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(54) METHOD AND COMMUNICATION TERMINAL APPARATUS FOR DISPLAYING FUNCTION IN COMMUNICATION

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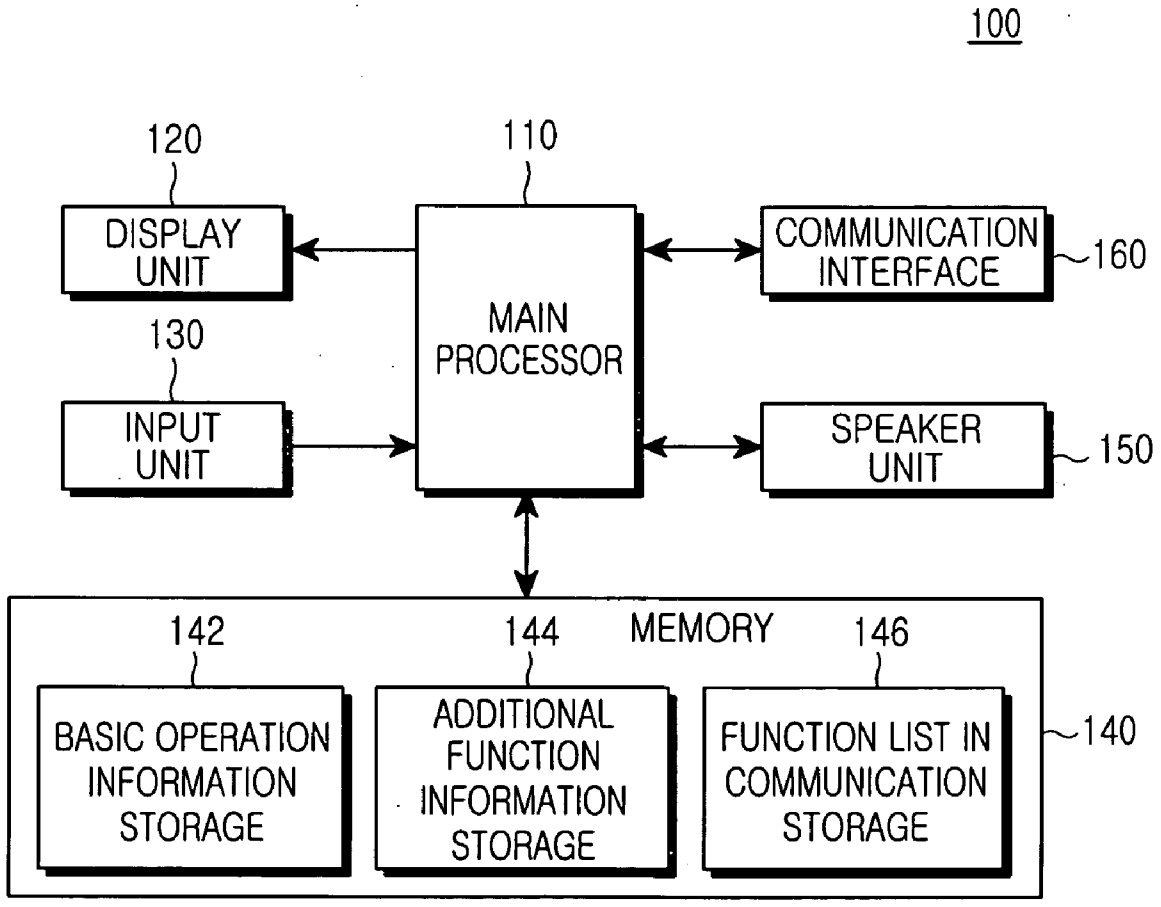
(57) ABSTRACT

A method and communication terminal apparatus for displaying a function in communication is disclosed that includes a display unit, a memory unit for storing and managing operation information including an additional function information and a function list in communication provided by the communication terminal apparatus. A main processing unit automatically reads the function list in communication stored in the memory unit and displays the list on the display unit when an operation mode of the communication terminal apparatus changes from a communication waiting mode to a communication mode. In the communication terminal apparatus, when an operation mode of the communication terminal apparatus changes to a communication mode, a function list in communication stored in advance is automatically read and then displayed. Accordingly, in the communication terminal apparatus, a function in communication is automatically informed to a user, and therefore, users can use the function in communication more conveniently.



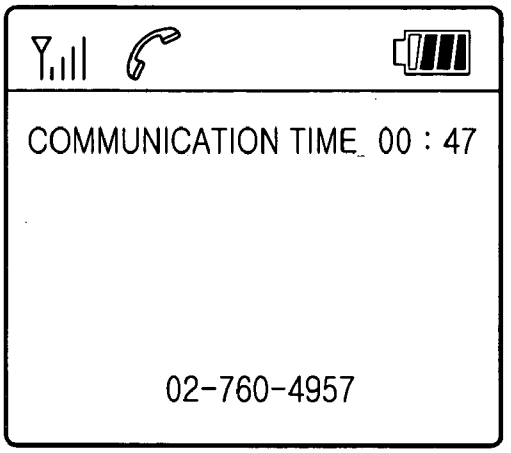


FIG.1
(PRIOR ART)

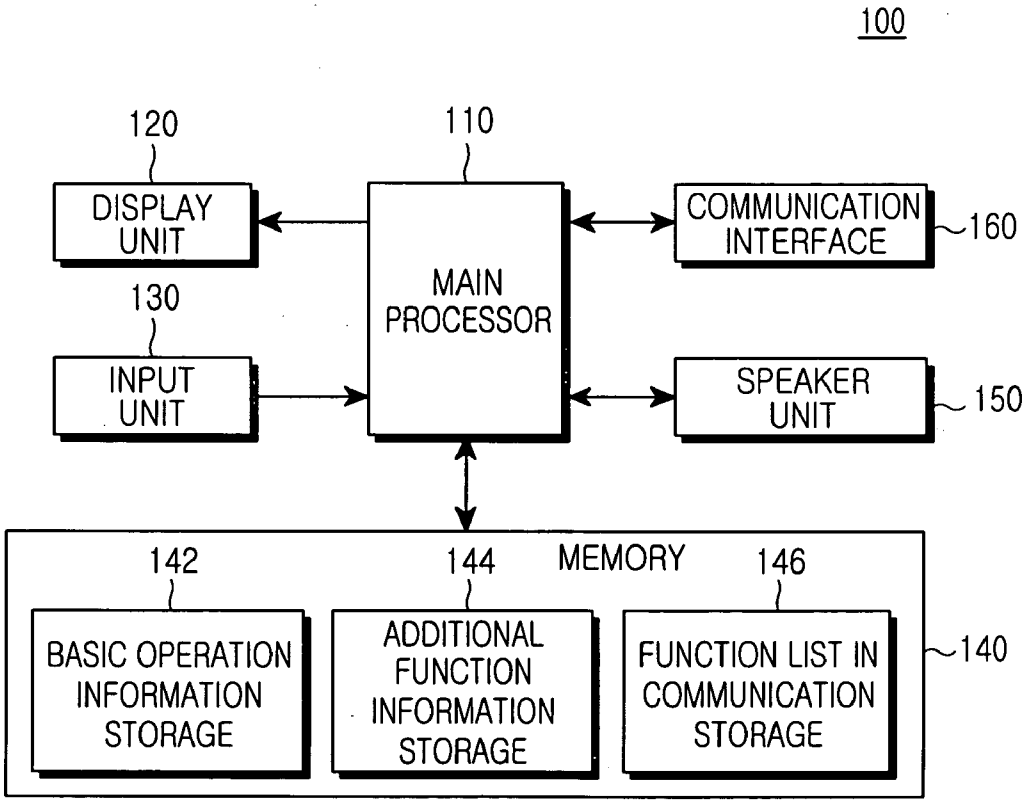


FIG.2

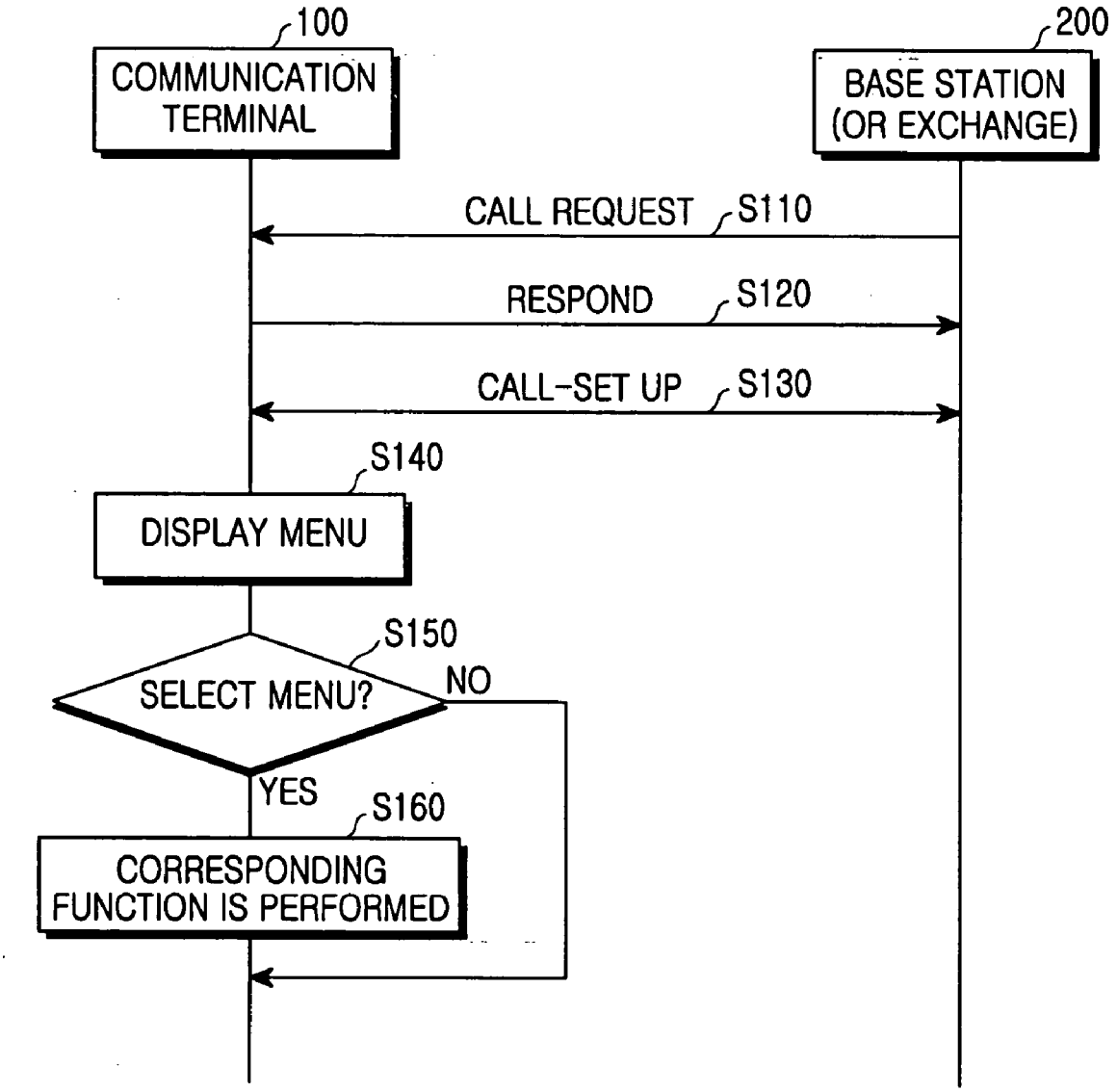

100
COMMUNICATION TERMINAL
200
BASE STATION (OR EXCHANGE)
CALL REQUEST
S110
RESPOND
S120
CALL-SET UP
S130
S140
DISPLAY MENU
S150
SELECT MENU?
NO
YES
S160
CORRESPONDING FUNCTION IS PERFORMED

FIG.3

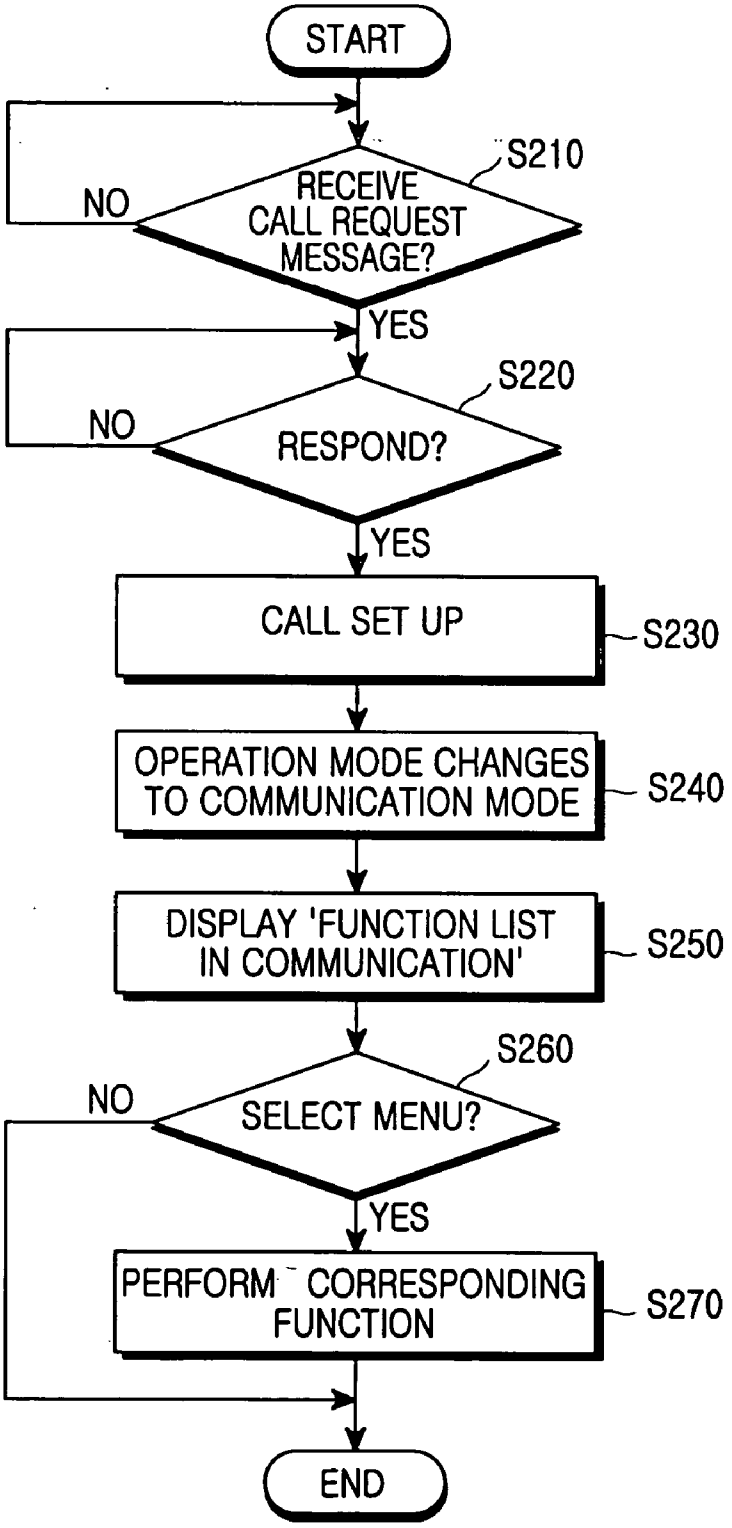

START
S210
RECEIVE CALL REQUEST MESSAGE?
NO
YES
S220
RESPOND?
NO
YES
CALL SET UP
S230
OPERATION MODE CHANGES TO COMMUNICATION MODE
S240
DISPLAY 'FUNCTION LIST IN COMMUNICATION'
S250
S260
SELECT MENU?
NO
YES
PERFORM CORRESPONDING FUNCTION
S270
END

FIG.4

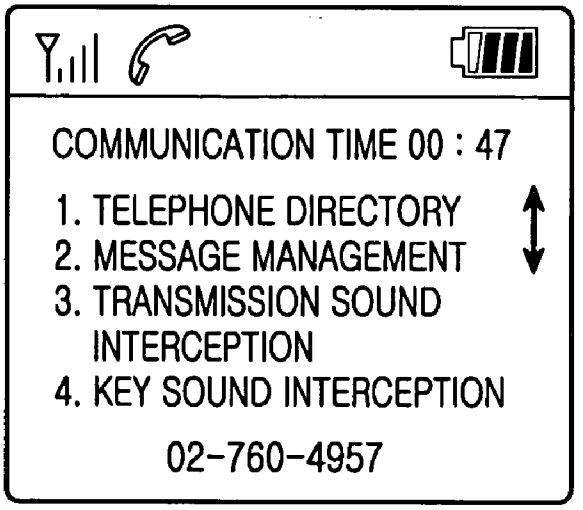

COMMUNICATION TIME 00 : 47
1. TELEPHONE DIRECTORY
2. MESSAGE MANAGEMENT
3. TRANSMISSION SOUND INTERCEPTION
4. KEY SOUND INTERCEPTION
02-760-4957

FIG.5A

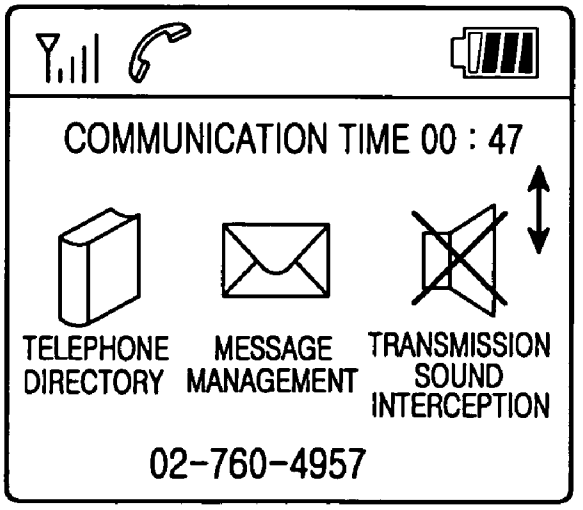

COMMUNICATION TIME 00 : 47
TELEPHONE DIRECTORY
MESSAGE MANAGEMENT
TRANSMISSION SOUND INTERCEPTION
02-760-4957

FIG.5B

METHOD AND COMMUNICATION TERMINAL APPARATUS FOR DISPLAYING FUNCTION IN COMMUNICATION

PRIORITY

[0001] This application claims priority to an application entitled "Method and Communication Terminal Apparatus For Displaying Function In Communication" filed in the Korean Industrial Property Office on Jul. 21, 2003 and assigned Serial No. 2003-49849, the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a method and communication terminal apparatus for displaying a function in communication, more particularly to a method and communication terminal apparatus capable of displaying and selecting functions which can be performed in communication.

[0004] 2. Description of the Related Art

[0005] In general, a communication terminal apparatus such as a portable telephone or a wire/wireless telephone provides functions which can be performed in communication (hereinafter, referred to as 'function in communication'). For instance, the function list in communication may include a telephone directory, a transmission/reception volume control, a transmission sound interception (i.e. "mute") and a key sound control.

[0006] However, conventional communication terminals do not positively inform a user of such a function in communication. For instance, in order to use the function in communication, a user calling by means of the conventional communication terminal must display menus with respect to the function in communication through a separate key operation. Then, the user must select a desired function in communication from among the menus displayed by the result of the key operation.

[0007] **FIG. 1** is an exemplary view regarding a screen in communication of a conventional portable telephone. Referring to **FIG. 1**, a portable telephone in communication displays an antenna bar representing a reception intensity of the portable telephone, a communication state, a power state of the portable telephone, a communication time of a corresponding communication and a telephone number of a counterpart. **FIG. 1** shows, as an example, a portable telephone that includes a display unit for displaying items as described above.

[0008] That is, in the prior art, since the communication terminals in communication displays only communication information with respect to a corresponding communication, users can't conveniently use or readily be informed of function in communication. Furthermore, there have been users who have not known the function in communication itself. Therefore, there have been many users who are unable to effectively use such communication terminal apparatuses.

SUMMARY OF THE INVENTION

[0009] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and a primary object of the present invention is to provide a method and a communication terminal apparatus, which enable a user to effectively use the communication terminal apparatus.

[0010] Another object of the present invention is to provide a method and a communication terminal apparatus, which enable users to conveniently use a function in communication.

[0011] In order to accomplish the aforementioned objects, according to an embodiment of the present invention, there is provided a communication terminal apparatus comprising: a memory unit for storing and managing operation information including an additional function information and a function list in communication; and a main processing unit for automatically reading the function list in communication stored in the memory unit and displaying the list on the display unit, when an operation mode of the communication terminal apparatus changes from a communication waiting mode to a communication mode.

[0012] In order to accomplish the aforementioned objects, according to an embodiment of the present, there is also provided a method for displaying a function in communication of a communication terminal apparatus comprising the steps of: (1) when an operation mode of the communication terminal apparatus changes to a communication mode, automatically reading a function list in communication stored in advance; and (2) displaying the read function list in communication on the display unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0014] **FIG. 1** is an exemplary view regarding a screen in communication of a conventional portable telephone;

[0015] **FIG. 2** is a block diagram showing a construction of a communication terminal apparatus according to an embodiment of the present invention;

[0016] **FIG. 3** is a flowchart illustrating a display method of a function in communication of a communication terminal apparatus according to an embodiment of the present invention;

[0017] **FIG. 4** is a flowchart illustrating a method for displaying a function in communication in a communication terminal apparatus according to an embodiment of the present invention; and

[0018] **FIGS. 5*a*** and **5*b*** are exemplary views regarding a screen in communication of a portable telephone according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Hereinafter, preferred embodiments according to the present invention will be described with reference to the accompanying drawings. In the following description of the present invention, a detailed description of known functions and configuration incorporated herein are omitted to avoid making the subject matter of the present invention unclear.

[0020] **FIG. 2** is a block diagram showing a construction of a communication terminal apparatus, which displays a function in communication, according to an embodiment of the present invention. Referring to **FIG. 2**, the communication terminal **100** according to an embodiment of the present invention includes a main processor **110**, a display unit **120**, an input unit **130**, a memory **140**, a speaker unit **150** and a communication interface unit **160**.

[0021] The input unit **130** and the speaker unit **150** provide an interface between the communication terminal **100** and a user, and they are commonly included in general communication terminal apparatuses, such as a wire/wireless telephone or a portable telephone, together with a microphone unit (not shown). Accordingly, a detailed description regarding the input unit **130** and the speaker unit **150** is omitted.

[0022] The display unit **120** displays an operation state of the communication terminal **100** and an input item provided from a user, and particularly displays communication information when the communication terminal **100** is on line.

[0023] The communication interface unit **160** provides a communication interface between the communication terminal **100** and an outside network connection device (not shown). Herein, the outside network connection device supports a call service between a communication terminal apparatus and a network, such as a telephone exchange in a public switched telephone network and a base station in a mobile telephone network. A detailed description regarding the outside network connection device is omitted.

[0024] The memory **140** stores and manages operation information including basic operation information, additional function information and a function list in communication. Herein, the basic operation information are information for supporting a call service function which is an inherent function of the communication terminal **100**. The additional function information are services, such as an alarm, a morning call or a telephone directory, which can be provided by the communication terminal **100** in addition to the call service function. The function list in communication is a list for items of functions (so-called "in-communication functions") which can be selected and performed from among the additional functions while the communication terminal **100** is in communication. Herein, the function in communication may include a telephone directory, a transmission/reception volume control, a transmission sound interception (i.e. "mute") and a key sound control, a transmission of self number, a call shift, a call holding, conference call, call recording, Dual Tone Multi-Frequency (DTMF), memo, etc. A transmission of self number is used to send the self number. DTMF is used to send the number inputted by the user as a DTMF tone signal. A call shift is used to connect an incoming call and hold with an current call.(i.e. shift between a current call and an incoming call). A call holding is used to hold a current call.

[0025] In order to perform such functions, the memory **140** includes a basic operation information storage **142** for storing and managing the basic operation information, an additional function information storage **144** for storing and managing the additional function information, and a function list in communication storage **146** for storing and managing the function list in communication.

[0026] The main processor **110** preferably controls the entire operation of the communication terminal **100**. Particularly, when an operation mode of the communication terminal **100** changes from a communication waiting mode to a communication mode, the main processor **110** reads a menu (hereinafter, a menu in communication) capable of selecting the function in communication from the function list in communication storage **146** and displays the menu on the display unit **120**.

[0027] Further, the main processor **110** may modify the function list in communication on the basis of an operation signal of a user inputted through the input unit **130**. For instance, the main processor **110** deletes an item, which a user wants to delete, from among items included in a predetermined function list in communication, and the main processor **110** adds an item, which a user wants to add, to a predetermined function list in communication. Particularly, for additional modification of the function list in-communication, the main processor **110** reads an item, which can be added to the function list in communication, from the additional function information storage **144** and provides the item to a user.

[0028] **FIG. 3** is a flowchart illustrating a display method of a function in communication of a communication terminal **100** according to an embodiment of the present invention. In the example in **FIG. 3**, a network connection device for supporting a call service between the communication terminal **100** and a network is shown as a base station (or an exchange) (hereinafter, referred to as a base station **200**).

[0029] Referring to **FIG. 3**, when the communication terminal **100** having received a call request (**S110**) from the base station **200** responds with respect to the request (**S120**), a call-set up for calling is performed between the communication terminal **100** and the base station **200** (**S130**). Through steps **S110** to **S130**, a general call-set up process was briefly described, but a call-set up process is not limited to the method exemplified in **FIG. 3**.

[0030] Next, when the call-set up is performed between the communication terminal **100** and the base station **200** through the aforementioned steps, an operation mode of the communication terminal **100** changes from a communication waiting mode to a communication mode. Then, the communication terminal **100** reads an already stored function list in communication from the function list in communication storage **146** in the memory **140** and then displays the list as a menu on the display unit **120** (**S140**). Herein, it is preferred that the function list in communication is displayed by a text type or an icon type.

[0031] Next, when a user selects a desired menu from among the function list in communication (**S150**), a function corresponding to the selection is performed (**S160**).

[0032] Also, the communication terminal **100** may enable the function list in communication to be displayed according to a predetermined display time. For instance, the function list in communication is displayed just after an operation mode of the communication terminal **100** changes to a communication mode, but the function list in communication is displayed during a predetermined display time. Herein, when information selected by a user is not inputted during the display time, the communication terminal **100** may enable the function list in communication to be deleted on a screen. Further, the communication terminal **100** may enable the function list in communication to be periodically displayed according to a predetermined display time interval.

[0033] Further, when a user does not want to display the function list in communication, the communication terminal **100** may be set according to information selected by a user so that the communication terminal **100** does not display the function list in communication even if an operation mode of the communication terminal **100** changes to a communication mode.

[0034] **FIG. 4** is a flowchart illustrating a method for displaying a function in communication in a communication terminal apparatus according to an embodiment of the present invention. Referring to **FIG. 4**, the communication terminal **100** receives a call request message from an outside network connection device such as a base station or an exchange (S**210**) and responds with respect to the request (S**220**). As a result of the response, when a call-set up is performed between the communication terminal **100** and the outside network connection device (S**230**), an operation mode of the communication terminal **100** changes to a communication mode (S**240**). That is, the operation mode of the communication terminal **100** changes from a communication waiting mode to a communication mode. Then, the communication terminal **100** reads a function list in communication stored in advance from the memory **140** and displays the function list in communication (S**250**).

[0035] Further, when a user selects an item that the user wants to perform from the function list in communication (S**260**), a function corresponding to the selection is performed (S**270**).

[0036] Further, though not shown in drawings, the communication terminal **100** can modify the function list in communication on the basis of request of a user. For instance, according to a user's command to add/delete the function list in communication, it is possible that a menu selected by the user is added to the function list in communication or a corresponding menu is deleted from the function list in communication.

[0037] **FIGS. 5***a* and **5***b* are exemplary views regarding a screen in communication of a portable telephone according to an embodiment of the present invention. That is, **FIGS. 5***a* and **5***b* show an example in which a function list in communication is displayed on a portable telephone in communication. **FIG. 5***a* shows an example in which the function list in communication is displayed by a text type and **FIG. 5***b* shows an example in which the function list in communication is displayed by an icon type.

[0038] In a method and communication terminal apparatus for displaying a function in communication according to the present invention, the function in communication is automatically informed to a user, thereby enabling a user to conveniently use the function in communication. Accordingly, in the present invention, a user can effectively use the communication terminal apparatus. Further, a user can select the function in communication, thereby realizing an operation environment of a communication terminal apparatus according to the user's individual preferences.

[0039] While the invention has been shown and described with reference to certain preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A communication terminal apparatus including a display unit, the communication terminal apparatus comprising:

a memory unit for storing and managing operation information including an additional function information and a function list in communication; and

a main processing unit for automatically reading the function list in communication stored in the memory unit and displaying the list on the display unit, when an operation mode of the communication terminal apparatus changes from a communication waiting mode to a communication mode.

2. The communication terminal apparatus of claim 1, wherein the main processing unit displays the function list in communication in a type selected from among a text type and an icon type.

3. The communication terminal apparatus of claim 1, wherein the main processing unit displays the function list in communication during a predetermined display time and deletes the function list on the display unit in communication after expiration of the predetermined display time.

4. The communication terminal apparatus of claim 1, wherein the main processing unit periodically displays the function list in communication according to a predetermined display time interval.

5. The communication terminal apparatus of claim 1, wherein the main processing unit further comprises an input unit for receiving a control command of a user and modifies the function list in communication on the basis of the control command of the user inputted through the input unit.

6. The communication terminal apparatus of claim 5, wherein the main processing unit reads the additional function information stored in the memory unit in response to the user's command to add in-communication functions, provides the additional function information to the user, and adds a corresponding item to the function list in communication on the basis of information selected by the user.

7. The communication terminal apparatus of claim 5, wherein the main processing unit deletes a corresponding item from the function list in communication in response to a command from the user to delete the item.

8. The communication terminal apparatus of claim 1, wherein the function list in communication includes sending a self number.

9. The communication terminal apparatus of claim 1, wherein the function list in communication includes sending a dual tone multi-frequency (DTMF).

10. The communication terminal apparatus of claim 1, wherein the function list in communication includes a call shift.

11. The communication terminal apparatus of claim 1, wherein the function list in communication includes a call holding.

12. The communication terminal apparatus of claim 1, wherein the function list in communication includes a transmission sound interception.

13. A method for displaying a function in communication of a communication terminal apparatus including a display unit, the method comprising the steps of:

when an operation mode of the communication terminal apparatus changes to a communication mode, automatically reading a stored function list in communication; and

displaying the function list in communication on the display unit.

14. The method for displaying a function in communication of a communication terminal apparatus of claim 13, wherein the function list in communication is displayed in a type selected from among a text type or an icon type.

15. The method for displaying a function in communication of a communication terminal apparatus of claim 13 wherein the function list in communication is displayed during a predetermined display time and the function list in communication is deleted on the display unit after expiration of the predetermined display time.

16. The method for displaying a function in communication of a communication terminal apparatus of claim 13 wherein the function list in communication is periodically displayed according to a predetermined display time interval.

17. The method for displaying a function in communication of a communication terminal apparatus of claim 13, further comprising a step of modifying the function list in communication according to a control command of a user.

18. The method for displaying a function in communication of a communication terminal apparatus of claim 17, wherein the modifying step further comprises:

reading additional function information stored in advance in response to the user's command to add an additional function in communication and providing the additional function information to the user; and

adding a corresponding item to the function list in communication on the basis of information selected by the user.

19. The method for displaying a function in communication of a communication terminal apparatus of claim 18, wherein a corresponding item is deleted from the function list in communication in response to a command from the user to delete the item.

20. The method for displaying a function in communication of a communication terminal apparatus of claim 13, further comprising a step of performing a function selected by a user.

21. The method for displaying a function in communication of a communication terminal apparatus of claim 13, further comprises performing the function selected by user in communication.

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