0 from Audio Data Storage Area H57b3 (S1), and sends the data to Phone PH (S2). Upon receiving Audio Data #0 from Host H (S3), Phone PH outputs Audio Data #0 from its speaker (S4). The user presses one of the keys of '1' through '6' wherein the sequences implemented thereafter are described hereinafter (S5).

This paragraph illustrates Line Connecting Software H57c3 stored in Communication Device Controlling Software Storage Area H57c of Host H and Line Connecting Software 20657c3 stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which connect line between Host H and Communication Device 200. In this embodiment, Host H calls Communication Device 200 by retrieving the corresponding phone number data from Phone Number Data Storage Area H57b2 (S1). Upon Communication Device 200 receiving the call from Host H (S2), the line is connected therebetween (S3). For the avoidance of doubt, the line is connected between Host H and Communication Device 200 merely to implement the present function, and a voice communication between human beings is not enabled thereafter.

This paragraph illustrates Manner Mode Deactivating Software H57c4 stored in Communication Device Controlling Software Storage Area H57c of Host H and Manner Mode Deactivating Software 20657c4 stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which deactivate the manner mode of Communication Device 200. Here, Communication Device 200 activates Vibrator 217 (FIG. 1) when Communication Device 200 is in the manner mode and outputs a ringing sound from Speaker 216 (FIG. 1) when Communication Device 200 is not in the manner mode, upon receiving an incoming call. Assume that the user presses key '1' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating command to Communication Device 200 (S3). Upon receiving the manner mode deactivating command from Host H (S4), Communication Device 200 deactivates the manner

mode (S5). Host H retrieves Audio Data #1 from Audio Data Storage Area H57b3 and sends the data to Phone PH (S6). Upon receiving Audio Data #1 from Host H, Phone PH outputs the data from its speaker (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H57c5 and Manner Mode Deactivating & Ringing Software 20657c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter.

This paragraph illustrates Manner Mode Deactivating & Ringing Software H57c5 stored in Communication Device Controlling Software Storage Area H57c of Host H and Manner Mode Deactivating & Ringing Software 20657c5 stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which deactivate the manner mode of Communication Device 200 and outputs a ringing sound thereafter. Assume that the user presses key '2' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating & device ringing command to Communication Device 200 (S3). Upon receiving the manner mode deactivating & device ringing command from Host H (S4), Communication Device 200 deactivates the manner mode (S5) and outputs a ring data from Speaker 216 (S6). Host H retrieves Audio Data #2 from Audio Data Storage Area H57b3 and sends the data to Phone PH (S7). Upon receiving Audio Data #2 from Host H, Phone PH outputs the data from its speaker (S8). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H57c5 and Manner Mode Deactivating & Ringing Software 20657c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

This paragraph illustrates Ringing Software H57c6 stored in Communication Device Controlling Software Storage Area H57c of Host H and Ringing Software 20657c6 stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which output a ringing sound from Speaker 216 (FIG. 1). Assume that the user presses key '3' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a device ringing command to Communication Device 200 (S3). Upon receiving the device ringing command from Host H (S4), Communication Device 200 outputs a ring data from Speaker 216 (S5). Host H retrieves Audio Data #3 from Audio Data Storage Area H57b3 and sends the data to Phone PH (S6). Upon receiving Audio Data #3 from Host H, Phone PH outputs the data from its speaker (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Ringing Software H57c6 and

Ringing Software 20657*c*6 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

This paragraph illustrates Password Changing Software H57*c*7 stored in Communication Device Controlling Software Storage Area H57*c* of Host H and Password Changing Software 20657*c*7 stored in Communication Device Controlling Software Storage Area 20657*c* of Communication Device 200, which change the password necessary to operate Communication Device 200. Assume that the user presses key '4' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). The user then enters a new password data by utilizing Phone PH (S3), which is sent to Communication Device 200 by Host H (S4). Upon receiving the new password data from Host H (S5), Communication Device 200 stores the new password data in Password Data Storage Area 20657*b*1 and the old password data is erased (S6). Host H retrieves Audio Data #4 from Audio Data Storage Area H57*b*3 and sends the data to Phone PH (S7). Upon receiving Audio Data #4 from Host H, Phone PH outputs the data from its speaker (S8).

This paragraph illustrates Device Locking Software H57*c*8 stored in Communication Device Controlling Software Storage Area H57*c* of Host H and Device Locking Software 20657*c*8 stored in Communication Device Controlling Software Storage Area 20657*c* of Communication Device 200, which lock Communication Device 200, i.e., nullify any input signal input via Input Device 210 (FIG. 1). Assume that the user presses key '5' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a device locking command to Communication Device 200 (S3). Upon receiving the device locking command from Host H (S4), Communication Device 200 is locked thereafter, i.e., any input via Input Device 210 is nullified unless a password data matching to the one stored in Password Data Storage Area 20657*b*1 is entered (S5). Host H retrieves Audio Data #5 from Audio Data Storage Area H57*b*3 and sends the data to Phone PH (S6). Upon receiving Audio Data #5 from Host H, Phone PH outputs the data from its speaker (S7).

This paragraph illustrates Power Off Software H57*c*9 stored in Communication Device Controlling Software Storage Area H57*c* of Host H and Power Off Software 20657*c*9 stored in Communication Device Controlling Software Storage Area 20657*c* of Communication Device 200, which turn off the power of Communication Device 200. Assume that the user presses key '6' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a power off command to Communication Device 200 (S3). Upon receiving the power off command from Host H (S4), Communication Device 200 turns off the power of itself (S5). Host H retrieves Audio Data #6 from Audio Data Storage Area H57*b*3 and sends the data to Phone PH (S6). Upon receiving Audio Data #6 from Host H, Phone PH outputs the data from its speaker (S7).

<<Communication Device Remote Controlling Function (by Web)>>

The following paragraphs illustrate the communication device remote controlling function (by web) which enables the user of Communication Device 200 to remotely control Communication Device 200 by an ordinary personal computer (Personal Computer PC) via the Internet, i.e., by accessing a certain web site. Here, Personal Computer PC

may be any type of personal computer, including a desktop computer, lap top computer, and PDA.

This paragraph illustrates the storage areas included in Host H. In the present embodiment, Host H includes Communication Device Controlling Information Storage Area H58*a* of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Information Storage Area H58*a*. In the present embodiment, Communication Device Controlling Information Storage Area H58*a* includes Communication Device Controlling Data Storage Area H58*b* and Communication Device Controlling Software Storage Area H58*c*. Communication Device Controlling Data Storage Area H58*b* stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. Communication Device Controlling Software Storage Area H58*c* stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Data Storage Area H58*b*. In the present embodiment, Communication Device Controlling Data Storage Area H58*b* includes Password Data Storage Area H58*b*1, Phone Number Data Storage Area H58*b*2, Web Display Data Storage Area H58*b*3, and Work Area H58*b*4. Password Data Storage Area H58*b*1 stores the data described hereinafter. Phone Number Data Storage Area H58*b*2 stores the data described hereinafter. Web Display Data Storage Area H58*b*3 stores the data described hereinafter. Work Area H58*b*4 is utilized as a work area to perform calculation and to temporarily store data.

This paragraph illustrates the data stored in Password Data Storage Area H58*b*1. In the present embodiment, Password Data Storage Area H58*b*1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data, and each password data represents the password set by the user of the corresponding user ID. Here, each password data is composed of alphanumeric data. In the present embodiment, Password Data Storage Area H58*b*1 stores the following data: the user ID 'User #1' and the corresponding password data 'Password Data #1'; the user ID 'User #2' and the corresponding password data 'Password Data #2'; the user ID 'User #3' and the corresponding password data 'Password Data #3'; the user ID 'User #4' and the corresponding password data 'Password Data #4'; and the user ID 'User #5' and the corresponding password data 'Password Data #5'.

This paragraph illustrates the data stored in Phone Number Data Storage Area H58*b*2. In the present embodiment, Phone Number Data Storage Area H58*b*2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data, and each phone number data represents the phone number of the user of the corresponding user ID. Here, each phone number data is composed of numeric data. In the present embodiment, Phone Number Data Storage Area H58*b*2 stores the following data: the user ID 'User #1' and the corresponding phone number data 'Phone Number Data #1'; the user ID 'User #2' and the corresponding phone number data 'Phone Number Data #2'; the user ID 'User #3' and the corresponding phone number data 'Phone Number Data #3'; the user ID 'User #4' and the corresponding phone

number data 'Phone Number Data #4'; and the user ID 'User #5' and the corresponding phone number data 'Phone Number Data #5'.

This paragraph illustrates the data stored in Web Display Data Storage Area H58*b*3. In the present embodiment, Web Display Data Storage Area H58*b*3 comprises two columns, i.e., 'Web Display ID' and 'Web Display Data'. Column 'Web Display ID' stores the web display IDs, and each web display ID represents the identification of the web display data stored in column 'Web Display Data'. Column 'Web Display Data' stores the web display data, and each web display data represents a message displayed on Personal Computer PC. In the present embodiment, Web Display Data Storage Area H58*b*3 stores the following data: the web display ID 'Web Display #0' and the corresponding web display data 'Web Display Data #0'; the web display ID 'Web Display #1' and the corresponding web display data 'Web Display Data #1'; the web display ID 'Web Display #2' and the corresponding web display data 'Web Display Data #2'; the web display ID 'Web Display #3' and the corresponding web display data 'Web Display Data #3'; the web display ID 'Web Display #4' and the corresponding web display data 'Web Display Data #4'; the web display ID 'Web Display #5' and the corresponding web display data 'Web Display Data #5'; and the web display ID 'Web Display #6' and the corresponding web display data 'Web Display Data #6'. 'Web Display Data #0' represents the message: 'To deactivate manner mode, press 1. To deactivate manner mode and ring your mobile phone, press 2. To ring your mobile phone, press 3. To change password of your mobile phone, press 4. To lock your mobile phone, press 5. To power off your mobile phone, press 6.' 'Web Display Data #1' represents the message: 'The manner mode has been deactivated.' 'Web Display Data #2' represents the message: 'The manner mode has been deactivated and your mobile phone has been rung.' 'Web Display Data #3' represents the message: 'Your mobile phone has been rung.' 'Web Display Data #4' represents the message: 'The password of your mobile phone has been changed.' 'Web Display Data #5' represents the message: 'Your mobile phone has been changed.' 'Web Display Data #6' represents the message: 'Your mobile phone has been power-offed.' This paragraph illustrates the display of Personal Computer PC. In the present embodiment, Home Page 20158HP, i.e., a home page to implement the present function is displayed on Personal Computer PC. Home Page 20158HP is primarily composed of Web Display Data #0 and six buttons, i.e., Buttons **1** through **6**. Following the instruction described in Web Display Data #0, the user may select one of the buttons to implement the desired function as described hereinafter.

This paragraph illustrates the software programs stored in Communication Device Controlling Software Storage Area H58*c*. In the present embodiment, Communication Device Controlling Software Storage Area H58*c* stores User Authenticating Software H58*c*1, Menu Introducing Software H58*c*2, Line Connecting Software H58*c*3, Manner Mode Deactivating Software H58*c*4, Manner Mode Deactivating & Ringing Software H58*c*5, Ringing Software H58*c*6, Password Changing Software H58*c*7, Device Locking Software H58*c*8, and Power Off Software H58*c*9. User Authenticating Software H58*c*1 is the software program described hereinafter. Menu Introducing Software H58*c*2 is the software program described hereinafter. Line Connecting Software H58*c*3 is the software program described hereinafter. Manner Mode Deactivating Software H58*c*4 is the software program described hereinafter. Manner Mode Deactivating & Ringing Software H58*c*5 is the software

program described hereinafter. Ringing Software H58*c*6 is the software program described hereinafter. Password Changing Software H58*c*7 is the software program described hereinafter. Device Locking Software H58*c*8 is the software program described hereinafter. Power Off Software H58*c*9 is the software program described hereinafter.

This paragraph illustrates the storage area included in RAM **206** (FIG. **1**). In the present embodiment, RAM **206** includes Communication Device Controlling Information Storage Area **20658***a* of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Communication Device Controlling Information Storage Area **20658***a*. In the present embodiment, Communication Device Controlling Information Storage Area **20658***a* includes Communication Device Controlling Data Storage Area **20658***b* and Communication Device Controlling Software Storage Area **20658***c*. Communication Device Controlling Data Storage Area **20658***b* stores the data necessary to implement the present function on the side of Communication Device **200**, such as the ones described hereinafter. Communication Device Controlling Software Storage Area **20658***c* stores the software programs necessary to implement the present function on the side of Communication Device **200**, such as the ones described hereinafter.

The data and/or the software programs stored in Communication Device Controlling Information Storage Area **20658***a* may be downloaded from Host H.

This paragraph illustrates the storage areas included in Communication Device Controlling Data Storage Area **20658***b*. In the present embodiment, Communication Device Controlling Data Storage Area **20658***b* includes Password Data Storage Area **20658***b*1 and Work Area **20658***b*4. Password Data Storage Area **20658***b*1 stores the data described hereinafter. Work Area **20658***b*4 is utilized as a work area to perform calculation and to temporarily store data.

This paragraph illustrates the data stored in Password Data Storage Area **20658***b*1. In the present embodiment, Password Data Storage Area **20658***b*1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which represents the identification of the user of Communication Device **200**. Column 'Password Data' stores the password data set by the user of Communication Device **200**. Here, the password data is composed of alphanumeric data. Assuming that the user ID of Communication Device **200** is 'User #1'. In the present embodiment, Password Data Storage Area H58*b*1 stores the following data: the user ID 'User #1' and the corresponding password data 'Password Data #1'.

This paragraph illustrates the data stored in Phone Number Data Storage Area **20658***b*2. In the present embodiment, Phone Number Data Storage Area **20658***b*2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user ID of the user of Communication Device **200**. Column 'Phone Number Data' stores the phone number data which represents the phone number of Communication Device **200**. Here, the phone number data is composed of numeric data. In the present embodiment, Phone Number Data Storage Area H58*b*2 stores the following data: the user ID 'User #1' and the corresponding phone number data 'Phone Number Data #1'.

This paragraph illustrates the software programs stored in Communication Device Controlling Software Storage Area **20658***c*. In the present embodiment, Communication Device Controlling Software Storage Area **20658***c* stores Line Connecting Software **20658***c*3, Manner Mode Deactivating Software **20658***c*4, Manner Mode Deactivating & Ringing Soft-

ware 20658*c*5, Ringing Software 20658*c*6, Password Changing Software 20658*c*7, Device Locking Software 20658*c*8, and Power Off Software 20658*c*9. Line Connecting Software 20658*c*3 is the software program described hereinafter. Manner Mode Deactivating Software 20658*c*4 is the software program described hereinafter. Manner Mode Deactivating & Ringing Software 20658*c*5 is the software program described hereinafter. Ringing Software 20658*c*6 is the software program described hereinafter. Password Changing Software 20658*c*7 is the software program described hereinafter. Device Locking Software 20658*c*8 is the software program described hereinafter. Power Off Software 20658*c*9 is the software program described hereinafter.

The following paragraphs illustrate the software programs which enables the user of Communication Device 200 to remotely control Communication Device 200 by Personal Computer PC.

This paragraph illustrates User Authenticating Software H58*c*1 stored in Communication Device Controlling Software Storage Area H58*c* of Host H, which authenticates the user of Communication Device 200 to implement the present function via Personal Computer PC. In the present embodiment, Personal Computer PC sends an access request to Host H via the Internet (S1). Upon receiving the request from Personal Computer PC (S2) and the line is connected therebetween (S3), the user, by utilizing Personal Computer PC, inputs both his/her password data (S4) and the phone number data of Communication Device 200 (S5). Host H initiates the authentication process by referring to Password Data Storage Area H58*b*1 and Phone Number Data Storage Area H58*b*2) (S6). The authentication process is completed (and the sequences described hereafter are enabled thereafter) if the password data and the phone number data described in S4 and S5 match with the data stored in Password Data Storage Area H58*b*1 and Phone Number Data Storage Area H58*b*2.

This paragraph illustrates Menu Introducing Software H58*c*2 stored in Communication Device Controlling Software Storage Area H58*c* of Host H, which introduces the menu on Personal Computer PC. In the present embodiment, Host H retrieves Web Display Data #0 from Web Display Data Storage Area H58*b*3 (S1), and sends the data to Personal Computer PC (S2). Upon receiving Web Display Data #0 from Host H (S3), Personal Computer PC displays Web Display Data #0 on its display (S4). The user selects from one of the buttons of '1' through '6' wherein sequences implemented thereafter are described hereinafter (S5).

This paragraph illustrates Line Connecting Software H58*c*3 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Line Connecting Software 20658*c*3 stored in Communication Device Controlling Software Storage Area 20658*c* of Communication Device 200, which connect line between Host H and Communication Device 200. In the present embodiment, Host H calls Communication Device 200 by retrieving the corresponding phone number data from Phone Number Data Storage Area H58*b*2 (S1). Upon Communication Device 200 receiving the call from Host H (S2), the line is connected therebetween (S3). For the avoidance of doubt, the line is connected between Host H and Communication Device 200 merely to implement the present function, and a voice communication between human beings is not enabled thereafter.

This paragraph illustrates Manner Mode Deactivating Software H58*c*4 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Manner

Mode Deactivating Software 20658*c*4 stored in Communication Device Controlling Software Storage Area 20658*c* of Communication Device 200, which deactivate the manner mode of Communication Device 200. Here, Communication Device 200 activates Vibrator 217 (FIG. 1) when Communication Device 200 is in the manner mode and outputs a ringing sound from Speaker 216 (FIG. 1) when Communication Device 200 is not in the manner mode, upon receiving an incoming call. Assume that the user selects button '1' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating command to Communication Device 200 (S3). Upon receiving the manner mode deactivating command from Host H (S4), Communication Device 200 deactivates the manner mode (S5). Host H retrieves Web Display Data #1 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data #1 from Host H, Personal Computer PC displays the data (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H58*c*5 and Manner Mode Deactivating & Ringing Software 20658*c*5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter.

This paragraph illustrates Manner Mode Deactivating & Ringing Software H58*c*5 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Manner Mode Deactivating & Ringing Software 20658*c*5 stored in Communication Device Controlling Software Storage Area 20658*c* of Communication Device 200, which deactivate the manner mode of Communication Device 200 and outputs a ringing sound thereafter. Assume that the user selects button '2' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating & device ringing command to Communication Device 200 (S3). Upon receiving the manner mode deactivating & device ringing command from Host H (S4), Communication Device 200 deactivates the manner mode (S5) and outputs a ring data from Speaker 216 (S6). Host H retrieves Web Display Data #2 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S7). Upon receiving Web Display Data #2 from Host H, Personal Computer PC displays the data (S8). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H58*c*5 and Manner Mode Deactivating & Ringing Software 20658*c*5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

This paragraph illustrates Ringing Software H58*c*6 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Ringing Software 20658*c*6 stored

in Communication Device Controlling Software Storage Area **20658***c* of Communication Device **200**, which output a ringing sound from Speaker **216** (FIG. **1**). Assume that the user selects button '3' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a device ringing command to Communication Device **200** (S3). Upon receiving the device ringing command from Host H (S4), Communication Device **200** outputs a ring data from Speaker **216** (S5). Host H retrieves Web Display Data #3 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data #3 from Host H, Personal Computer PC displays the data (S7). Normally the purpose to output the ringing sound from Speaker **216** is to give a notification to the user that Communication Device **200** has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker **216** by executing Ringing Software H58*c*6 and Ringing Software **20658***c*6 is merely to let the user to identify the location of Communication Device **200**. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

This paragraph illustrates Password Changing Software H58*c*7 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Password Changing Software **20658***c*7 stored in Communication Device Controlling Software Storage Area **20658***c* of Communication Device **200**, which change the password necessary to operate Communication Device **200**. Assume that the user selects button '4' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). The user then enters a new password data by utilizing Personal Computer PC (S3), which is sent to Communication Device **200** by Host H (S4). Upon receiving the new password data from Host H (S5), Communication Device **200** stores the new password data in Password Data Storage Area **20658***b*1 and the old password data is erased (S6). Host H retrieves Web Display Data #4 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S7). Upon receiving Web Display Data #4 from Host H, Personal Computer PC displays the data (S8).

This paragraph illustrates Device Locking Software H58*c*8 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Device Locking Software **20658***c*8 stored in Communication Device Controlling Software Storage Area **20658***c* of Communication Device **200**, which lock Communication Device **200**, i.e., nullify any input signal input via Input Device **210** (FIG. **1**). Assume that the user selects button '5' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a device locking command to Communication Device **200** (S3). Upon receiving the device locking command from Host H (S4), Communication Device **200** is locked thereafter, i.e., any input via Input Device **210** is nullified unless a password data matching to the one stored in Password Data Storage Area **20658***b*1 is entered (S5). Host H retrieves Web Display Data #5 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data #5 from Host H, Personal Computer PC displays the data (S7).

This paragraph illustrates Power Off Software H58*c*9 stored in Communication Device Controlling Software Storage Area H58*c* of Host H and Power Off Software **20658***c*9 stored in Communication Device Controlling Software Storage Area **20658***c* of Communication Device **200**, which turn off the power of Communication Device **200**. Assume that the user selects button '6' displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a power off command to Communication Device **200** (S3). Upon receiving the power off command from Host H (S4), Communication Device **200** turns off the power of itself (S5). Host H retrieves Web Display Data #6 from Web Display Data Storage Area H58*b*3 and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data #6 from Host H, Personal Computer PC displays the data (S7).

<<Shortcut Icon Displaying Function>>

The following paragraphs illustrate the shortcut icon displaying function which displays one or more of shortcut icons on LCD **201** (FIG. **1**) of Communication Device **200**. The user of Communication Device **200** can execute the software programs in a convenient manner by selecting (e.g., clicking or double clicking) the shortcut icons. The foregoing software programs may be any software programs described in this specification.

This paragraph illustrates the shortcut icons displayed on LCD **201** (FIG. **1**) of Communication Device **200** by implementing the present function. In this embodiment, three shortcut icons are displayed on LCD **201** (FIG. **1**), i.e., Shortcut Icon #1, Shortcut Icon #2, and Shortcut Icon #3. The user of Communication Device **200** can execute the software programs by selecting (e.g., clicking or double clicking) one of the shortcut icons. For example, assume that Shortcut Icon #1 represents MS Word 97. By selecting (e.g., clicking or double clicking) Shortcut Icon #1, the user can execute MS Word 97 installed in Communication Device **200** or Host H. Three shortcut icons are illustrated in the present drawing, however, only for purposes of simplifying the explanation of the present function. Therefore, as many shortcut icons equivalent to the number of the software programs described in this specification may be displayed on LCD **201**, and the corresponding software programs may be executed by implementing the present function.

This paragraph illustrates the storage area included in RAM **206** (FIG. **1**). In this embodiment, RAM **206** includes Shortcut Icon Displaying Information Storage Area **20659***a* of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Shortcut Icon Displaying Information Storage Area **20659***a*. In this embodiment, Shortcut Icon Displaying Information Storage Area **20659***a* includes Shortcut Icon Displaying Data Storage Area **20659***b* and Shortcut Icon Displaying Software Storage Area **20659***c*. Shortcut Icon Displaying Data Storage Area **20659***b* stores the data necessary to implement the present function, such as the ones described hereinafter. Shortcut Icon Displaying Software Storage Area **20659***c* stores the software programs necessary to implement the present function, such as the ones described hereinafter.

The data and/or the software programs stored in Shortcut Icon Displaying Software Storage Area **20659***c* may be downloaded from Host H.

This paragraph illustrates the storage areas included in Shortcut Icon Displaying Data Storage Area **20659***b*. In this embodiment, Shortcut Icon Displaying Data Storage Area

20659*b* includes Shortcut Icon Image Data Storage Area 20659*b*1, Shortcut Icon Location Data Storage Area 20659*b*2, Shortcut Icon Link Data Storage Area 20659*b*3, and Selected Shortcut Icon Data Storage Area 20659*b*4. Shortcut Icon Image Data Storage Area 20659*b*1 stores the data described hereinafter. Shortcut Icon Location Data Storage Area 20659*b*2 stores the data described hereinafter. Shortcut Icon Link Data Storage Area 20659*b*3 stores the data described hereinafter. Selected Shortcut Icon Data Storage Area 20659*b*4 stores the data described hereinafter.

This paragraph illustrates the data stored in Shortcut Icon Image Data Storage Area 20659*b*1. In this embodiment, Shortcut Icon Image Data Storage Area 20659*b*1 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Image Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs, and each shortcut icon ID is the identification of the corresponding shortcut icon image data stored in column 'Shortcut Icon Image Data'. Column 'Shortcut Icon Image Data' stores the shortcut icon image data, and each shortcut icon image data is the image data of the shortcut icon displayed on LCD 201 (FIG. 1) as described hereinbefore. In this embodiment, Shortcut Icon Image Data Storage Area 20659*b*1 stores the following data: the shortcut icon ID 'Shortcut Icon #1' and the corresponding shortcut icon image data 'Shortcut Icon Image Data #1'; the shortcut icon ID 'Shortcut Icon #2' and the corresponding shortcut icon image data 'Shortcut Icon Image Data #2'; the shortcut icon ID 'Shortcut Icon #3' and the corresponding shortcut icon image data 'Shortcut Icon Image Data #3'; and the shortcut icon ID 'Shortcut Icon #4' and the corresponding shortcut icon image data 'Shortcut Icon Image Data #4'.

This paragraph illustrates the data stored in Shortcut Icon Location Data Storage Area 20659*b*2. In this embodiment, Shortcut Icon Location Data Storage Area 20659*b*2 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Location Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs described hereinbefore. Column 'Shortcut Icon Location Data' stores the shortcut icon location data, and each shortcut icon location data indicates the location displayed on LCD 201 (FIG. 1) in (x,y) format of the shortcut icon image data of the corresponding shortcut icon ID. In this embodiment, Shortcut Icon Location Data Storage Area 20659*b*2 stores the following data: the shortcut icon ID 'Shortcut Icon #1' and the corresponding shortcut icon location data 'Shortcut Icon Location Data #1'; the shortcut icon ID 'Shortcut Icon #2' and the corresponding shortcut icon location data 'Shortcut Icon Location Data #2'; the shortcut icon ID 'Shortcut Icon #3' and the corresponding shortcut icon location data 'Shortcut Icon Location Data #3'; and the shortcut icon ID 'Shortcut Icon #4' and the corresponding shortcut icon location data 'Shortcut Icon Location Data #4'.

This paragraph illustrates the data stored in Shortcut Icon Link Data Storage Area 20659*b*3. In this embodiment, Shortcut Icon Link Data Storage Area 20659*b*3 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Link Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs described hereinbefore. Column 'Shortcut Icon Link Data' stores the shortcut icon link data, and each shortcut icon link data represents the location in Communication Device 200 of the software program stored therein represented by the shortcut icon of the corresponding shortcut icon ID. In this embodiment, Shortcut Icon Link Data Storage Area 20659*b*3 stores the following data: the shortcut icon ID 'Shortcut Icon #1' and the corresponding shortcut icon link data 'Shortcut Icon Link Data #1'; the shortcut icon ID 'Shortcut Icon #2' and the corresponding shortcut icon

link data 'Shortcut Icon Link Data #2'; the shortcut icon ID 'Shortcut Icon #3' and the corresponding shortcut icon link data 'Shortcut Icon Link Data #3'; and the shortcut icon ID 'Shortcut Icon #4' and the corresponding shortcut icon link data 'Shortcut Icon Link Data #4'. The foregoing software program may be any software program described in this specification.

This paragraph illustrates the data stored in Selected Shortcut Icon Data Storage Area 20659*b*4. In this embodiment, Selected Shortcut Icon Data Storage Area 20659*b*4 stores one or more of shortcut icon IDs. Only the shortcut icon image data of the shortcut icon IDs stored in Selected Shortcut Icon Data Storage Area 20659*b*4 are displayed on LCD 201 (FIG. 1). In this embodiment, Selected Shortcut Icon Data Storage Area 20659*b*4 stores the following data: the shortcut icon IDs 'Shortcut Icon #1', 'Shortcut Icon #2', and 'Shortcut Icon #3', which means that only the shortcut icon image data corresponding to 'Shortcut Icon #1', 'Shortcut Icon #2', and 'Shortcut Icon #3' are displayed on LCD 201.

This paragraph illustrates the software programs stored in Shortcut Icon Displaying Software Storage Area 20659*c*. In this embodiment, Shortcut Icon Displaying Software Storage Area 20659*c* stores Shortcut Icon Displaying Software 20659*c*1, Software Executing Software 20659*c*2, Shortcut Icon Location Data Changing Software 20659*c*3, and Software Executing Software 20659*c*4. Shortcut Icon Displaying Software 20659*c*1 is the software program described hereinafter. Software Executing Software 20659*c*2 is the software program described hereinafter. Shortcut Icon Location Data Changing Software 20659*c*3 is the software program described hereinafter. Software Executing Software 20659*c*4 is the software program described hereinafter.

This paragraph illustrates Shortcut Icon Displaying Software 20659*c*1 stored in Shortcut Icon Displaying Software Storage Area 20659*c* of Communication Device 200, which displays the shortcut icon image data displayed on LCD 201 (FIG. 1) of Communication Device 200. In this embodiment, CPU 211 (FIG. 1) refers to the shortcut icon IDs stored in Selected Shortcut Icon Data Storage Area 20659*b*4 to identify the shortcut icon image data to be displayed on LCD 201 (FIG. 1) (S1). CPU 211 then retrieves the shortcut icon image data of the corresponding shortcut icon IDs identified in S1 from Shortcut Icon Image Data Storage Area 20659*b*1 (S2). CPU 211 further retrieves the shortcut icon location data of the corresponding shortcut icon IDs identified in S1 from Shortcut Icon Location Data Storage Area 20659*b*2 (S3). CPU 211 displays on LCD 201 (FIG. 1) the shortcut icon image data thereafter (S4).

This paragraph illustrates Software Executing Software 20659*c*2 stored in Shortcut Icon Displaying Software Storage Area 20659*c* of Communication Device 200, which executes the corresponding software program upon selecting the shortcut icon image data displayed on LCD 201 (FIG. 1) of Communication Device 200. In this embodiment, the user of Communication Device 200 selects the shortcut icon image data displayed on LCD 201 by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). CPU 211 (FIG. 1) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). CPU 211 identifies the shortcut icon link data stored in Shortcut Icon Link Data Storage Area 20659*b*3 from the shortcut icon ID identified in S2 (S3), and executes the corresponding software program (S4).

This paragraph illustrates Shortcut Icon Location Data Changing Software 20659*c*3 stored in Shortcut Icon Displaying Software Storage Area 20659*c* of Communication

Device **200**, which enables the user of Communication Device **200** to change the location of the shortcut icon image data displayed on LCD **201** (FIG. **1**). In this embodiment, the user of Communication Device **200** selects the shortcut icon image data displayed on LCD **201** (S1). CPU **211** (FIG. **1**) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). The user moves the shortcut icon selected in S1 by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S3). CPU **211** then identifies the new location thereof (S4), and updates the shortcut icon location data stored in Shortcut Icon Location Data Storage Area **20659**b2 (S5).

<<Shortcut Icon Displaying Function—Executing Software in Host H>>

The following paragraphs illustrate the implementation of the present invention wherein the user of Communication Device **200** executes the software programs stored in Host H by selecting the shortcut icons displayed on LCD **201** (FIG. **1**).

This paragraph illustrates the storage areas included in Host H. In this embodiment, Host H includes Shortcut Icon Displaying Information Storage Area H**59**a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Shortcut Icon Displaying Information Storage Area H**59**a. In this embodiment, Shortcut Icon Displaying Information Storage Area H**59**a includes Shortcut Icon Displaying Data Storage Area H**59**b and Shortcut Icon Displaying Software Storage Area H**59**c. Shortcut Icon Displaying Data Storage Area H**59**b stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. Shortcut Icon Displaying Software Storage Area H**59**c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage area included in Shortcut Icon Displaying Data Storage Area H**59**b. In this embodiment, Shortcut Icon Displaying Data Storage Area H**59**b includes Software Programs Storage Area H**59**b1. Software Programs Storage Area H**59**b1 stores the data described hereinafter.

This paragraph illustrates the data stored in Software Programs Storage Area H**59**b1. In this embodiment, Software Programs Storage Area H**59**b1 comprises two columns, i.e., 'Software ID' and 'Software Program'. Column 'Software ID' stores the software IDs, and each software ID is an identification of the software program stored in column 'Software Program'. Column 'Software Program' stores the software programs. In this embodiment, Software Programs Storage Area H**59**b1 stores the following data: software ID 'Software #3' and the corresponding software program 'Software Program #3'; software ID 'Software #4' and the corresponding software program 'Software Program #4'; software ID 'Software #5' and the corresponding software program 'Software Program #5'; and software ID 'Software #6' and the corresponding software program 'Software Program #6'. Here, the software programs may be any software programs which are stored in Host H described in this specification. As another embodiment, the software programs may be any software programs stored in RAM **206** (FIG. **1**) of Communication Device **200** described in this specification.

This paragraph illustrates the software program stored in Shortcut Icon Displaying Software Storage Area H**59**c. In this embodiment, Shortcut Icon Displaying Software Stor-

age Area H**59**c stores Software Executing Software H**59**c4. Software Executing Software H**59**c4 is the software program described hereinafter.

This paragraph illustrates Software Executing Software H**59**c4 stored in Shortcut Icon Displaying Software Storage Area H**59**c of Host H and Software Executing Software **20659**c4 stored in Shortcut Icon Displaying Software Storage Area **20659**c of Communication Device **200**, which execute the corresponding software program upon selecting the shortcut icon image data displayed on LCD **201** (FIG. **1**) of Communication Device **200**. In this embodiment, the user of Communication Device **200** selects the shortcut icon image data displayed on LCD **201** by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). CPU **211** identifies the shortcut icon link data stored in Shortcut Icon Link Data Storage Area **20659**b3 from the shortcut icon ID identified in S2 (S3), which is sent to Host H (S4). Upon receiving the shortcut icon link data from Communication Device **200** (S5), Host H executes the corresponding software program (S6) and produces the relevant display data, which are send to Communication Device **200** (S7). Upon receiving the relevant display data from Host H, Communication Device **200** displays the data on LCD **201** (S8).

<<Multiple Channel Processing Function>>

The following paragraphs illustrate the multiple channel processing function which enables Communication Device **200** to send and receive a large amount of data in a short period of time by increasing the upload and download speed.

This paragraph illustrates the storage area included in Host H. In this embodiment, Host H includes Multiple Channel Processing Information Storage Area H**61**a of which the data and the software programs stored therein are described hereinafter. Here, Host H is a base station which communicates with Communication Device **200** in a wireless fashion.

This paragraph illustrates the storage areas included in Multiple Channel Processing Information Storage Area H**61**a. In this embodiment, Multiple Channel Processing Information Storage Area H**61**a includes Multiple Channel Processing Data Storage Area H**61**b and Multiple Channel Processing Software Storage Area H**61**c. Multiple Channel Processing Data Storage Area H**61**b stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. Multiple Channel Processing Software Storage Area H**61**c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage areas included in Multiple Channel Processing Data Storage Area H**61**b. In this embodiment, Multiple Channel Processing Data Storage Area H**61**b includes User Data Storage Area H**61**b1, Channel Number Storage Area H**61**b2, and Signal Type Data Storage Area H**61**b3. User Data Storage Area H**61**b1 stores the data described hereinafter. Channel Number Storage Area H**61**b2 stores the data described hereinafter. Signal Type Data Storage Area H**61**b3 stores the data described hereinafter.

This paragraph illustrates the data stored in User Data Storage Area H**61**b1. In this embodiment, User Data Storage Area H**61**b1 comprises two columns, i.e., 'User ID' and 'User Data'. Column 'User ID' stores the user IDs, and each user ID in an identification of the user of Communication Device **200**. Column 'User Data' stores the user data, and each user data represents the personal data of the user of the corresponding user ID, such as name, home address, office

address, phone number, email address, fax number, age, sex, credit card number of the user of the corresponding user ID. In this embodiment, User Data Storage Area H61*b*1 stores the following data: the user ID 'User #1' and the corresponding user data 'User Data #1'; the user ID 'User #2' and the corresponding user data 'User Data #2'; the user ID 'User #3' and the corresponding user data 'User Data #3'; and the user ID 'User #4' and the corresponding user data 'User Data #4'.

This paragraph illustrates the data stored in Channel Number Storage Area H61*b*2. In this embodiment, Channel Number Storage Area H61*b*2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs, and each channel ID is an identification of the channel which is assigned to each Communication Device 200 and through which Host H and Communication Device 200 send and receive data. Normally one channel ID is assigned to one user ID. Column 'User ID' stores the user IDs described hereinbefore. In this embodiment, Channel Number Storage Area H61*b*2 stores the following data: the channel ID 'Channel #1' and the user ID 'User #1'; the channel ID 'Channel #2' with no corresponding user ID stored; the channel ID 'Channel #3' and the user ID 'User #3'; and the channel ID 'Channel #4' and the user ID 'User #4'. Here, the foregoing data indicates that, to communicate with Host H, the channel ID 'Channel #1' is utilized by Communication Device 200 represented by the user ID 'User #1'; the channel ID 'Channel #2' is not utilized by any Communication Device 200 (i.e., vacant); the channel ID 'Channel #3' is utilized by Communication Device 200 represented by the user ID 'User #3'; and the channel ID 'Channel #4' is utilized by Communication Device 200 represented by the user ID 'User #4'.

This paragraph illustrates another example of the data stored in Channel Number Storage Area H61*b*2. In this embodiment, Channel Number Storage Area H61*b*2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'User ID' stores the user IDs described hereinbefore. In this embodiment, Channel Number Storage Area H61*b*2 stores the following data: the channel ID 'Channel #1' and the user ID 'User #1'; the channel ID 'Channel #2' and the user ID 'User #1'; the channel ID 'Channel #3' and the user ID 'User #3'; and the channel ID 'Channel #4' and the user ID 'User #4'. Here, the foregoing data indicates that, to communicate with Host H, the channel ID 'Channel #1' is utilized by Communication Device 200 represented by the user ID 'User #1'; the channel ID 'Channel #2' is also utilized by Communication Device 200 represented by the user ID 'User #1'; the channel ID 'Channel #3' is utilized by Communication Device 200 represented by the user ID 'User #3'; and the channel ID 'Channel #4' is utilized by Communication Device 200 represented by the user ID 'User #4'. In sum, the foregoing data indicates that two channel IDs, i.e., 'Channel #1' and 'Channel #2' are utilized by one Communication Device 200 represented by the user ID 'User #1'.

This paragraph illustrates the data stored in Signal Type Data Storage Area H61*b*3. In this embodiment, Signal Type Data Storage Area H61*b*3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In this embodiment, Signal Type Data Storage Area H61*b*3 stores the following data: the channel ID 'Channel #1' and the

corresponding signal type data 'cdma2000'; the channel ID 'Channel #2' and the corresponding signal type data 'cdma2000'; the channel ID 'Channel #3' and the corresponding signal type data 'W-CDMA'; and the channel ID 'Channel #4' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel #1' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel #2' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel #3' is assigned to the signal type data 'W-CDMA'; and the channel identified by the channel ID 'Channel #4' is assigned to the signal type data 'cdma2000'. Assuming that Communication Device 200 represented by the user ID 'User #1' utilizes the channels represented by the channel ID 'Channel #1' and 'Channel #2' as described hereinbefore. In this embodiment, Communication Device 200 represented by the user ID 'User #1' utilizes the signal type data 'cdma2000' for the channels represented by the channel ID 'Channel #1' and 'Channel #2' for communicating with Host H.

This paragraph illustrates another example of the data stored in Signal Type Data Storage Area H61*b*3. In this embodiment, Signal Type Data Storage Area H61*b*3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In this embodiment, Signal Type Data Storage Area H61*b*3 stores the following data: the channel ID 'Channel #1' and the corresponding signal type data 'cdma2000'; the channel ID 'Channel #2' and the corresponding signal type data 'W-CDMA'; the channel ID 'Channel #3' and the corresponding signal type data 'W-CDMA'; and the channel ID 'Channel #4' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel #1' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel #2' is assigned to the signal type data 'W-CDMA'; the channel identified by the channel ID 'Channel #3' is assigned to the signal type data 'W-CDMA'; and the channel identified by the channel ID 'Channel #4' is assigned to the signal type data 'cdma2000'. Assuming that Communication Device 200 represented by the user ID 'User #1' utilizes the channels represented by the channel ID 'Channel #1' and 'Channel #2' as described hereinbefore. In this embodiment, Communication Device 200 represented by the user ID 'User #1' utilizes the signal type data in a hybrid manner for communicating with Host H, i.e., the signal type data 'cdma2000' for 'Channel #1' and the signal type data 'W-CDMA' for 'Channel #2'.

This paragraph illustrates the software programs stored in Multiple Channel Processing Software Storage Area H61*c*. In this embodiment, Multiple Channel Processing Software Storage Area H61*c* stores Signal Type Data Detecting Software H61*c*1, User ID Identifying Software H61*c*2, Data Sending/Receiving Software H61*c*2*a*, Channel Number Adding Software H61*c*3, Data Sending/Receiving Software H61*c*3*a*, Signal Type Data Adding Software H61*c*4, and Data Sending/Receiving Software H61*c*4*a*. Signal Type Data Detecting Software H61*c*1 is the software program described hereinafter. User ID Identifying Software H61*c*2 is the software program described hereinafter. Data Sending/Receiving Software H61*c*2*a* is the software program described hereinafter. Channel Number Adding Software

H61c3 is the software program described hereinafter. Data Sending/Receiving Software H61c3a is the software program described hereinafter. Signal Type Data Adding Software H61c4 is the software program described hereinafter. Data Sending/Receiving Software H61c4a is the software program described hereinafter.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1) of Communication Device 200. In this embodiment, RAM 206 includes Multiple Channel Processing Information Storage Area 20661a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in Multiple Channel Processing Information Storage Area 20661a. In this embodiment, Multiple Channel Processing Information Storage Area 20661a includes Multiple Channel Processing Data Storage Area 20661b and Multiple Channel Processing Software Storage Area 20661c. Multiple Channel Processing Data Storage Area 20661b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter. Multiple Channel Processing Software Storage Area 20661c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter.

The data and/or the software programs stored in Multiple Channel Processing Software Storage Area 20661c may be downloaded from Host H.

This paragraph illustrates the storage areas included in Multiple Channel Processing Data Storage Area 20661b. In this embodiment, Multiple Channel Processing Data Storage Area 20661b includes User Data Storage Area 20661b1, Channel Number Storage Area 20661b2, and Signal Type Data Storage Area 20661b3. User Data Storage Area 20661b1 stores the data described hereinafter. Channel Number Storage Area 20661b2 stores the data described hereinafter. Signal Type Data Storage Area 20661b3 stores the data described hereinafter.

This paragraph illustrates the data stored in User Data Storage Area 20661b1. In this embodiment, User Data Storage Area 20661b1 comprises two columns, i.e., 'User ID' and 'User Data'. Column 'User ID' stores the user ID which is an identification of Communication Device 200. Column 'User Data' stores the user data represents the personal data of the user of Communication Device 200, such as name, home address, office address, phone number, email address, fax number, age, sex, credit card number of the user. In this embodiment, User Data Storage Area 20661b1 stores the following data: the user ID 'User #1' and the corresponding user data 'User Data #1'.

This paragraph illustrates the data stored in Channel Number Storage Area 20661b2. In this embodiment, Channel Number Storage Area 20661b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel ID which is an identification of the channel through which Host H and Communication Device 200 send and receive data. Column 'User ID' stores the user ID described hereinbefore. In this embodiment, Channel Number Storage Area 20661b2 stores the following data: the channel ID 'Channel #1' and the corresponding user ID 'User #1'. The foregoing data indicates that, to communicate with Host H, the channel ID 'Channel #1' is utilized by Communication Device 200 represented by the user ID 'User #1'.

This paragraph illustrates another example of the data stored in Channel Number Storage Area 20661b2. In this

embodiment, Channel Number Storage Area 20661b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs, and each channel ID is an identification of the channel through which Host H and Communication Device 200 send and receive data. Column 'User ID' stores the user ID described hereinbefore. In this embodiment, Channel Number Storage Area 20661b2 stores the following data: the channel ID 'Channel #1' and the corresponding user ID 'User #1'; and the channel ID 'Channel #2' and the corresponding user ID 'User #2'. The foregoing data indicates that, to communicate with Host H, the channel IDs of 'Channel #1' and 'Channel #2' are utilized by Communication Device 200 represented by the user ID 'User #1'.

This paragraph illustrates the data stored in Signal Type Data Storage Area 20661b3. In this embodiment, Signal Type Data Storage Area 20661b3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In this embodiment, Signal Type Data Storage Area 20661b3 stores the following data: the channel ID 'Channel #1' and the corresponding signal type data 'cdma2000'; and the channel ID 'Channel #2' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel #1' is assigned to the signal type data 'cdma2000'; and the channel identified by the channel ID 'Channel #2' is assigned to the signal type data 'cdma2000'. In this embodiment, Communication Device 200 represented by the user ID 'User #1' utilizes the signal type data 'cdma2000' for the channels represented by the channel ID 'Channel #1' and 'Channel #2' for communicating with Host H.

This paragraph illustrates another example of the data stored in Signal Type Data Storage Area 20661b3. In this embodiment, Signal Type Data Storage Area 20661b3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In this embodiment, Signal Type Data Storage Area 20661b3 stores the following data: the channel ID 'Channel #1' and the corresponding signal type data 'cdma2000'; and the channel ID 'Channel #2' and the corresponding signal type data 'W-CDMA'. The foregoing data indicates that the channel identified by the channel ID 'Channel #1' is assigned to the signal type data 'cdma2000'; and the channel identified by the channel ID 'Channel #2' is assigned to the signal type data 'W-CDMA'. In this embodiment, Communication Device 200 represented by the user ID 'User #1' utilizes the signal type data in a hybrid manner for communicating with Host H, i.e., the signal type data 'cdma2000' for 'Channel #1' and the signal type data 'W-CDMA' for 'Channel #2'.

This paragraph illustrates the software programs stored in Multiple Channel Processing Software Storage Area 20661c. In this embodiment, Multiple Channel Processing Software Storage Area 20661c stores Signal Type Data Detecting Software 20661c1, User ID Identifying Software 20661c2, Data Sending/Receiving Software 20661c2a, Channel Number Adding Software 20661c3, Data Sending/Receiving Software 20661c3a, Signal Type Data Adding Software 20661c4, and Data Sending/Receiving Software 20661c4a. Signal Type Data Detecting Software 20661c1 is

the software program described hereinafter. User ID Identifying Software **20661***c2* is the software program described hereinafter. Data Sending/Receiving Software **20661***c2a* is the software program described hereinafter. Channel Number Adding Software **20661***c3* is the software program described hereinafter. Data Sending/Receiving Software **20661***c3a* is the software program described hereinafter. Signal Type Data Adding Software **20661***c4* is the software program described hereinafter. Data Sending/Receiving Software **20661***c4a* is the software program described hereinafter.

This paragraph illustrates Signal Type Data Detecting Software H**61***c1* of Host H and Signal Type Data Detecting Software **20661***c1* of Communication Device **200**, which detect the signal type utilized for the communication between Host H and Communication Device **200** from any signal type categorized as 2G, 3G, and 4G. The detection of the signal type is implemented by Host H in the present embodiment. In this embodiment, Host H detects the signal type (S1), and stores the signal type data in Signal Type Data Storage Area H**61***b3* at the default channel number (in the present example, Channel #1) (S2). Host H then sends the signal type data to Communication Device **200** (S3). Upon receiving the signal type data from Host H (S4), Communication Device **200** stores the signal type data in Signal Type Data Storage Area **20661***b3* at the default channel number (in the present example, Channel #1) (S5).

This paragraph illustrates another embodiment of Signal Type Data Detecting Software H**61***c1* of Host H and Signal Type Data Detecting Software **20661***c1* of Communication Device **200**, which detect the signal type utilized for the communication between Host H and Communication Device **200** from any signal type categorized as 2G, 3G, and 4G. The detection of the signal type is implemented by Communication Device **200** in the present embodiment. In this embodiment, CPU **211** (FIG. **1**) of Communication Device **200** detects the signal type (S1), and stores the signal type data in Signal Type Data Storage Area **20661***b3* at the default channel number (in the present example, Channel #1) (S2). CPU **211** then sends the signal type data to Host H (S3). Upon receiving the signal type data from Communication Device **200** (S4), Host H stores the signal type data in Signal Type Data Storage Area H**61***b3* at the default channel number (in the present example, Channel #1) (S5).

This paragraph illustrates User ID Identifying Software H**61***c2* of Host H and User ID Identifying Software **20661***c2* of Communication Device **200**, which identify the user ID of the corresponding Communication Device **200**. In this embodiment, Communication Device **200** sends the user ID to Host H (S1). Upon receiving the User ID from Communication Device **200** (S2), Host H identifies the default channel number (in the present example, Channel #1) for Communication Device **200** (S3), and stores the User ID in Channel Number Storage Area H**61***b2* at the channel number identified in S3 (S4).

This paragraph illustrates Data Sending/Receiving Software H**61***c2a* of Host H and Data Sending/Receiving Software **20661***c2a* of Communication Device **200** by which Host H sends data to Communication Device **200**. In this embodiment, Host H retrieves the default channel number (in the present example, Channel #1) from Channel Number Storage Area H**61***b2* (S1), and sends data (e.g., audiovisual data and alphanumeric data) to Communication Device **200** through the default channel number (in the present example, Channel #1) retrieved in S1 (S2). Communication Device

200 receives the data (e.g., audiovisual data and alphanumeric data) from Host H through the same channel number (S3).

This paragraph illustrates another embodiment of Data Sending/Receiving Software H**61***c2a* of Host H and Data Sending/Receiving Software **20661***c2a* of Communication Device **200** by which Communication Device **200** sends data (e.g., audiovisual data and alphanumeric data) to Host H. In this embodiment, Communication Device **200** retrieves the default channel number (in the present example, Channel #1) from Channel Number Storage Area **20661***b2* (S1), and sends data (e.g., audiovisual data and alphanumeric data) to Host H through the default channel number (in the present example, Channel #1) retrieved in S1 (S2). Host H receives the data (e.g., audiovisual data and alphanumeric data) from Communication Device **200** through the same channel number (S3).

This paragraph illustrates Channel Number Adding Software H**61***c3* of Host H and Channel Number Adding Software **20661***c3* of Communication Device **200**, which add another channel to increase the download and/or upload speed of Communication Device **200**. In this embodiment, Communication Device **200** sends a channel number adding request to Host H (S1). Upon receiving the channel number adding request from Communication Device **200** (S2), Host H checks the availability in the same signal type data (S3). Assuming that vacancy is found in the same signal type data, Host H selects a new channel number (in the present example, Channel #2) from the available channel numbers for Communication Device **200** (S4). Host H stores the user ID of Communication Device **200** in Channel Number Storage Area H**61***b2* at new channel number (in the present example, Channel #2) selected in S4 (S5). Host H then sends the new channel number (in the present example, Channel #2) selected in S4 to Communication Device **200** (S6). Upon receiving the new channel number (in the present example, Channel #2) from Host H (S7), Communication Device **200** stores the new channel number (in the present example, Channel #2) in Channel Number Storage Area **20661***b2* (S8). As another embodiment, instead of Host H adding a new channel number by receiving a channel number adding request from Communication Device **200**, Host H may do so in its own initiative.

This paragraph illustrates Data Sending/Receiving Software H**61***c3a* of Host H and Data Sending/Receiving Software **20661***c3a* of Communication Device **200** by which Host H sends data to Communication Device **200** by increasing the download speed. In this embodiment, Host H retrieves the channel numbers (in the present example, Channel #1 and #2) from Channel Number Storage Area H**61***b2* of the corresponding user ID (in the present example, User #1) (S1). Host H splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Communication Device **200** to the First Data and the Second Data (S2). Host H sends the First Data to Communication Device **200** through Channel #1 (S3), and sends the Second Data to Communication Device **200** through Channel #2 (S4). Communication Device **200** receives the First Data from Host H through Channel #1 (S5), and receives the Second Data from Host H through Channel #2 (S6). Communication Device **200** merges the First Data and the Second Data thereafter (S7).

This paragraph illustrates Data Sending/Receiving Software H**61***c3a* of Host H and Data Sending/Receiving Software **20661***c3a* of Communication Device **200** by which Communication Device **200** sends data to Host H by increasing the upload speed. In this embodiment, Communication Device **200** retrieves the channel numbers (in the

present example, Channels #1 and #2) from Channel Number Storage Area 20661*b*2 (S1). Communication Device 200 splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Host H to the Third Data and the Fourth Data (S2). Communication Device 200 sends the Third Data to Host H through Channel #1 (S3), and sends the Fourth Data to Host H through Channel #2 (S4). Host H receives the Third Data from Communication Device 200 through Channel #1 (S5), and receives the Fourth Data from Communication Device 200 through Channel #2 (S6). Host H merges the Third Data and the Fourth Data thereafter (S7).

This paragraph illustrates Signal Type Data Adding Software H61*c*4 of Host H and Signal Type Data Adding Software 20661*c*4 of Communication Device 200, which add new channel in different signal type if no available channel is found in the same signal type in S3 described hereinbefore. In this embodiment, Host H checks the availability in other signal type data (S1). Assuming that an available new channel is found in W-CDMA. Host H selects a new channel number (in the present example, Channel #2) In Signal Type Data Storage Area H61*b*3 for Communication Device 200 (S2). Host H stores the user ID (in the present example, User #1) in Channel Number Storage Area H61*b*2 at new channel number selected in S2 (in the present example, Channel #2) (S3). Host H stores the signal type data (in the present example, W-CDMA) in Signal Type Data Storage Area H61*b*3 at new channel number selected in S2 (in the present example, Channel #2) (S4). Host H sends the new channel number (in the present example, Channel #2) and the new signal type data (in the present example, W-CDMA) to Communication Device 200 (S5). Communication Device 200 receives the new channel number (in the present example, Channel #2) and the new signal type data (in the present example, W-CDMA) from Host H (S6). Communication Device 200 stores the new channel number (in the present example, Channel #2) in Channel Number Storage Area 20661*b*2 (S7). Communication Device 200 (in the present example, W-CDMA) in Signal Type Data Storage Area 20661*b*3 (S8).

This paragraph illustrates Data Sending/Receiving Software H61*c*4*a* of Host H and Data Sending/Receiving Software 20661*c*4*a* of Communication Device 200 by which Host H sends data to Communication Device 200 by increasing the download speed. In this embodiment, Host H retrieves the channel numbers (in the present example, Channel #1 and #2) from Channel Number Storage Area H61*b*2 of the corresponding user ID (in the present example, User #1) (S1). Host H splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Communication Device 200 to the First Data and the Second Data (S2). Host H sends the First Data to Communication Device 200 through Channel #1 in cdma2000 (S3), and sends the Second Data to Communication Device 200 through Channel #2 in W-CDMA (S4). Communication Device 200 receives the First Data from Host H through Channel #1 in cdma2000 (S5), and receives the Second Data from Host H through Channel #2 in W-CDMA (S6). Communication Device 200 merges the First Data and the Second Data thereafter (S7).

This paragraph illustrates Data Sending/Receiving Software H61*c*4*a* of Host H and Data Sending/Receiving Software 20661*c*4*a* of Communication Device 200 by which Communication Device 200 sends data to Host H by increasing the upload speed. In this embodiment, Communication Device 200 retrieves the channel numbers (in the present example, Channel #1 and #2) from Channel Number Storage Area 20661*b*2 (S1). Communication Device 200 splits the data (e.g., audiovisual data and alphanumeric data)

to be sent to Host H to the Third Data and the Fourth Data (S2). Communication Device 200 sends the Third Data to Host H through Channel #1 in cdma2000 (S3), and sends the Fourth Data to Host H through Channel #2 in W-CDMA (S4). Host H receives the Third Data from Communication Device 200 through Channel #1 in cdma2000 (S5), and receives the Fourth Data from Communication Device 200 through Channel #2 in W-CDMA (S6). Host H merges the Third Data and the Fourth Data thereafter (S7).

As another embodiment, the present function may be utilized for processing other sets of combination of the signals, such as the 2G signal and the 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by '2G' and the term 'W-CDMA' is substituted by '3G' in the explanation set out hereinbefore for purposes of implementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS; the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

As another embodiment, the present function may be utilized for processing other sets of combination of the signals, such as the 3G signal and the 4G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by '3G' and the term 'W-CDMA' is substituted by '4G' in the explanation set out hereinbefore for purposes of implementing the present embodiment. Here, the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA, and the 4G signal may be of any type of signal categorized as 4G.

As another embodiment, the present function may be utilized for processing the first type of 4G signal and the second type of 4G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 4G signal' and the term 'W-CDMA' is substituted by 'the second type of 4G signal' for purposes of implementing the present embodiment. Here, the first type of 4G signal and the second type of 4G signal may be of any type of signal categorized as 4G.

As another embodiment, the present function may be utilized for processing the 2G signal and the 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the 2G signal' and the term 'W-CDMA' is substituted by 'the 3G signal' for purposes of implementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS, and the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

As another embodiment, the present function may be utilized for processing the first type of 2G signal and the second type of 2G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 2G signal' and the term 'W-CDMA' is substituted by 'the second type of 2G signal' for purposes of implementing the present embodiment. Here, the first type of 2G signal and the second type of 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS.

In sum, the present function described hereinbefore may be utilized for processing any combination of any type of signals.

For the avoidance of doubt, the multiple signal processing function may be utilized while implementing the present function.

of doubt, all software programs described hereinbefore to implement the present function may be executed solely by CPU **211** (FIG. **1**) or by Signal Processor **208** (FIG. **1**), or by both CPU **211** and Signal Processor **208**.

<<Cellular TV Function>>

The following paragraphs illustrate the cellular TV function of the Communication Device **200** (FIG. **1**).

In this embodiment, the cellular TV function of the Communication Device **200** (FIG. **1**) is exploited by the combination of TV Server TVS, Host H, Sub-host SHa, Sub-host SHb, Communication Device **200***a*, and Communication Device **200***b*. TV Server TVS is electronically linked to Host H, which is also electronically linked to Sub-hosts SHa and SHb. Sub-hosts SHa and SHb are linked to Communication Devices **200***a* and **200***b* in a wireless fashion. TV Server TVS stores a plurality of channel data, which are explained in details hereinafter. A plurality of channel data are transferred from TV Server TVS to Host H, which distributes such data to Sub-hosts SHa and SHb. Sub-hosts SHa and SHb transfers the plurality of channel data to Communication Devices **200***a* and **200***b* respectively via Mobile Signal MS1, i.e., a plurality of wireless signal which enables Communication Devices **200***a* and **200***b* to communicate with Sub-hosts SHa and SHb respectively in a wireless fashion, thereby enables to display the channel data on LCD **201** (FIG. **1**) installed on each of Communication Devices **200***a* and **200***b*.

This paragraph illustrates another embodiment of the cellular TV function of Communication Device **200** (FIG. **1**), which utilizes a network. TV Server TVS is electronically linked to Internet Server IS via Network NT, such as the Internet. Internet Server IS is linked to Communication Device **200** in a wireless fashion. A plurality of channel data are distributed from TV Server TVS to Internet Server IS via network NT, which transfers such data to Communication Device **200** via Mobile Signal MS, i.e., a plurality of wireless signal which enables Communication Device **200** to communicate with Internet Server IS in a wireless fashion.

This paragraph illustrates the data stored in TV Server TVS. In this embodiment, six kinds of channel data are stored. Namely, the channel data regarding Channel **1** is stored in Area TVS1, the channel data regarding Channel **2** is stored in Area TVS2, the channel data regarding Channel **3** is stored in Area TVS3, the channel data regarding Channel **4** is stored in Area TVS4, the channel data regarding Channel **5** is stored in Area TVS5, and the channel data regarding Channel **6** is stored in Area TVS6. Here, each channel data represents a specific TV program, i.e., each channel data is primarily composed of a series of motion picture data and a series of subtitle data which are designed to be displayed on LCD **201** (FIG. **1**) and a series of audio data which are designed to be output from Speaker **216** (FIG. **1**).

In this embodiment, Communication Device **200** (FIG. **1**) has the capability to display satellite TV programs. Broadcast center BC distributes a plurality of Satellite Signal SS to Satellite **304**, which transfers the same series of signals to Communication Device **200**, both of which in a wireless fashion. A plurality of Satellite Signal SS include a plurality of channel data.

In this embodiment, Communication Device **200** (FIG. **1**) also has the capability to display ground wave TV programs. Broadcast Center BC distributes a plurality of channel data to Tower TW via a fixed cable, which transfers the plurality of channel data via ground wave, i.e., Ground Wave Signal GWS to Communication Device **200**.

This paragraph illustrates the basic structure of Signal Processor **208** (FIG. **1**). Signal processor **208** is primarily composed of Voice Signal Processor **208***a*, Non-Voice Signal Processor **208***b*, TV Signal Processor **208***c*, and Splitter **208***d*. Splitter **208***d* distributes a plurality of wireless signals received from Antenna **218** (FIG. **1**) to Voice Signal Processor **208***a*, Non-Voice Signal Processor **208***b*, and TV Signal Processor **208***c*. Voice Signal Processor **208***a* processes the voice signal received via Antenna **218** and decodes such signal so as to output the voice signal from Speaker **216** (FIG. **1**). Non-Voice Signal Processor **208***b* processes various kinds of non-voice signals, such as, but not limiting to, channel controlling signals, GPS signals, and internet signals, so as to format and decode the received signals to be readable by CPU **211** (FIG. **1**). Packet signals, i.e., a series of signals composed of packets, are also processed by Non-Voice Signal Processor **208***b*. Packet signals representing voice signals are also processed by Non-Voice Signal Processor **208***b*. TV Signal Processor **208***c* processes the plurality of wireless signals received in the manners described hereinbefore in order for the channel data included therein to be decoded and thereby be output from LCD **201** (FIG. **1**) and Speaker **216** (FIG. **1**).

This paragraph illustrates the basic structure of TV Signal Processor **208***c* described hereinbefore. TV Signal Processor **208***c* is primarily composed of Mobile Signal Processor **208***c*1, Satellite Signal Processor **208***c*2, and Ground Wave Signal Processor **208***c*3. Mobile Signal Processor **208***c*1 processes a plurality of mobile signals received in the manners described hereinbefore in order for the channel data included therein to be decoded and thereby be output from LCD **201** (FIG. **1**) and Speaker **216** (FIG. **1**). Satellite Signal Processor **208***c*2 processes a plurality of Satellite Signal SS received in the manner described hereinbefore in order for the channel data included therein to be decoded and thereby be output from LCD **201** (FIG. **1**) and Speaker **216** (FIG. **1**). Ground Wave Signal Processor **208***c*3 processes a plurality of Ground Wave Signal GWS received in the manner described hereinbefore in order for the channel data included therein to be decoded and thereby be output from LCD **201** (FIG. **1**) and Speaker **216** (FIG. **1**).

As another embodiment of the present invention, Voice Signal Processor **208***a*, Non-Voice Signal Processor **208***b*, and TV Signal Processor **208***c* may be integrated and merged into one circuit and eliminate Splitter **208***d* in order to highly integrate Signal Processor **208** (FIG. **1**).

This paragraph illustrates the format of the plurality of channel data transferred described hereinbefore. In this embodiment, a plurality of channel data can be distributed in a TDMA format. In this embodiment, Channel Data CH1 is divided into CH1*a* and CH1*b*, Channel Data CH2 is divided into CH2*a* and CH2*b*, and Channel Data CH3 is divided into CH3*a* and CH3*b*, and transferred. Instead of 'chopping' each channel data, Channel Data CH1, CH2, and CH3 can be transferred in different frequencies (FDMA format) or scramble all of them and transfer within a certain width of frequency (CDMA or W-CDMA).

This paragraph illustrates the menu displayed on LCD **201** (FIG. **1**). In this embodiment, the user of Communication Device **200** has an option to select one of the functions installed in Communication Device **200**. Namely, the user can, by manipulation of Input Device **210** or by the voice recognition system, utilize Communication Device **200** as a cellular phone by selecting '1. Phone', as an email editor and send and/or receive emails by selecting '2. Email', as a TV monitoring device by selecting '3. TV', as a word processor by selecting '4. Memo', and as an Internet accessing device

by selecting '5. Internet'. In this embodiment, a TV screen is displayed on LCD 201 by selecting '3. TV'.

This paragraph illustrates the software program which administers the overall function explained hereinbefore. From the kind of the input signal input from Input Device 210 or by the voice recognition system, the related function assigned to such input signal is activated by CPU 211 (FIG. 1) (S1). For example, a phone function is activated when input signal '1' is input from Input Device 210 (S2a), an email function is activated when input signal '2' is input from Input Device 210 (S2b), a TV monitoring function is activated when input signal '3' is input from Input Device 210 (S2c), a word processing function is activated when input signal '4' is input from Input Device 210 (S2d), and an internet function is activated when input signal '5' is input from Input Device 210 (S2e). Another function can be selected from the menu described hereinbefore via Input Device 210 or by the voice recognition system after selecting one function, and enables to activate one function while the other function is still running (S3). For example, the user can utilize the phone function while watching TV, or access the Internet while utilizing the phone function.

This paragraph illustrates the information stored in RAM 206 (FIG. 1) in order to implement the foregoing functions. Voice Data Calculating Area 206a208c3 stores a software program to implement the phone function as described in S2a hereinbefore, and Voice Data Storage Area 206b stores the voice data received from or sending via Voice Signal Processor 208a. Email Data Calculating Area 206c stores a software program to implement the email function as described in S2b hereinbefore, and Email Data Storage Area 206d stores the email data received from or sending via Non-Voice Signal Processor 208b. TV Data Calculating Area 206e stores a software program to implement the cellular TV function as described in S2c hereinbefore, and TV Data Storage Area 206f stores the channel data received from TV Signal Processor 208c. Text Data Calculating Area 206g stores a software program to implement the word processing function as described in S2d hereinbefore, and Text Data Storage Area 206h stores a series of text data which are input and/or edited by utilizing Input Device 210 or via voice recognition system. Internet Data Calculating Area 206i stores a software program to implement the Internet function as described in S2e hereinbefore, and Internet Data Storage Area 206j stores a series of internet data, such as, but not limited to, HTML data, XML data, image data, audio/visual data, and other various types of data received from Non-Voice Signal Processor 208b. Some types of voice data, such as the voice data in a form of packet received from or sending via Non-Voice Signal Processor 208b may be stored in Voice Data Storage Area 206b.

This paragraph illustrates the information stored in TV Data Storage Area 206f described hereinbefore. In this embodiment, three types of channel data are stored in TV Data Storage Area 206f. Namely, channel data regarding Channel 1 is stored in Area 206f/1, channel data regarding Channel 2 is stored in Area 206f/2, and channel data regarding Channel 3 is stored in Area 206f/3. Here, each channel data is primarily composed of a series of motion picture data and a series of subtitle data which are designed to be displayed on LCD 201 (FIG. 1) and a series of audio data which are designed to be output from Speaker 216 (FIG. 1).

This paragraph illustrates the structure of Video Processor 202 described in FIG. 1. Email Data Processing Area 202a processes the email data stored in Email Data Storage Area 206d to be displayed on LCD 201 (FIG. 1). TV Data Processing Area 202b processes the channel data stored in TV Data Storage Area 206f to be displayed on LCD 201 (FIG. 1). Text Data Processing Area 202c processes the text data stored in Text Data Storage Area 206h to be displayed on LCD 201 (FIG. 1). Internet Data Processing Area 202d processes the internet data stored in Internet Data Storage Area 206j to be displayed on LCD 201 (FIG. 1). As another embodiment of the present invention, Email Data Processing Area 202a, TV Data Processing Area 202b, Text Data Processing Area 202c, and Internet Data Processing Area 202d may be merged into one circuit and delegate its function to CPU 211 (FIG. 1) in order to highly integrate Video Processor 202.

<<Cellular TV—Incoming Message Notice Displaying Function>>

The following paragraphs illustrate the function of displaying a notice of incoming message.

In this embodiment, Message MS1 is shown at the upper right corner of LCD 201 (FIG. 1) indicating that a new email has arrived while TV monitoring function is implemented.

This paragraph illustrates the data stored in Email Data Calculating Area 206c and Email Data Storage Area 206d in order to implement the incoming message function. Email Data Calculating Area 206c includes Incoming Message Calculating Area 206k which stores a software program described hereinafter, and Email Data Storage Area 206d includes Message Data Storage Area (MS1) 206m which stores the text data of MS1 (in the present example, the text data 'Email' as shown hereinbefore).

This paragraph illustrates the software program stored in Incoming Message Calculating Area 206k. First of all, CPU 211 (FIG. 1) checks whether a new incoming message has arrived by scanning Email Data Storage Area 206d (S1). If a new message has arrived (S2), CPU 211 retrieves the text data (MS1) from Message Data Storage Area (MS1) 206m and displays on LCD 201 (FIG. 1) as described hereinbefore for a specified period of time (S3). The software program is executed periodically with a fixed interval.

<<Cellular TV—Video Recording Function>>

The following paragraphs illustrate the function of video recording the TV programs, i.e., a series of channel data, of Communication Device 200 (FIG. 1).

In this embodiment, Message MS2 is shown on LCD 201 (FIG. 1) when the video recording function is implemented, and Message MS3 is shown when the implementation of the video recording function has been terminated.

This paragraph illustrates the information stored in TV Data Calculating Area 206e and TV Data Storage Area 206f in order to implement the video recording function. TV Data Calculating Area 206e includes Video Record Calculating Area 206n which stores a software program to implement the present function which is further explained in details hereinafter. TV Data Storage Area 206f includes Video Data Storage Area 206o and Message Data Storage Area (MS2, MS3) 206p. Video Data Storage Area 206o stores the recorded channel data retrieved from TV Data Storage Area 206f, more specifically from either Area 206f/1, Area 206f/2, or Area 206f/3 described hereinbefore. Video Storage Area 206o is divided into several sectors (not shown), therefore a plurality of channel data can be recorded and stored simultaneously.

This paragraph illustrates the software program stored in Video Record Calculating Area 206n. When a certain channel data (i.e., TV program) has been selected and start recording signal has been input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1), CPU 211 (FIG. 1) initiates the recording process, i.e., retrieves the relevant channel data from either Area 206f/1, Area 206f/2, or

Area 206*f*3 described hereinbefore and stores in one sector (not shown) in Video Data Storage Area 206*o* (S2). During the recording process, the text data of Message MS2 is retrieved from Message Data Storage Area (MS2, MS3) 206*p* and displayed at the upper right corner of LCD 201 (FIG. 1) as described hereinbefore indicating that the video recording function is in process (S3). If the stop recording signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system indicating to stop the video recording process (S4), CPU 211 stops the video recording process (S5), and retrieves the text data of Message MS3 from Message Data Storage Area (MS2, MS3) 206*p* and displays at the upper right corner of LCD 201 for a specified period of time (S6). Since Video Storage Area 206*o* is divided into several sectors as stated above, S1 from S6 can be repeated to record and store a plurality of channel data simultaneously.

This paragraph illustrates the software program stored in Video Record Calculating Area 206*n* to playback the recorded channel data. First, a channel data is selected and playback signal is input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Once these signals are received, CPU 211 (FIG. 1) initiates the playback process of the recorded channel data, i.e., CPU 211 retrieves the selected channel data from Video Data Storage Area 206*o*, and TV data processing Area 202*b* of Video Processor 202 (FIG. 1) processes the channel data to be displayed on LCD 201 (FIG. 1) (S2). This playback process continues until a stop playback signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a stop playback signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 stops the foregoing processes, and retrieves the text data of Message MS3 from Message Data Storage Area (MS2, MS3) 206*p* and displays at the upper right corner of LCD 201 for a specified period of time (S4).

<<Cellular TV—Screen Shot Function>>

The following paragraphs illustrate the function of screen shot of Communication Device 200 (FIG. 1), i.e., a function to capture the screen displayed on LCD 201 (FIG. 1) and store it as a single image.

In this embodiment, Message MS4 is shown on LCD 201 (FIG. 1) when the screen shot function is implemented.

This paragraph illustrates the information stored in TV Data Calculating Area 206*e* and TV Data Storage Area 206*f* in order to implement the screen shot function. TV Data Calculating Area 206*e* includes Screen Shot Calculating Area 206*q* which stores a software program to implement the present function which is further explained in details hereinafter. TV Data Storage Area 206*f* includes Screen Shot Data Storage Area 206*r* and Message Data Storage Area (MS4) 206*s*. Screen Shot Data Storage Area 206*r* stores the recorded image data retrieved from TV Data Storage Area 206*f*, more specifically from either Area 206*f*1, Area 206*f*2, or Area 206*f*3 described hereinbefore. Screen Shot Storage Area 206*r* is divided into several sectors (not shown), therefore a plurality of image data can be recorded and stored simultaneously.

This paragraph illustrates the software program stored in Screen Shot Calculating Area 206*q*. When a start recording signal has been input by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1), CPU 211 (FIG. 1) initiates the recording process, i.e., retrieves an image data, which is currently displayed on LCD 201 (FIG. 1), from the relevant area of TV Data Storage Area 206*f*, i.e., from either Area 206*f*1, Area 206*f*2, or Area 206*f*3 described hereinbefore, and stores in one of the sectors (not shown) in Screen

Shot Data Storage Area 206*r* (S2). CPU 211 retrieves the text data of Message MS4 from Message Data Storage Area (MS4) 206*s* and displays at the upper right corner of LCD 201 (FIG. 1) as described hereinbefore for a specific period of time indicating that the screen shot function is implemented (S3). Then CPU 211 retrieves the image data which is just stored in Screen Shot Data Storage Area 206*r*, and TV Data Processing Area 202*b* of Video Processor 202 (FIG. 1) processes the image data to be displayed on LCD 201 (FIG. 1) for a specific period of time (S4). Since screen shot storage Area 206*r* is divided into several sectors as stated above, S1 from S4 can be repeated to record and store a plurality of image data.

This paragraph illustrates the software program stored in Screen Shot Calculating Area 206*q* to display the recorded image data. First, an image data is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). When this signal is received, CPU 211 (FIG. 1) initiates the display process of the recorded image data, i.e., CPU 211 retrieves the selected image data from Screen Shot Data Storage Area 206*r*, and TV Data Processing Area 202*b* of Video Processor 202 (FIG. 1) processes the image data to be displayed on LCD 201 (FIG. 1) (S2). The image data is displayed until a close signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a close signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 terminates to display the image data (S4).

<<Cellular TV—Timer Video Recording Function (1)>>

The following paragraphs illustrate the timer video recording function of Communication Device 200 (FIG. 1), i.e., a function to video record the TV programs (a series of channel data) at specified times.

This paragraph illustrates the items which are input by utilizing Input Device 210 (FIG. 1) or via voice recognition system. In this embodiment, the items which are input by utilizing Input Device 210 or via voice recognition system are displayed on LCD 201. Here, the items are the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the '×3 mode' and the '×6 mode'. The high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The '×3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The '×6 mode' records the selected TV program with lesser quality compared to the '×3 mode', however, the available length of time to record is fairly long compared to the '×3 mode'.

This paragraph illustrates the software program stored in Video Record Calculating Area 206*n* to specify the items described hereinbefore. First of all, the channel number is selected by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1). Next, the start time (S2), the stop time (S3), and the mode (S4) are input and/or selected in the same manner. Once the foregoing steps are completed, more series of S1 through S4 can be repeated as many as the user of Communication Device 200 desires (S5). Namely, the function of timer video recording enables to timer record more than one TV programs (i.e., a plurality of channel data).

This paragraph illustrates the software program stored in Video Record Calculating Area 206n to implement the timer video recording function. Once the function of timer video recording is initiated by utilizing Input Device 210 (FIG. 1) or via voice recognition system (S1), CPU 211 (FIG. 1) checks the current time (S2). If the current time matches the start time specified by the process described in S2 of hereinbefore (S3), then CPU 211 identifies the channel number to be recorded and the mode selected of which the details are explained in S4 of hereinbefore (S4), and initiates the recording process of the TV program (i.e., channel data) (S5). CPU 211 continues the recording process until the current time matches the stop time specified by the process described in S3 of hereinbefore (S6). The recording process is terminated when the current time matches the stop time (S7).

This paragraph illustrates the data stored in video data storage Area 206o. In this embodiment, Video Data Storage Area 206o is divided into certain areas in order to store a plurality of channel data. In this embodiment, the TV programs (a plurality of channel data) of channel numbers 1, 2, and 3 are stored in Areas 206o1, 206o2, and 206o3, respectively. Since Video Data Storage Area 206o is divided into certain areas and thereby enables to store a plurality of channel data (here, the channel data of Channel 1, 2, and 3), a plurality of channel data (more than one TV programs) can be recorded simultaneously.

This paragraph illustrates the area in which the items described hereinbefore are stored. In this embodiment, the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode' are stored in Timer Data Storage Area 206t of RAM 206 (FIG. 1).

This paragraph illustrates the details of Timer Data Storage Area 206t. Timer Data Storage Area 206t is composed of two types of areas. The first area administers the current time, and the second area stores the items explained hereinbefore. Here, the first area is Timer 206t4 and provides the current time to CPU 211 (FIG. 1), which is utilized in S3 (initiation of the video recording) and S6 (termination of the video recording) of the flowchart described hereinbefore. The second area is described as Areas 206t1, 206t2, and 206t3. The number of the second area corresponds with the number of the areas allocated in Video Data Storage Area 206o explained hereinbefore. Each of Areas 206t1, 206t2, and 206t3 stores the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. In sum, Area 206t1 stores the start time, the stop time, and the mode for Channel 1, Area 206t2 stores the start time, the stop time, and the mode for Channel 2, and Area 206t3 stores the start time, the stop time, and the mode for Channel 3.

<<Cellular TV—PC Download Function>>

The following paragraphs illustrate the function to download various types of data stored in Communication Device 200 to a personal computer.

This paragraph illustrates the basic components to implement the present function. In this embodiment, Communication Device 200 transmits a series of PC Download Signal PDS to Personal Computer PC. Such sequence is performed

under the control of CPU 211 (FIG. 1). PC Download Signal PDS carries a plurality of data stored in Communication Device 200, more specifically in RAM 206 (FIG. 1). Logically any types of data can be transmitted from Communication Device 200 to Personal Computer PC. For example, data, software program, and other various types of information stored in Voice Data Calculating Area 206a208c3, Voice Data Storage Area 206b, Email Data Calculating Area 206c, Email Data Storage Area 206d, TV Data Calculating Area 206e, TV Data Storage Area 206f, Text Data Calculating Area 206g, Text Data Storage Area 206h, Internet Data Calculating Area 206l, Internet Data Storage Area 206j, all of which are stored in RAM 206 as explained hereinbefore, can be transmitted from Communication Device 200 to Personal Computer PC.

The method of transmitting a series of PC Download Signal PDS can be arranged in several ways. The first method is to transmit a series of PC Download Signal PDS directly from Communication Device 200 to Personal Computer PC as described hereinbefore. In this method, CPU 211 (FIG. 1) first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is directly transmitted to Personal Computer PC via Antenna 218 (FIG. 1) in a wireless fashion. In order to implement the first method, Personal Computer PC must have the capability to send and receive data in a wireless fashion. The second method is to transmit a series of PC Download Signal PDS indirectly from Communication Device 200 to Personal Computer PC utilizing network, such as the Internet. In this method, CPU 211 (FIG. 1) first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is transmitted to a computer (e.g., the Internet server, however, not shown) or a computer connected thereto (not shown) in a wireless fashion. Here, the computer (e.g., the Internet server) or the computer connected thereto has the capability to send and receive data in a wireless fashion. The computer (e.g., the Internet server) or the computer connected thereto is connected to the network (e.g., the Internet). Then the computer (e.g., the Internet server) or the computer connected thereto transmits the target to Personal Computer PC via network by an ordinary method commonly utilized to transfer data via network. No capability for Personal Computer PC to send and receive data in a wireless fashion is required in this method. The third method is to transmit a series of PC Download Signal PDS indirectly from Communication Device 200 to personal computer utilizing artificial satellite (not shown). In this method, CPU 211 (FIG. 1) first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is transmitted to an artificial satellite in a wireless fashion. The satellite is connected to a network (e.g., the Internet, however, not shown). Then the satellite transmits the target to Personal Computer PC via network by an ordinary method commonly utilized to transfer data from a satellite via network to a computer connected thereto. No capability for Personal Computer PC to send and receive data in a wireless fashion is required in this method.

This paragraph illustrates the software program stored in a specific area of RAM 206 (FIG. 1) to implement the present function. In this embodiment, a list of data, software program, and other various types of information stored in RAM 206 is displayed on LCD 201 (FIG. 1) under the control of CPU 211 (FIG. 1) (S1). In the next step, one or more of data, software program, and other various types of

information, which are to be the components of the target, are selected by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S2). The method of transmitting the target is selected in the same manner (S3). Once a start signal indicating to initiate the downloading process is input by utilizing Input Device **210** or via voice recognition system (S4), the downloading process is initiated by the method selected in S3 (S5) until the target is completely downloaded to Personal Computer PC (S6). Once CPU **211** (FIG. **1**) detects that the target has been completely downloaded to Personal Computer PC to the last bit, the downloading process is terminated (S7).

<<Cellular TV—Sending by Email Function>>

The following paragraphs illustrate the method to send the recorded TV program (i.e., channel data) and screen shot data via emails.

This paragraph illustrates the items displayed on LCD **201** (FIG. **1**). By way of utilizing Input Device **210** (FIG. **1**) or the voice recognition system, the receiver's address is typed in 'Email Address' column, another email address is typed in 'CC' column, the title or the subject of the email is typed in 'Subject' column, the locations of recorded TV program (i.e., channel data) and/or screen shot data in RAM **206** (FIG. **1**) are typed in 'Attachment', and a series of text data, i.e., a message to the receiver of the email is typed in 'Text' column.

This paragraph illustrates the data stored in RAM **206** (FIG. **1**) for purposes of sending the recorded TV program (i.e., channel data) and screen shot data via emails. In this embodiment, RAM **206** (FIG. **1**) includes four areas to implement the present function, i.e., Email Information Storage Area **206***u*, Email Information Calculating Area **206***v*, Video Data Storage Area **206***w*, and Screen Shot Data Storage Area **206***x*. Email Information Storage Area **206***u* stores the information regarding the items explained hereinbefore, namely the receiver's address typed in 'Email Address' column, another email address typed in 'CC' column, the title or the subject of the email typed in 'Subject' column, the locations of recorded TV program (i.e., channel data) and/or screen shot data in RAM **206** (FIG. **1**) typed in 'Attachment', and a series of text data, i.e., a message to the receiver of the email typed in 'Text' column. Email Information Calculating Area **206***v* stores the software program explained hereinafter. Video Data Storage Area **206***w* stores the recorded TV program (i.e., channel data) which is to be attached to and sent by the email. Screen Shot Data Storage Area **206***x* stores the screen shot data which is to be attached to and sent by the email.

This paragraph illustrates the software program stored in Email Information Calculating Area **206***v*. First, all the items described hereinbefore are input by utilizing Input Device **210** (FIG. **1**) or the voice recognition system (S1). Once a send signal is input by utilizing Input Device **210** or via voice recognition system indicating to send the email (S2), CPU **211** (FIG. **1**) attaches the recorded TV program (i.e., channel data) and/or the screen shot data stored in Video Data Storage Area **206***w* and/or Screen Shot Data Storage Area **206***x*(S3), and the email is sent to the receiver's email address (S4).

As another embodiment, Video Data Storage Area **206***w* and Screen Shot Data Storage Area **206***x* may be omitted, and the recorded TV program (i.e., channel data) may be retrieved directly from Video Data Storage Area **206***o* and the screen shot data may be retrieved directly from Screen Shot Data Storage Area **206***r*.

<<Cellular TV—EZ Recording Function>>

The following paragraphs illustrate the EZ recording function, which is an improvement of the function of the timer video recording illustrated hereinbefore. The EZ recording function provides an easy and convenient method to input some of the items displayed on LCD **201** (FIG. **1**), i.e., the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time).

This paragraph illustrates the method to input the above mentioned items utilizing the EZ recording function. In this embodiment, a TV listing which presents the channel number, the time from which the TV program starts and the time until which the TV program continues is displayed on LCD **201**. For example, TV Program Pr **1** is shown on Channel **1** and starts from 6:00 p.m. and ends at 7:00 p.m.; TV Program Pr **2** is shown on Channel **1** and starts from 7:00 p.m. and ends at 8:00 p.m.; TV Program Pr **3** is shown on Channel **1** and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr **4** is shown on Channel **2** and starts from 6:00 p.m. and ends at 8:00 p.m.; TV Program Pr **5** is shown on Channel **2** and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr **6** is shown on Channel **3** and starts from 6:00 p.m. and ends at 7:00 p.m.; and TV Program Pr **7** is shown on Channel **3** and starts from 7:00 p.m. and ends at 9:00 p.m. The TV program displayed on LCD **201** (FIG. **1**) is selected by way of utilizing the cursor displayed thereon. In the present example, the cursor is located on TV Program Pr **2**.

This paragraph illustrates the software program to implement the EZ recording function. First of all, the TV program which is to be recorded is selected by moving the cursor displayed on LCD **201** (FIG. **1**). In this embodiment, the cursor currently located on TV Program Pr **2** can be moved up and highlight TV Program Pr **1**, or instead moved down and highlight TV Program Pr **3**. The cursor can move left and highlight TV Program Pr **4**. The highlighted TV program is the object of the EZ recording function, and when a specific key is entered by utilizing Input Device **210** (FIG. **1**) or via voice recognition system, CPU **211** (FIG. **1**) stores the channel number, the start time, and the stop time in Timer Data Storage Area **206***t* as described hereinbefore. In this embodiment, CPU **211** stores Channel **1** as the channel number, 7:00 p.m. as the start time, and 8:00 p.m. as the stop time in Area **206***t*1 of Timer Data Storage Area **206***t* (S1). Next, the mode is selected (S2). The mode represents the high quality mode, the standard mode, the '×3 mode' and the '×6 mode'. Here, the high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The '×3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The '×6 mode' records the selected TV program with lesser quality compared to the '×3 mode', however, the available length of time to record is fairly long compared to the '×3 mode' as described hereinbefore. The method of selecting the mode is same to the one explained in S4 hereinbefore. The sequence of S1 and S2 can be repeated, and has the same function of the software program explained hereinbefore, namely a plurality of TV programs can be timer recorded simultaneously (S3). In this embodiment, TV programs Pr **1**, Pr **4**, and Pr **6** can be timer recorded simultaneously. All the relevant data are stored in Timer Data Storage Area **206***t*. Once setting the channel number, the start time, the stop time, and the mode are

selected by the above mentioned method, CPU **211** (FIG. **1**) starts the timer mode. By way of starting the timer mode, the software program explained hereinbefore is initiated (S4).

This paragraph illustrates the data stored in TV Server TVS. In this embodiment, TV Server TVS contains TV Listing Storage Area TVS **7** to store the updated data of the TV listings which are displayed on LCD **201** (FIG. **1**) on demand.

<<Cellular TV—Subtitle Displaying Function>>

The following paragraphs illustrate the function to display subtitles on LCD **201** (FIG. **1**) of Communication Device **200** (FIG. **1**).

In this embodiment, Subtitle ST is shown on the lower portion of LCD **201** (FIG. **1**) when TV screen is displayed thereon.

This paragraph illustrates the software program to implement the function to display Subtitle ST on LCD **201** (FIG. **1**). When specific signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system indicating to display Subtitle ST (S1), CPU **211** (FIG. **1**) retrieves a series of subtitle data from RAM **206** (FIG. **1**) and displays Subtitle ST on LCD **201** (FIG. **1**).

This paragraph illustrates the relevant information stored in RAM **206** (FIG. **1**) in order to implement the function to display Subtitle ST. In this embodiment, TV Data Calculating Area **206**e includes Subtitle Data Calculating Area **206**e1 which stores the software program explained hereinbefore. In addition, TV Data Storage Area **206**f includes Subtitle Data Storage Area **206**f1 which stores a plurality of text data which are designed to be displayed on LCD **201** (FIG. **1**) after being processed by Video Processor **202** (FIG. **1**). Two types of text data are stored, i.e., the text code data and the text image data. The text code data identifies the specific text, such as 'A', 'B', and 'C', and the text image data represents the image of each text of 'A', 'B', and 'C' which are to be displayed on LCD **201**.

This paragraph illustrates the method to process the text data stored in Subtitle Data Storage Area **206**f1 in order to be displayed on LCD **201** (FIG. **1**). In this embodiment, TV Data Processing Area **202**b includes Subtitle Data Processing Area **202**b1. First of all, a series of text code data are retrieved from Subtitle Data Storage Area **206**f1 under the administration of CPU **211** (FIG. **1**). Then a series of corresponding text image data are retrieved from Subtitle Data Storage Area **206**f1 under the administration of CPU **211**. The retrieved text image data are then transferred to Subtitle Data Processing Area **202**b1. Subtitle Data Processing Area **202**b1 processes the retrieved text image data to produce a series of real images (such as adding colors) and the processed images are displayed on LCD **201**.

This paragraph illustrates the information received in a wireless fashion via Antenna **218** (FIG. **1**). The information can be received in a TDMA format. In this embodiment, three channel data, i.e., Channel Data **1**, Channel Data **2**, and Channel Data **3** are received in a wireless fashion via Antenna **218**. When utilizing the TDMA format, each channel data and the corresponding subtitle data are divided in to packets, and each packet is transferred and received in turn as described hereinbefore. Namely, the first portion of Channel Data **1** (CH1a) and the first portion of the corresponding subtitle data (SD1a) are included in the first packet, the first portion of Channel Data **2** (CH2a) and the first portion of the corresponding subtitle data (SD2a) are included in the second packet, the first portion of Channel Data **3** (CH3a) and the first portion of the corresponding subtitle data (SD3a) are included in the third packet, the second portion of Channel Data **1** (CH1b) and the second

portion of the corresponding subtitle data (SD1b) are included in the fourth packet, the second portion of Channel Data **2** (CH2b) and the second portion of the corresponding subtitle data (SD2b) are included in the fifth packet, and the second portion of Channel Data **3** (CH3b) and the second portion of the corresponding subtitle data (SD3b) are included in the sixth packet.

On the other hand, the information can be received in a CDMA format or FDMA format. Under these formats, channel data and the corresponding subtitle data can be transferred and received seamlessly compared to the TDMA format. In this embodiment, Channel Data CH1 and the corresponding Subtitle Data SD1, Channel Data CH2 and the corresponding Subtitle Data SD2, and Channel Data CH3 and the corresponding Subtitle Data SD3 are transferred and received simultaneously by utilizing CDMA and/or FDMA format.

<<Cellular TV—Pay Per View Function>>

The following paragraphs illustrate the PPV (pay per view) function of Communication Device **200** (FIG. **1**).

In this embodiment, TV Data Calculation Area **206**e includes Decoder Storage Area **206**e2, i.e., an area which stores a software program to decode a series of encoded channel data. TV Data Storage Area **206**f includes Encoded TV Data Storage Area **206**f2, i.e., an area which stores a series of encoded channel data received via Antenna **218** (FIG. **1**) in a wireless fashion, and Authenticated TV Program Information Storage Area **206**f3, i.e., an area which stores information regarding the authenticated TV programs.

This paragraph illustrates the sequence of the decoder stored in Decoder Storage Area **206**e2. First of all, a specific TV program (i.e., channel data) is selected by utilizing Input Device **210** (FIG. **1**) or via the voice recognition system (S1). The decoder then retrieves the information stored in Authenticated TV Program Information Storage Area **206**f3 and identifies whether the selected TV program is authenticated (S2). If the selected TV program is authenticated, decoder decodes the encoded channel data stored in Encoded TV Data Storage Area **206**f2 (S3). The decoded channel data is displayed on LCD **201** (FIG. **1**) via Video Processor **202** (FIG. **1**) (S4).

The software program, in this embodiment, updates the information stored in Authenticated TV Program Information Storage Area **206**f3. The software program is stored in either TV Server TVS or Communication Device **200** (FIG. **1**). First of all, the payment status of the monthly fee paid by the user of Communication Device **200** is checked periodically, for example at the end of each month (S1). If the monthly payment is not yet paid (S2), and the grace period (e.g., 10 days) for paying the monthly fee has already been expired (S3), the decoder stored in Decoder Storage Area **206**e2 is erased therefrom and thereby PPV function is no longer available (S4). As another embodiment, the decoder can be frozen instead of being erased for future use.

PPV function applies to each TV program, i.e., authentication process applies to each TV program (i.e., channel data) and enables the TV program to be viewed on LCD **201** (FIG. **1**) only when such TV program is authenticated. However, as another embodiment, PPV function can be applied to each channel number. For example, a whole channel number, such as Channel **3** hereinbefore, can be blocked and enabled to be viewed by PPV function only when such channel is authenticated.

<<Cellular TV—Timer Video Recording Function (2)>>

This paragraph illustrates the second embodiment of the timer video recording function, i.e., the function to video record the TV programs (a plurality of channel data) at

specified times of Communication Device **200** (FIG. **1**). The primary difference between the timer video recording function illustrated hereinbefore (the second embodiment) and the one explained hereinbefore (the first embodiment) is that the former stores the series of channel data in a personal computer which is a separate device from Communication Device **200** (FIG. **1**) whereas the latter stores the series of channel data in Communication Device **200** itself.

In this embodiment, Communication Device **200** is connected with Personal Computer PC via Network NT. Communication Device **200** and Network NT are electronically linked. Personal computer PC is a computer which is electronically linked to Network NT, such as the Internet. Communication Device **200** transfers to Personal Computer PC a set of Timer Video Recording Signal TVRS, the details of which is explained hereinafter.

This paragraph illustrates the items which are input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system. In this embodiment, the items are displayed on LCD **201**, i.e., the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. Here, the high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The 'x3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The 'x6 mode' records the selected TV program with lesser quality compared to the 'x3 mode', however, the available length of time to record is fairly long compared to the 'x3 mode'.

This paragraph illustrates the software program stored in Video Record Calculating Area **206***n* to specify the items described hereinbefore. First of all, the channel number is selected by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). Next, the start time (S2), the stop time (S3), and the mode (S4) are input and/or selected by utilizing Input Device **210** or via voice recognition system. Once the foregoing steps are completed, more series of S1 through S4 can be repeated as many as the user of Communication Device **200** desires (S5). Namely, the function of timer video recording enables to timer record more than one TV programs (a plurality of channel data).

Once the items described hereinbefore are identified, the items are incorporated into Timer Video Recording Signal TVRS and transferred to Personal Computer PC via Network NT as described hereinbefore.

Personal Computer PC has an area therein to store the software program described hereinbefore, which implements the timer video recording function. Once the timer video recording function is initiated by receiving Timer Video Recording Signal TVRS from Communication Device **200** via Network NT (S1), the CPU of Personal Computer PC checks the current time (S2). If the current time matches the start time retrieved from Timer Video Recording Signal TVRS (S3), then the CPU of Personal Computer PC identifies the channel number to be recorded and the mode selected of which the details are explained hereinbefore (S4), and initiates the recording process of the TV program (i.e., channel data) (S5). The CPU of Personal Computer PC continues the recording process until the

current time matches the stop time retrieved from Timer Video Recording Signal TVRS (S6). The recording process is terminated when the current time matches the stop time (S7).

Personal computer PC has an area therein which is similar to Video Data Storage Area **206***o* described hereinbefore. The area is divided into certain areas in order to store a plurality of channel data as described hereinbefore. In this embodiment, the TV programs (a plurality of channel data) of channel numbers **1**, **2**, and **3** are stored in each area of Personal Computer PC (which corresponds to Areas **206***o***1**, **206***o***2**, and **206***o***3** hereinbefore). Since each area of Personal Computer PC is divided into certain areas and thereby enables to store a plurality of channel data, a plurality of channel data (more than one TV program) can be recorded simultaneously.

Personal computer PC has an area therein which is similar to Timer Data Storage Area **206***t* described hereinbefore. All data are retrieved from Timer Video Recording Signal TVRS. In this embodiment, the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode' are stored in the area of Personal Computer PC.

The area explained in the previous paragraph is composed of two types of areas. The first area administers the current time, and the second area stores the items explained hereinbefore. Here, the first area is a timer similar to Timer **206***t***4** hereinbefore and provides the current time to the CPU of Personal Computer PC, which is utilized in S3 (initiation of the video recording) and S6 (termination of the video recording) of the flowchart described hereinbefore. The second area is similar to Areas **206***t***1**, **206***t***2**, and **206***t***3** hereinbefore. The areas of Personal Computer PC corresponding to Areas **206***t***1**, **206***t***2**, and **206***t***3** hereinbefore store the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. In other words, the area of Personal Computer PC corresponding to Area **206***t***1** stores the start time, the stop time, and the mode for Channel **1**, the area of Personal Computer PC corresponding to Area **206***t***2** stores the start time, the stop time, and the mode for Channel **2**, and the area of Personal Computer PC corresponding to Area **206***t***3** stores the start time, the stop time, and the mode for Channel **3**.

<<Cellular TV—Summary>>

The foregoing invention may be summarized as the following. A communication device comprising a TV monitoring system, a wireless communication system, and an antenna wherein said antenna receives a plurality of TV data which are displayed on a display means installed into said communication device, and said antenna also receives communication data which is necessary to operate said wireless communication system thereby enabling the user of said communication device to enjoy watching TV on said display means as well as utilizing said wireless communication system.

<<On Demand TV Function>>

The following paragraphs illustrate the on demand TV function which enables Communication Device 200 to display a TV program on LCD 201 (FIG. 1) on the user's demand.

This paragraph illustrates the storage area included in Host Information Storage Area H00a of Host H. In this embodiment, Host Information Storage Area H00a includes On Demand TV Information Storage Area H40a of which the data and the software programs stored therein are described hereinafter.

This paragraph illustrates the storage areas included in On Demand TV Information Storage Area H40a. In this embodiment, On Demand TV Information Storage Area H40a includes On Demand TV Data Storage Area H40b and On Demand TV Software Storage Area H40c. On Demand TV Data Storage Area H40b stores the data necessary to implement the present function on the side of Host H, such as the ones described hereinafter. On Demand TV Software Storage Area H40c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described hereinafter.

This paragraph illustrates the storage area included in On Demand TV Data Storage Area H40b. In this embodiment, On Demand TV Data Storage Area H40b includes TV Program Data Storage Area H40b1 of which the data stored therein are described hereinafter.

This paragraph illustrates the storage areas included in TV Program Data Storage Area H40b1. In this embodiment, TV Program Data Storage Area H40b1 comprises two columns, i.e., 'Channel ID' and 'TV Program Data'. The column 'Channel ID' stores the identifications of the channels available on Communication Device 200. The column 'TV Program Data' stores the TV program data of the corresponding channel ID. In the example described in the present drawing, TV Program Data Storage Area H40b1 stores 'Channel ID' H40ChID1 of which the 'TV Program Data' is H40TPD1; 'Channel ID' H40ChID2 of which the 'TV Program Data' is H40TPD2; 'Channel ID' H40ChID3 of which the 'TV Program Data' is H40TPD3; 'Channel ID' H40ChID4 of which the 'TV Program Data' is H40TPD4; and 'Channel ID' H40ChID5 of which the 'TV Program Data' is H40TPD5.

This paragraph illustrates the structure of TV program data stored in the column 'TV Program Data' of TV Program Data Storage Area H40b1. Taking TV Program Data H40TPD1 for example, the data comprises two types of data, i.e., the time data (which is described as 'Time (Min)' in the present drawing) and the TV program packet data (which is described as 'TV Program Packet Data' in the present drawing). TV Program Data H40TPD1, in the present example, is divided into ten TV program packet data, i.e., H40TPD1a, H40TPD1b, H40TPD1c, H40TPD1d, H40TPD1e, H40TPD1f, H40TPD1g, H40TPD1h, H40TPD1i, H40TPD1j, and H40TPD1k of which the corresponding time data are '0', '1', '2', '3', '4', '5', '6', '7', '8', '9', and '10', respectively. Each of time data '1' through '10' represents the time frame which the corresponding TV program data is displayed. Namely, TV program data H40TPD1a is displayed at time '0'. TV program data H40TPD1b is displayed at time '1'. TV program data H40TPD1c is displayed at time '2'. TV program data H40TPD1d is displayed at time '3'. TV program data H40TPD1e is displayed at time '4'. TV program data H40TPD1f is displayed at time '5'. TV program data H40TPD1g is displayed at time '6'. TV program data H40TPD1h is displayed at time '7'. TV program data

H40TPD1i is displayed at time '8'. TV program data H40TPD1j is displayed at time '9'. TV program data H40TPD1k is displayed at time '10'. Therefore, TV Program Data H40TPD1 can be paused and resumed from any time frame by identifying the time data. All TV program data stored in TV Program Data Storage Area H40b1 are composed of a plurality of TV program packet data, and a time data is assigned to each TV program packet data as described hereinbefore.

This paragraph illustrates the software programs stored in On Demand TV Software Storage Area H40c. In this embodiment, On Demand TV Software Storage Area H40c stores TV Program Packet Data Sending Software H40c1, Timer Software H40c2, Current Time Identifying Software H40c3, Next Packet Data Sending Software H40c4, TV Program Pausing Software H40c5, TV Program Resume Software H40c6, and TV Program Initializing Software H40c7. TV Program Packet Data Sending Software H40c1 is the software program which is described hereinafter. Timer Software H40c2 is the software program which is described hereinafter. Current Time Identifying Software H40c3 is the software program which identifies the current time produced by Timer Software H40c2. Next Packet Data Sending Software H40c4 is the software program which is described hereinafter. TV Program Pausing Software H40c5 is the software program which is described hereinafter. TV Program Resume Software H40c6 is the software program which is described hereinafter. TV Program Initializing Software H40c7 is the software program which is described hereinafter.

This paragraph illustrates the storage area included in RAM 206 (FIG. 1) of Communication Device 200. In this embodiment, RAM 206 includes On Demand TV Information Storage Area 20640a of which the data and the software programs stored therein are described hereinafter.

The data and software programs stored in On Demand TV Information Storage Area 20640a are downloaded from Host H.

This paragraph illustrates the storage areas included in On Demand TV Information Storage Area 20640a. In this embodiment, On Demand TV Information Storage Area 20640a includes On Demand TV Data Storage Area 20640b and On Demand TV Software Storage Area 20640c. On Demand TV Data Storage Area 20640b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter. On Demand TV Software Storage Area 20640c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described hereinafter.

This paragraph illustrates the storage area included in On Demand TV Data Storage Area 20640b. In this embodiment, On Demand TV Data Storage Area 20640b includes TV Program Data Storage Area 20640b1 of which the data stored therein are described hereinafter.

This paragraph illustrates the data stored in TV Program Data Storage Area 20640b1. In this embodiment, TV Program Data Storage Area 20640b1 comprises two columns, i.e., 'Channel ID' and 'TV Program Packet Data'. The column 'Channel ID' stores the identification of the channels available on Communication Device 200. The column 'TV Program Packet Data' stores the TV program packet data of the corresponding channel ID received from Host H.

This paragraph illustrates the software program stored in On Demand TV Software Storage Area 20640c. In this embodiment, On Demand TV Software Storage Area 20640c stores TV Program Initiating Software 20640c1, TV

Program Packet Data Receiving Software **20640**c**2**, TV Program Packet Data Displaying Software **20640**c**3**, Next Packet Data Receiving Software **20640**c**4**, TV Program Pausing Software **20640**c**5**, TV Program Resume Software **20640**c**6**, and TV Program Initializing Software **20640**c**7**. TV Program Initiating Software **20640**c**1** is the software program which is described hereinafter. TV Program Packet Data Receiving Software **20640**c**2** is the software program which is described hereinafter. TV Program Packet Data Displaying Software **20640**c**3** is the software program which is described hereinafter. Next Packet Data Receiving Software **20640**c**4** is the software program which is described hereinafter. TV Program Pausing Software **20640**c**5** is the software program which is described hereinafter. TV Program Resume Software **20640**c**6** is the software program which is described hereinafter. TV Program Initializing Software **20640**c**7** is the software program which is described hereinafter.

This paragraph illustrates Timer Software H**40**c**2** stored in On Demand TV Software Storage Area H**40**c of Host H. In this embodiment, Host H, first of all, resets the time to '0' (S1). Host H administers the time, and everytime one minute has past (S2), the timer is incremented by '1' until the time reaches the maximum number. Referring to TV Program Data H**40**TPD**1** described hereinbefore for example, when the time is reset to '0', the TV program packet data H**40**TPD**1**a is ready to be retrieved from TV Program Data Storage Area H**40**b**1**. After one minute has passed, the timer is incremented and the time is '1' at which the TV program packet data H**40**TPD**1**b is ready to be retrieved from TV Program Data Storage Area H**40**b**1**. When the timer is incremented and the time is '2', the TV program packet data H**40**TPD**1**c is ready to be retrieved from TV Program Data Storage Area H**40**b**1**. In the same manner, when the timer is incremented and the time is '3', the TV program packet data H**40**TPD**1**d is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '4', the TV program packet data H**40**TPD**1**e is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '5', the TV program packet data H**40**TPD**1**f is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '6', the TV program packet data H**40**TPD**1**g is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '7', the TV program packet data H**40**TPD**1**h is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '8', the TV program packet data H**40**TPD**1**i is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '9', the TV program packet data H**40**TPD**1**j is ready to be retrieved from TV Program Data Storage Area H**40**b**1**; when the timer is incremented and the time is '10', the TV program packet data H**40**TPD**1**k is ready to be retrieved from TV Program Data Storage Area H**40**b**1**. The timer is no longer be incremented thereafter since the time '10' is the maximum number for TV Program Data H**40**TPD**1**. The maximum number of each TV program data stored in TV Program Data Storage Area H**40**b**1** may be different from the other TV program data stored therein.

This paragraph illustrates TV Program Initiating Software **20640**c**1** stored in On Demand TV Software Storage Area **20640**c of Communication Device **200**. In this embodiment, a certain channel ID is selected by utilizing Input Device **210** (FIG. 1) or via voice recognition system (S1). Next, CPU

211 (FIG. 1) sends TV Program Data Request **20640**TPDR to Host H of which the data stored therein are described hereinafter (S2).

This paragraph illustrates the data included in TV Program Data Request **20640**TPDR described in S2 hereinbefore. In this embodiment, TV Program Data Request **20640**TPDR includes Request Signal **20640**TPDR**1** and Channel ID **20640**TPDR**2**. Request Signal **20640**TPDR**1** is an indication to Host H to retrieve the TV program data therefrom corresponding to Channel ID **20640**TPDR**2**, and Channel ID **20640**TPDR**2** is the channel ID selected in S1 hereinbefore.

This paragraph illustrates TV Program Packet Data Sending Software H**40**c**1** stored in On Demand TV Software Storage Area H**40**c of Host H. In this embodiment, Host H, first of all, receives TV Program Data Request **20640**TPDR (S1). Host H then retrieves Channel ID **20640**TPDR**2** therefrom (S2), and identifies the channel ID (S3). Host H identifies the current time of the TV program data of the corresponding channel ID by utilizing Current Time Identifying Software H**40**c**3** (S4), and retrieves the corresponding TV program packet data from TV Program Data Storage Area H**40**b**1** (S5). Host H sends to Communication Device **200** thereafter Requested TV Program Data H**40**RTPD of which the data stored therein are described hereinafter (S6). Assuming that Channel ID **20640**TPDR**2** included in TV Program Data Request **20640**TPDR represents 'Channel ID' H**40**ChID**1** stored in TV Program Data Storage Area H**40**b**1**. Host H retrieves and identifies the 'Channel ID' as H**40**ChID**1** in S2 and S3. Assuming that the TV program corresponding to 'Channel ID' H**40**ChID**1** is already on-air for five minutes and is just about to start the sixth minute of the TV program. Host H identifies the current time (i.e., 'Time (Min)') as '5' in S4 by utilizing Current Time Identifying Software H**40**c**3**, and retrieves the corresponding 'TV Program Packet Data' H**40**TPD**1**f from TV Program Data Storage Area H**40**b**1** in S5, which is sent to Communication Device **200** as Requested TV Program Data H**40**RTPD in S6.

This paragraph illustrates the data stored in Requested TV Program Data H**40**RTPD described in S6 hereinbefore. In this embodiment, Requested TV Program Data H**40**RTPD comprises Response Signal H**40**RTPD**1**, Channel ID H**40**RTPD**2**, and TV Program Packet Data H**40**RTPD**3**. Response Signal H**40**RTPD**1** indicates that Requested TV Program Data H**40**RTPD is a response to TV Program Data Request **20640**TPDR described hereinbefore. Channel ID H**40**RTPD**2** represents 'Channel ID' H**40**ChID**1** stored in TV Program Data Storage Area H**40**b**1** in the present example. TV Program Packet Data H**40**RTPD**3** represents 'TV Program Packet Data' H**40**TPD**1**f stored in TV Program Data Storage Area H**40**b**1** in the present example.

This paragraph illustrates TV Program Packet Data Receiving Software **20640**c**2** stored in On Demand TV Software Storage Area **20640**c of Communication Device **200**. Referring to the present drawing, CPU **211** (FIG. 1) receives Requested TV Program Data H**40**RTPD sent by Host H in S6 hereinbefore (S1). CPU **211** then retrieves Channel ID H**40**RTPD**2** and TV Program Packet Data H**40**RTPD**3** from Requested TV Program Data H**40**RTPD (S2), and stores these data in TV Program Data Storage Area **20640**b**1** (S3). In the present example, 'Channel ID' H**40**ChID**1** and 'TV Program Packet Data' H**40**TPD**1**f are retrieved in S2 and stored in TV Program Data Storage Area **20640**b**1** in S3.

This paragraph illustrates TV Program Packet Data Displaying Software **20640**c**3** stored in On Demand TV Soft-

ware Storage Area **20640***c* of Communication Device **200**. Referring to the present drawing, CPU **211** (FIG. **1**) retrieves TV Program Packet Data H**40**RTPD3 from TV Program Data Storage Area **20640***b*1 (S1), and displays the data on LCD **201** (FIG. **1**) of Communication Device **200** (S2). In the present example, 'TV Program Packet Data' H**40**TPD1*f* is retrieved in S1 and displayed on LCD **201** in S2.

This paragraph illustrates both Next Packet Data Sending Software H**40***c*4 stored in On Demand TV Software Storage Area H**40***c* of Host H and Next Packet Data Receiving Software **20640***c*4 stored in On Demand TV Software Storage Area **20640***c* of Communication Device **200**. Referring to the present drawing, Host H retrieves the next TV program packet data from TV Program Data Storage Area H**40***b*1 (S1), and sends the data to Communication Device **200** (S2). CPU **211** (FIG. **1**) of Communication Device **200** receives the next TV program packet data (S3), and stores the data in TV Program Data Storage Area **20640***b*1 (S4), which is displayed on LCD **201** (FIG. **1**) of Communication Device **200** thereafter. Here, the next TV program packet data is the data which is scheduled to be sent to and displayed on Communication Device **200**. In this embodiment, H**40**TPD1*b* is the next TV program packet data if the TV program packet data H**40**TPD1*a* is already sent to and displayed on Communication Device **200**, H**40**TPD1*c* is the next TV program packet data if the TV program packet data H**40**TPD1*b* is already sent to and displayed on Communication Device **200**, H**40**TPD1*d* is the next TV program packet data if the TV program packet data H**40**TPD1*c* is already sent to and displayed on Communication Device **200**, H**40**TPD1*e* is the next TV program packet data if the TV program packet data H**40**TPD1*d* is already sent to and displayed on Communication Device **200**, H**40**TPD1*f* is the next TV program packet data if the TV program packet data H**40**TPD1*e* is already sent to and displayed on Communication Device **200**, H**40**TPD1*g* is the next TV program packet data if the TV program packet data H**40**TPD1*f* is already sent to and displayed on Communication Device **200**, H**40**TPD1*h* is the next TV program packet data if the TV program packet data H**40**TPD1*g* is already sent to and displayed on Communication Device **200**, H**40**TPD1*i* is the next TV program packet data if the TV program packet data H**40**TPD1*h* is already sent to and displayed on Communication Device **200**, H**40**TPD1*j* is the next TV program packet data if the TV program packet data H**40**TPD1*i* is already sent to and displayed on Communication Device **200**, and H**40**TPD1*k* is the next TV program packet data if the TV program packet data H**40**TPD1*j* is already sent to and displayed on Communication Device **200**.

This paragraph illustrates both TV Program Pausing Software **20640***c*5 stored in On Demand TV Software Storage Area **20640***c* of Communication Device **200** and TV Program Pausing Software H**40***c*5 stored in On Demand TV Software Storage Area H**40***c* of Host H. Referring to the present drawing, a pause signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then displays the still image included in the TV program packet data on LCD **201** (FIG. **1**) at the time the pause signal is input in S1 (S2). CPU **211** sends a pause request (S3) which is received by Host H (S4). Host H stops sending the next TV program packet data to Communication Device **200** thereafter (S5).

This paragraph illustrates both TV Program Resume Software **20640***c*6 stored in On Demand TV Software Storage Area **20640***c* of Communication Device **200** and TV Program Resume Software H**40***c*6 stored in On Demand TV Software Storage Area H**40***c* of Host H. Referring to the

present drawing, a resume signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then sends a resume request to Host H indicating to resume sending the next TV program packet data (S2). Upon receiving the resume request (S3), Host H resumes sending the next TV program packet data to Communication Device **200** (S4). The next TV program packet data of the next TV program packet data is sent thereafter, and the remaining TV program packet data are sent to and displayed on Communication Device **200** unless the pause signal described in S1 hereinbefore or any signal or the like is input to Communication Device **200**.

This paragraph illustrates both TV Program Initializing Software **20640***c*7 stored in On Demand TV Software Storage Area **20640***c* of Communication Device **200** and TV Program Initializing Software H**40***c*7 stored in On Demand TV Software Storage Area H**40***c* of Host H. Referring to the present drawing, an initializing signal is input by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). CPU **211** (FIG. **1**) then sends an initializing request to Host H indicating to start the TV program from the beginning (S2). Upon receiving the initializing request (S3), Host H initializes the timer of Timer Software H**40***c*2 to '0', and thereby the first TV program packet data is ready to be sent to and displayed on Communication Device **200** (S4). In the present example, the timer of Timer Software H**40***c*2 is initialized to '0', thereby 'TV Program Packet Data' H**40**TPD1*a* of TV Program Data H**40**TPD1 stored in TV Program Data Storage Area H**40***b*1 is ready to be sent to and displayed on Communication Device **200**. The first TV program packet data, 'TV Program Packet Data' H**40**TPD1*a* in the present example, is sent to Communication Device **200** (S5). The previous explanation applies hereafter until the pause signal or any signal of the like is input to Communication Device **200**.

<<On Demand TV Function—Summary>>

(1) An on demand TV system comprising a host computer and a communication device wherein said host computer stores a TV program, said communication device requests for said TV program, said TV program is sent to said communication device and displayed on a display of said communication device, said TV program is paused when a pause signal is input via said input device.

(2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an on demand TV mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a TV program is displayed on said display and said TV program is paused when a pause signal is input via said input device when said on demand TV mode is implemented.

(3) An on demand TV software program which displays a TV program on a display of a communication device wherein said TV program is paused under the control of said on demand TV software program when a pause signal is input via said input device.

(4) Said TV program in summary (1), (2), or (3) is resumed from the point said TV program is paused when a resume signal is input via said input device.

(5) Said TV program in summary (1), (2), or (3) is replayed from the beginning of said TV program when an initiation signal is input via said input device.

<<Multiple Mode Implementing Function>>

The following paragraphs illustrate the multiple mode implementing function of Communication Device **200**

which enables to activate and implement a plurality of modes, functions, and/or systems described in this specification simultaneously.

This paragraph illustrates the software programs stored in RAM **206** (FIG. **1**) to implement the multiple mode implementing function (FIG. **1**). RAM **206** includes Multiple Mode Implementer Storage Area **20690**a. Multiple Mode Implementer Storage Area **20690**a stores Multiple Mode Implementer **20690**b, Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, Mode Activating Software **20690**e, and Mode Implementation Repeater **20690**f, all of which are software programs. Multiple Mode Implementer **20690**b administers the overall implementation of the present function. One of the major tasks of Multiple Mode Implementer **20690**b is to administer and control the timing and sequence of Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, Mode Activating Software **20690**e, and Mode Implementation Repeater **20690**f. For example, Multiple Mode Implementer **20690**b executes them in the following order: Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, Mode Activating Software **20690**e, and Mode Implementation Repeater **20690**f. Mode List Displaying Software **20690**c displays on LCD **201** (FIG. **1**) a list of a certain amount or all modes, functions, and/or systems explained in this specification of which the sequence is explained hereinafter. Mode Selecting Software **20690**d selects a certain amount or all modes, functions, and/or systems explained in this specification of which the sequence is explained hereinafter. Mode Activating Software **20690**e activates a certain amount or all modes, functions, and/or systems selected by the Mode Selecting Software **20690**d of which the sequence is explained hereinafter. Mode Implementation Repeater **20690**f executes Multiple Mode Implementer **20690**b which reactivates Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, Mode Activating Software **20690**e of which the sequence is explained hereinafter.

This paragraph illustrates the sequence of Mode List Displaying Software **20690**c. CPU **211** (FIG. **1**), under the command of Mode List Displaying Software **20690**c, displays a list of a certain amount or all modes, functions, and/or systems described in this specification on LCD **201** (FIG. **1**).

This paragraph illustrates the sequence of Mode Selecting Software **20690**d. The user of Communication Device **200** inputs an input signal by utilizing Input Device **210** (FIG. **1**) or via voice recognition system identifying one of the modes, functions, and/or systems displayed on LCD **201** (FIG. **1**) (S1), and CPU **211** (FIG. **1**), under the command of Mode Selecting Software **20690**d, interprets the input signal and selects the corresponding mode, function, or system (S2).

This paragraph illustrates the sequence of Mode Activating Software **20690**e. CPU **211** (FIG. **1**), under the command of Mode Activating Software **20690**e, activates the mode, function, or, system selected in S2 described hereinbefore. CPU **211** thereafter implements the activated mode, function, or system as described in the relevant section of this specification.

This paragraph illustrates the sequence of Mode Implementation Repeater **20690**f. The user of Communication Device **200** inputs an input signal by utilizing Input Device **210** (FIG. **1**) or via voice recognition system (S1). Once the activation of the selected mode, function, or system described hereinbefore is completed, and if the input signal indicates to repeat the process to activate another mode, function, or system (S2), CPU **211** (FIG. **1**), under the

command of Mode Implementation Repeater **20690**f, executes Multiple Mode Implementer **20690**b, which reactivates Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, and Mode Activating Software **20690**e to activate the second mode, function, or system while the first mode, function, or system is implemented by utilizing the method of so-called 'time sharing' (S3). Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, and Mode Activating Software **20690**e can be repeatedly executed until all modes, function, and systems displayed on LCD **201** (FIG. **1**) are selected and activated. The activation of modes, functions, and/or systems is not repeated if the input signal explained in S2 so indicates.

As another embodiment, Multiple Mode Implementer **20690**b, Mode List Displaying Software **20690**c, Mode Selecting Software **20690**d, Mode Activating Software **20690**e, and Mode Implementation Repeater **20690**f described hereinbefore may be integrated into one software program, Multiple Mode Implementer **20690**b. CPU **211** (FIG. **1**), first of all, displays a list of a certain amount or all modes, functions, and/or systems described in this specification on LCD **201** (FIG. **1**) (S1). Next, the user of Communication Device **200** inputs an input signal by utilizing Input Device **210** (FIG. **1**) or via voice recognition system identifying one of the modes, functions, and/or systems displayed on LCD **201** (S2), and CPU **211** interprets the input signal and selects the corresponding mode, function, or system (S3). CPU **211** activates the mode, function, or system selected in S3, and thereafter implements the activated mode, function, or system as described in the relevant section of this specification (S4). Once the activation of the selected mode, function, or system described in S4 is completed, the user of Communication Device **200** inputs an input signal by utilizing Input Device **210** or via voice recognition system (S5). If the input signal indicates to repeat the process to activate another mode, function, or system (S6), CPU **211** repeats the steps S1 through S4 to activate the second mode, function, or system while the first mode, function, or system is implemented by utilizing the method so-called 'time sharing'. The steps of S1 though S4 can be repeatedly executed until all modes, function, and systems displayed on LCD **201** are selected and activated. The activation of modes, functions, and/or systems is not repeated if the input signal explained in S5 so indicates. As another embodiment, before or at the time one software program is activated, CPU **211** may, either automatically or manually (i.e., by a signal input by the user of Communication Device), terminate the other software programs already activated or prohibit other software programs to be activated while one software program is implemented in order to save the limited space of RAM **206**, thereby allowing only one software program implemented at a time. For the avoidance of doubt, the meaning of each term 'mode(s)', 'function(s)', and 'system(s)' is equivalent to the others in this specification. Namely, the meaning of 'mode(s)' includes and is equivalent to that of 'function(s)' and 'system(s)', the meaning of 'function(s)' includes and is equivalent to that of 'mode(s)' and 'system(s)', and the meaning of 'system(s)' includes and is equivalent to that of 'mode(s)' and 'function(s)'. Therefore, even only mode(s) is expressly utilized in this specification, it impliedly includes function(s) and/or system(s) by its definition.

INCORPORATION BY REFERENCE

The paragraphs and drawings described in U.S. Ser. No. 10/710,600 filed 2004 Jul. 23 incorporated to this applica-

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tion by reference are, based on U.S. Pat. No. 8,090,402: the preamble (col 57 line 64-col 58 line 15; no drawings); Communication Device **200** (Voice Communication Mode) (col 58 line 16-col 60 line 2; FIGS. 1 through 2c); Voice Recognition System (col 60 line 3-col 65 line 3; FIGS. 3 through 19); Positioning System (col 65 line 4-col 69 line 46; FIGS. 20a through 32g); Auto Backup System (col 69 line 47-col 70 line 51; FIGS. 33 through 37); Signal Amplifier (col 70 line 52-col 71 line 13; FIG. 38); Audio/Video Data Capturing System (col 71 line 14-col 72 line 67; FIGS. 39 through 44b); Digital Mirror Function (1) (col 73 line 1-col 74 line 45; FIGS. 44c through 44e); Caller ID System (col 74 line 46-col 75 line 18; FIGS. 45 through 47); Stock Purchasing Function (col 75 line 19-col 76 line 23; FIGS. 48 through 52); Timer Email Function (col 76 line 24-col 76 line 67; FIGS. 53a and 53b); Call Blocking Function (col 77 line 1-col 78 line 35; FIGS. 54 through 59); Online Payment Function (col 78 line 36-col 79 line 67; FIGS. 60 through 64); Navigation System (col 80 line 1-col 84 line 3; FIGS. 65 through 74a); Remote Controlling System (col 84 line 4-col 87 line 10; FIGS. 75 through 85); Auto Emergency Calling System (col 87 line 11-col 87 line 62; FIGS. 86 and 87); Cellular TV Function (col 87 line 63-col 101 line 54; FIGS. 88 through 135); 3D Video Game Function (col 101 line 55-col 104 line 18; FIGS. 136 through 144); Digital Mirror Function (2) (col 104 line 19-col 106 line 6; FIGS. 145 through 155); Voice Recognition Sys—E-mail (2) (col 106 line 7-col 107 line 38; FIGS. 156 through 160); Positioning System—GPS Search Engine (col 107 line 39-col 117 line 12; FIGS. 161 through 182); Mobile Ignition Key Function (col 117 line 13-col 121 line 35; FIGS. 183 through 201); Voice Print Authentication System (col 121 line 36-col 123 line 44; FIGS. 202 through 211); Fingerprint Authentication System (col 123 line 45-col 126 line 7; FIGS. 212 through 221); Auto Time Adjust Function (col 126 line 8-col 126 line 48; FIGS. 222 through 224); Video/Photo Mode (col 126 line 49-col 131 line 63; FIGS. 225 through 242); Call Taxi Function (col 131 line 64-col 140 line 52; FIGS. 243 through 269); Shooting Video Game Function (col 140 line 53-col 143 line 42; FIGS. 270 through 283); Driving Video Game Function (col 143 line 43-col 146 line 7; FIGS. 284 through 294); Address Book Updating Function (col 146 line 8-col 149 line 13; FIGS. 295 through 312); Batch Address Book Updating Function—With Host (col 149 line 14-col 152 line 4; FIGS. 313 through 329); Batch Address Book Updating Function—Peer-To-Peer Connection (col 152 line 5-col 152 line 49; FIGS. 329a through 329c); Batch Scheduler Updating Function—With Host (col 152 line 50-col 156 line 16; FIGS. 330 through 350); Batch Scheduler Updating Function—Peer-To-Peer Connection (col 156 line 17-col 156 line 67; FIGS. 351 and 352); Calculator Function (col 157 line 1-col 157 line 59; FIGS. 353 through 356); Spreadsheet Function (col 157 line 60-col 159 line 9; FIGS. 357 through 360); Word Processing Function (col 159 line 10-col 162 line 61; FIGS. 361 through 373); TV Remote Controller Function (col 162 line 62-col 167 line 19; FIGS. 374 through 394); CD/PC Inter-communicating Function (col 167 line 20-col 171 line 49; FIGS. 413 through 427); PDWR Sound Selecting Function (col 171 line 50-col 179 line 3; FIGS. 428 through 456); Start Up Software Function (col 179 line 4-col 180 line 67; FIGS. 457 through 466); Another Embodiment Of Communication Device **200** (col 181 line 1-col 183 line 13; FIGS. 467a through 467d); Stereo Audio Data Output Function (col 183 line 14-col 185 line 67; FIGS. 468 through 479); Stereo Visual Data Output Function (col 186 line 1-col 188 line 51; FIGS. 480 through 491); Multiple Signal Processing Function (col 188 line

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52-col 199 line 13; FIGS. 492 through 529); Positioning System—Pin-pointing Function (col 199 line 14-col 204 line 67; FIGS. 530 through 553); Artificial Satellite Host (col 205 line 1-col 208 line 22; FIGS. 554 through 567); CCD Bar Code Reader Function (col 208 line 23-col 211 line 27; FIGS. 568 through 579); Online Renting Function (col 211 line 28-col 225 line 57; FIGS. 580 through 633); SOS Calling Function (col 225 line 58-col 228 line 31; FIGS. 634 through 645); Input Device (col 228 line 32-col 229 line 50; FIGS. 646 through 650); PC Remote Controlling Function (col 229 line 51-col 235 line 27; FIGS. 651 through 670); PC Remote Downloading Function (col 235 line 28-col 244 line 15; FIGS. 671 through 701); Audiovisual Playback Function (col 244 line 16-col 249 line 15; FIGS. 702 through 716); Audio Playback Function (col 249 line 16-col 253 line 58; FIGS. 717 through 731); Ticket Purchasing Function (col 253 line 59-col 259 line 5; FIGS. 732 through 753); Remote Data Erasing Function (col 259 line 6-col 263 line 43; FIGS. 754 through 774); Business Card Function (col 263 line 44-col 266 line 6; FIGS. 775 through 783); Game Vibrating Function (col 266 line 7-col 267 line 17; FIGS. 784 through 786); Part-time Job Finding Function (col 267 line 18-col 270 line 57; FIGS. 787 through 801); Parking Lot Finding Function (col 270 line 58-col 277 line 47; FIGS. 802 through 832); Parts Upgradable Communication Device (col 277 line 48-col 280 line 67; FIGS. 833a through 833x); On Demand TV Function (col 281 line 1-col 287 line 3; FIGS. 834 through 855); Inter-communicating TV Function (col 287 line 4-col 292 line 6; FIGS. 856 through 882); Display Controlling Function (col 292 line 7-col 295 line 4; FIGS. 883 through 894); Multiple Party Communicating Function (col 295 line 5-col 301 line 34; FIGS. 894a through 917); Display Brightness Controlling Function (col 301 line 35-col 302 line 50; FIGS. 918 through 923); Multiple Party Pin-pointing Function (col 302 line 51-col 311 line 12; FIGS. 924 through 950f); Digital Camera Function (col 311 line 13-col 316 line 15; FIGS. 951 through 968); Phone Number Linking Function (col 316 line 16-col 320 line 5; FIGS. 968a through 983); Multiple Window Displaying Function (col 320 line 6-col 323 line 32; FIGS. 984 through 995); Mouse Pointer Displaying Function (col 323 line 33-col 328 line 64; FIGS. 996 through 1021); House Item Pin-pointing Function (col 328 line 65-col 356 line 64; FIGS. 1022 through 1152); Membership Administrating Function (col 356 line 65-col 363 line 67; FIGS. 1153 through 1188); Keyword Search Timer Recording Function (col 364 line 1-col 385 line 55; FIGS. 1189 through 1254); Weather Forecast Displaying Function (col 385 line 56-col 394 line 56; FIGS. 1255 through 1288); Multiple Language Displaying Function (col 394 line 57-col 411 line 63; FIGS. 1289 through 1331); Caller's Information Displaying Function (col 411 line 64-col 423 line 52; FIGS. 1332 through 1375); Communication Device Remote Controlling Function (By Phone) (col 423 line 53-col 430 line 46; FIGS. 1394 through 1415); Communication Device Remote Controlling Function (By Web) (col 430 line 47-col 437 line 61; FIGS. 1416 through 1437); Shortcut Icon Displaying Function (col 437 line 62-col 442 line 29; FIGS. 1438 through 1455); Task Tray Icon Displaying Function (col 442 line 30-col 445 line 62; FIGS. 1456 through 1470); Multiple Channel Processing Function (col 445 line 63-col 455 line 27; FIGS. 1471 through 1498); Solar Battery Charging Function (col 455 line 28-col 458 line 26; FIGS. 1499 through 1509); OS Updating Function (col 458 line 27-col 489 line 3; FIGS. 1510 through 1575); Device Managing Function (col 489 line 4-col 492 line 59; FIGS. 1576 through 1587); Automobile Controlling Function (col 492 line 60-col 505 line 55;

FIGS. 1588 through 1627); OCR Function (col 505 line 56-col 512 line 51; FIGS. 1628 through 1652); Multiple Mode Implementing Function (col 512 line 52 col 515 line 56; FIGS. 395 through 400); Multiple Software Download Function (col 515 line 57-col 518 line 3; FIGS. 401 through 407); Selected Software Distributing Function (col 518 line 4-col 523 line 54; FIGS. 1376 through 1393d); Multiple Software Download And Mode Implementation Function (col 523 line 55-col 525 line 33; FIGS. 408 through 412); and the last sentence (col 525 line 34-col 525 line 51; no drawings). If there is ever discrepancy between the disclosures of this application and U.S. Pat. No. 8,090,402, the latter prevails.

The invention claimed is:

1. A mobile communication device comprising:
a microphone;
a speaker;
an input device;
a display;
an antenna;
a wireless voice communication implementer, wherein wireless voice communication is implemented via said antenna;
a route displaying implementer, wherein said mobile communication device calculates route from a first location to a second location and said route is displayed on said display; and
a multiple language implementer, wherein the language mode selected via said input device is implemented, wherein said language mode selected is one of a plurality of language modes including a 1st language mode and a 2nd language mode, wherein when said 1st language mode is selected via said input device, user visual interface is displayed on said display by utilizing a 1st language data stored in said mobile communication device, wherein when said 2nd language mode is selected via said input device, said user visual interface is displayed on said display by utilizing a 2nd language data stored in said mobile communication device.

2. The mobile communication device of claim 1, wherein said mobile communication device is an automobile.

3. The mobile communication device of claim 1, wherein said mobile communication device is a motorcycle.

4. The mobile communication device of claim 1, wherein when said mobile communication device is powered off under said 1st language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 1st language data stored in said mobile communication device.

5. The mobile communication device of claim 1, wherein when said mobile communication device is powered off under said 2nd language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 2nd language data stored in said mobile communication device.

6. The mobile communication device of claim 1, wherein said user visual interface includes a first predetermined item and a second predetermined item, and when said 1st language mode is selected via said input device, said first predetermined item and said second predetermined item are displayed on said display by utilizing said 1st language data stored in said mobile communication device.

7. A system comprising:
a mobile communication device comprising a microphone, a speaker, an input device, a display, and an antenna;

a wireless voice communication implementer, wherein wireless voice communication is implemented via said antenna;
a route displaying implementer, wherein said mobile communication device calculates route from a first location to a second location and said route is displayed on said display; and
a multiple language implementer, wherein the language mode selected via said input device is implemented, wherein said language mode selected is one of a plurality of language modes including a 1st language mode and a 2nd language mode, wherein when said 1st language mode is selected via said input device, user visual interface is displayed on said display by utilizing a 1st language data stored in said mobile communication device, wherein when said 2nd language mode is selected via said input device, said user visual interface is displayed on said display by utilizing a 2nd language data stored in said mobile communication device.

8. The system of claim 7, wherein said mobile communication device is an automobile.

9. The system of claim 7, wherein said mobile communication device is a motorcycle.

10. The system of claim 7, wherein when said mobile communication device is powered off under said 1st language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 1st language data stored in said mobile communication device.

11. The system of claim 7, wherein when said mobile communication device is powered off under said 2nd language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 2nd language data stored in said mobile communication device.

12. The system of claim 7, wherein said user visual interface includes a first predetermined item and a second predetermined item, and when said 1st language mode is selected via said input device, said first predetermined item and said second predetermined item are displayed on said display by utilizing said 1st language data stored in said mobile communication device.

13. A method for a mobile communication device comprising a microphone, a speaker, an input device, a display, and an antenna, said method comprising:
a wireless voice communication implementing step, wherein wireless voice communication is implemented via said antenna;
a route displaying implementing step, wherein said mobile communication device calculates route from a first location to a second location and said route is displayed on said display; and
a multiple language implementing step, wherein the language mode selected via said input device is implemented, wherein said language mode selected is one of a plurality of language modes including a 1st language mode and a 2nd language mode, wherein when said 1st language mode is selected via said input device, user visual interface is displayed on said display by utilizing a 1st language data stored in said mobile communication device, wherein when said 2nd language mode is selected via said input device, said user visual interface is displayed on said display by utilizing a 2nd language data stored in said mobile communication device.

14. The method of claim 13, wherein said mobile communication device is an automobile.

15. The method of claim 13, wherein said mobile communication device is a motorcycle.

16. The method of claim **13**, wherein when said mobile communication device is powered off under said 1st language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 1st language data stored in said mobile communication device.

17. The method of claim **13**, wherein when said mobile communication device is powered off under said 2nd language mode and powered on thereafter, said user visual interface is displayed on said display by utilizing said 2nd language data stored in said mobile communication device.

18. The method of claim **13**, wherein said user visual interface includes a first predetermined item and a second predetermined item, and when said 1st language mode is selected via said input device, said first predetermined item and said second predetermined item are displayed on said display by utilizing said 1st language data.

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