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(54) **METHOD OF DIVIDING SCREEN AREAS AND MOBILE TERMINAL EMPLOYING THE SAME**

(75) Inventors: **Hyung Min Yook**, Seoul (KR); **Sung Sik Yoo**, Gyeonggi-do (KR); **Kang Won Lee**, Gyeonggi-do (KR); **Myeong Lo Lee**, Seoul (KR); **Young Ae Kang**, Seoul (KR); **Hui Chul Yang**, Seoul (KR); **Yong Ki Min**, Seoul (KR)

Correspondence Address:
CHA & REITER, LLC
210 ROUTE 4 EAST STE 103
PARAMUS, NJ 07652 (US)

(73) Assignee: **SAMSUNG ELECTRONICS CO., LTD.**, Gyeonggi-Do (KR)

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(57) **ABSTRACT**

A method of supporting divided screen areas and a mobile terminal employing the same are disclosed. The method includes: generating input signals for one of sequentially and simultaneously activating a plurality of user functions; activating the user functions according to generated input signals; dividing a screen into divided screen areas that correspond to activated user functions; and outputting functional view areas associated with the activated user functions to the corresponding divided screen areas.

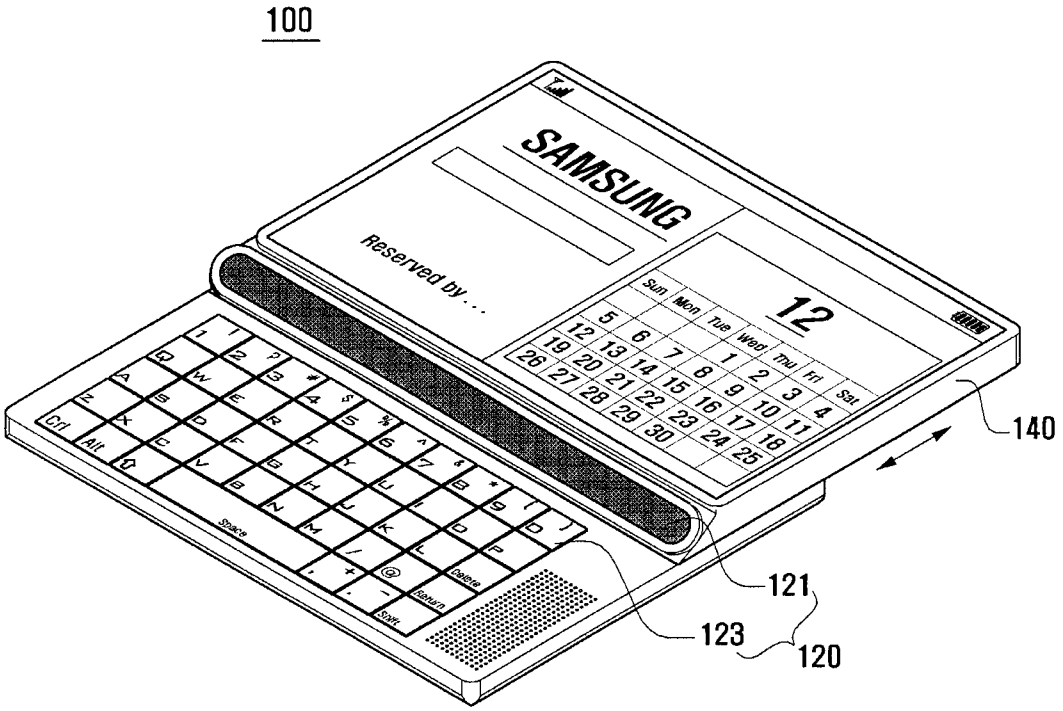


FIG . 1

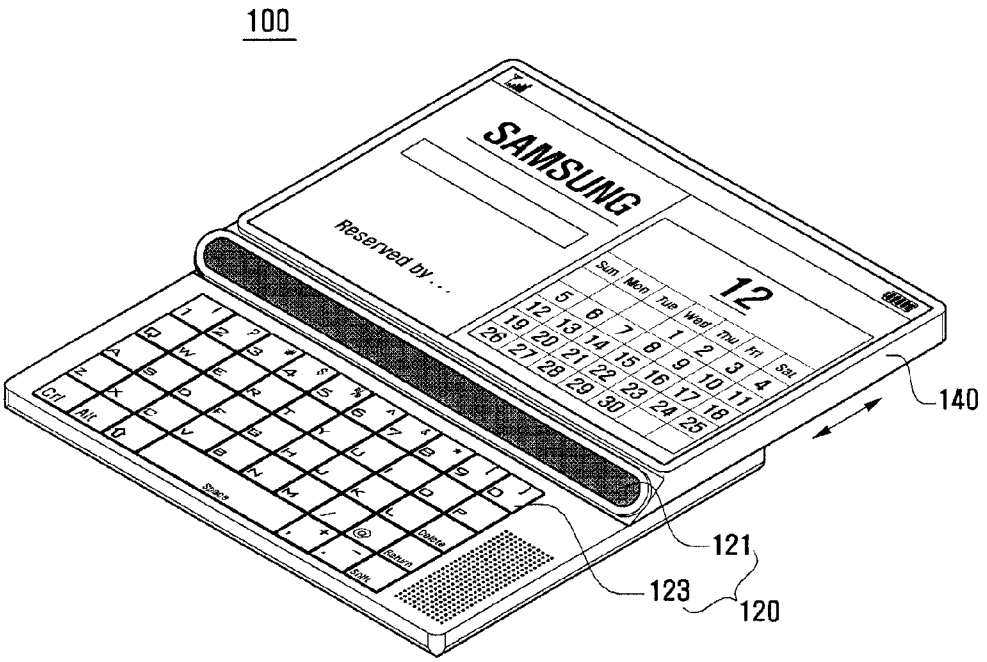


FIG . 2

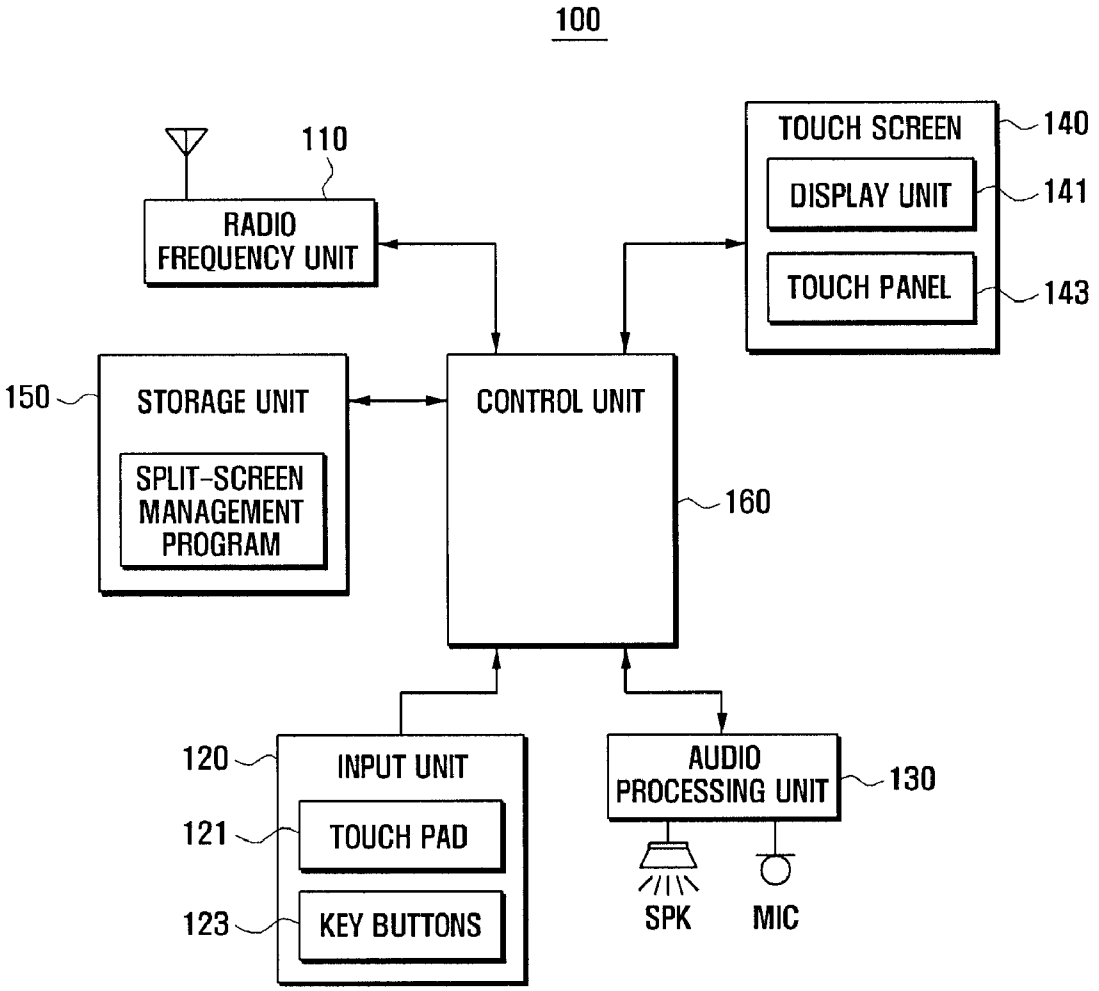

100
110
RADIO FREQUENCY UNIT
TOUCH SCREEN
140
DISPLAY UNIT
141
TOUCH PANEL
143
150
STORAGE UNIT
SPLIT-SCREEN MANAGEMENT PROGRAM
CONTROL UNIT
160
120
INPUT UNIT
121
TOUCH PAD
123
KEY BUTTONS
AUDIO PROCESSING UNIT
130
SPK
MIC

FIG . 3

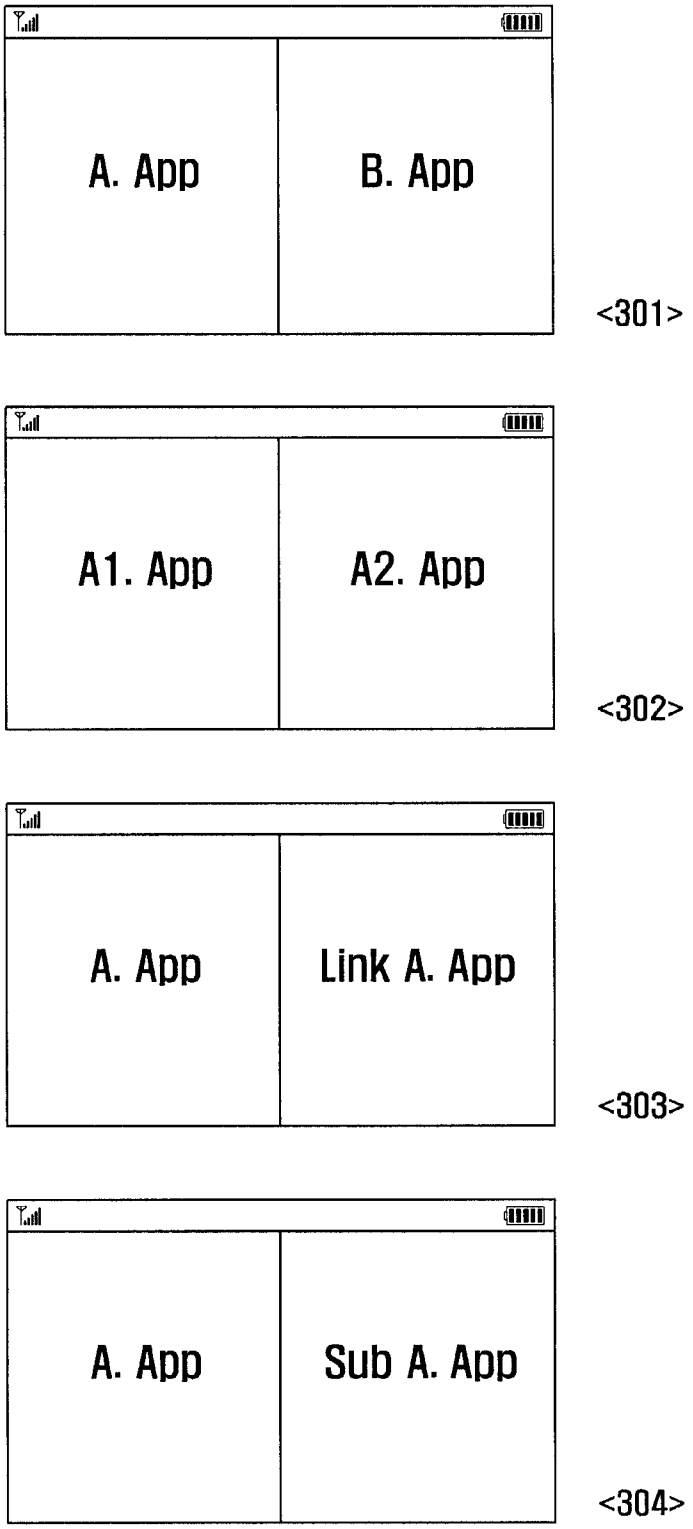

A. App
B. App
<301>
A1. App
A2. App
<302>
A. App
Link A. App
<303>
A. App
Sub A. App
<304>

FIG. 4a

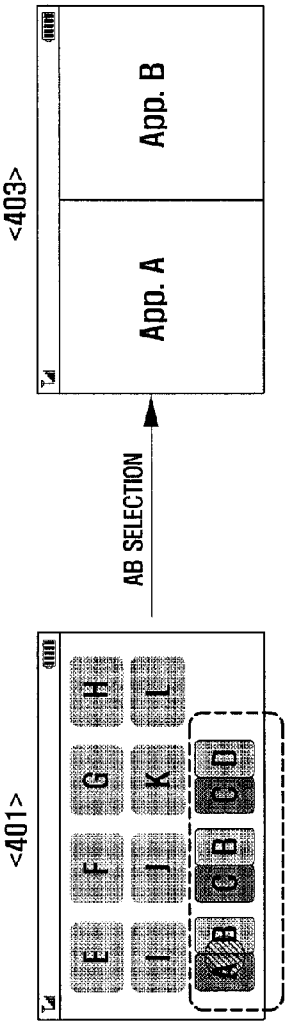

<401>
E
F
G
H
I
J
K
L
A
B
C
D
AB SELECTION
<403>
App. A
App. B

FIG. 4b

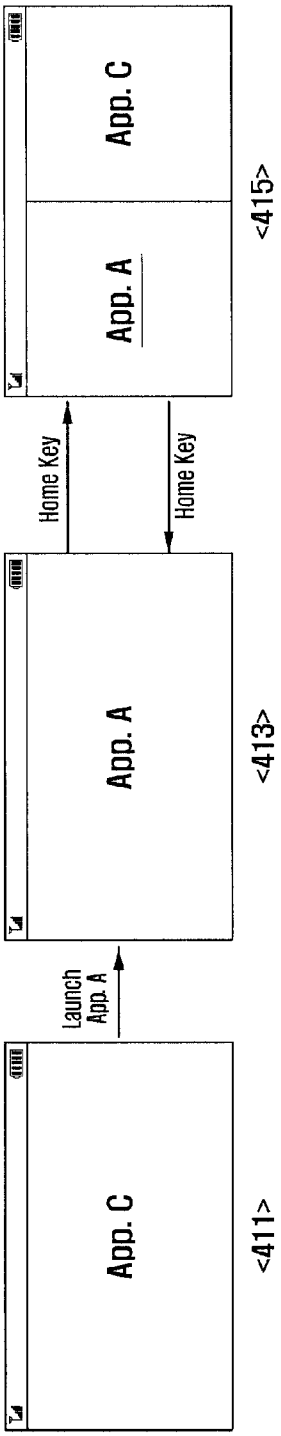

App. C
<411>
Launch App. A
App. A
<413>
Home Key
Home Key
App. A
App. C
<415>

FIG. 4c

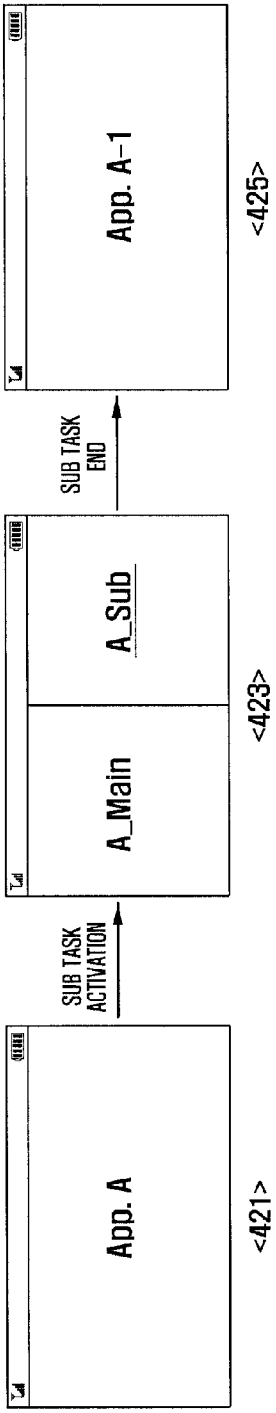

App. A
<421>
SUB TASK ACTIVATION
A_Main
A_Sub
<423>
SUB TASK END
App. A-1
<425>

FIG. 4d

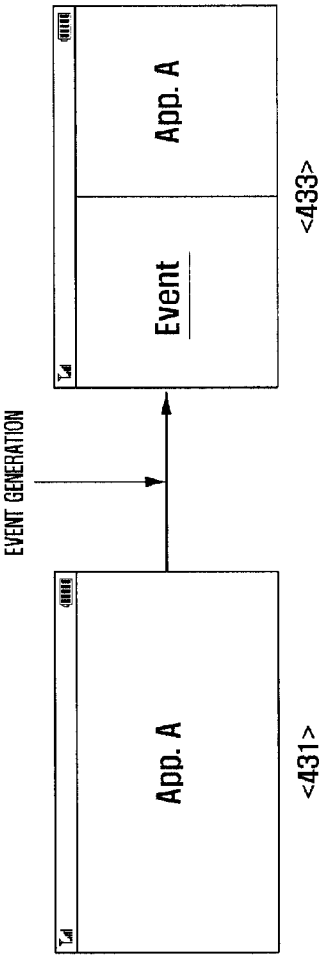

App. A
<431>
EVENT GENERATION
Event
App. A
<433>

FIG. 4e

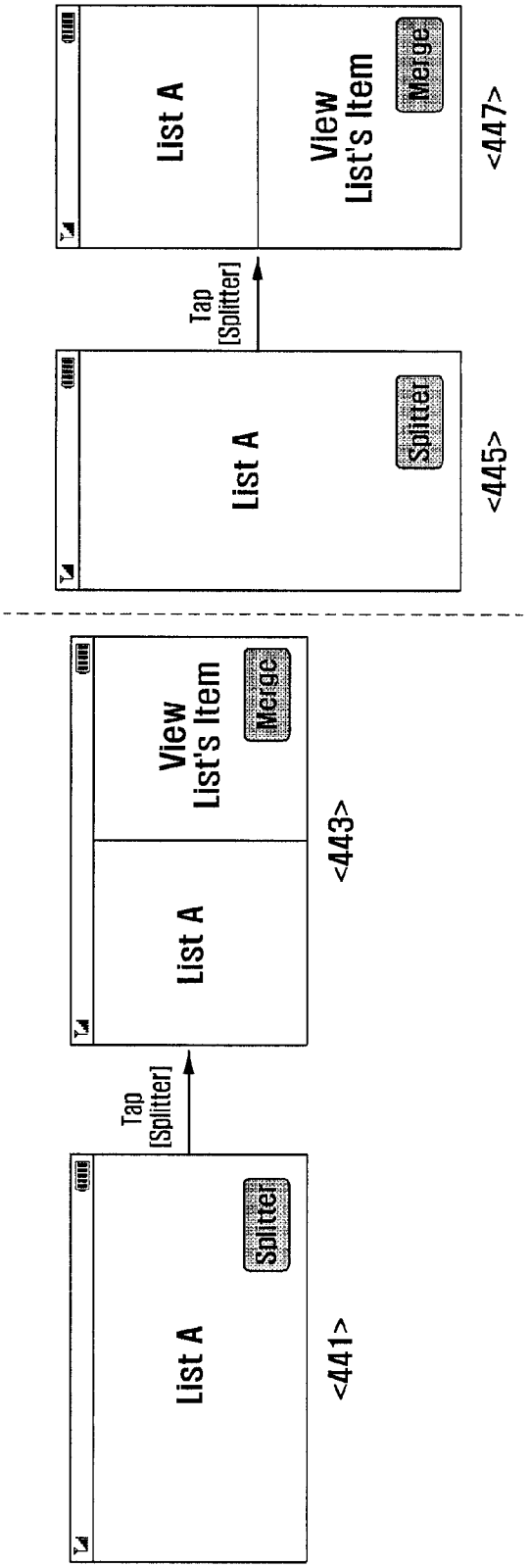

List A
Splitter
<441>
Tap
[Splitter]
List A
View
List's Item
Merge
<443>
List A
Splitter
<445>
Tap
[Splitter]
List A
View
List's Item
Merge
<447>

FIG. 5a

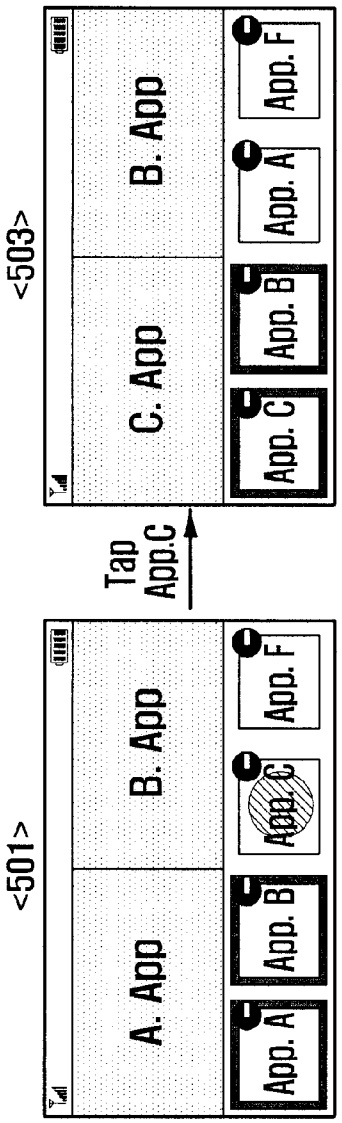

<501>
A. App
B. App
App. A
App. B
App. C
App. F
Tap
App.C
<503>
C. App
B. App
App. C
App. B
App. A
App. F

FIG. 5b

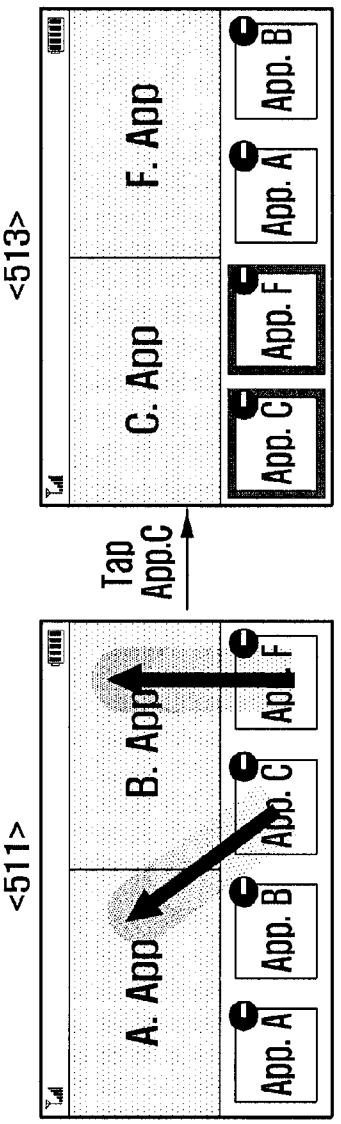

<511>
A. App
B. App
App. A
App. B
App. C
App. F
Tap
App.C
<513>
C. App
F. App
App. C
App. F
App. A
App. B

FIG. 5c

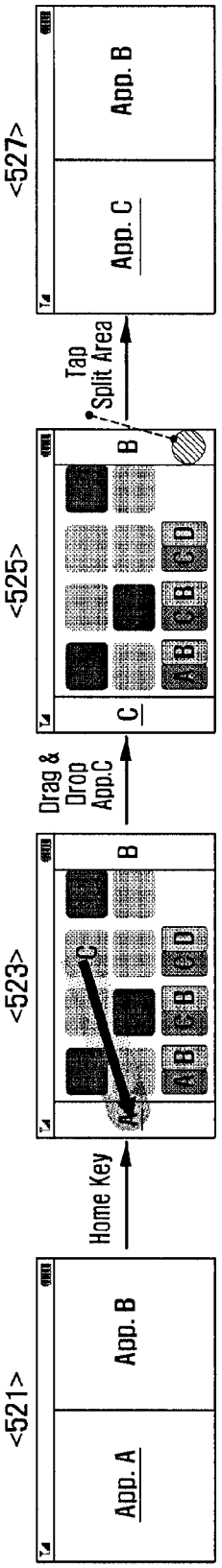
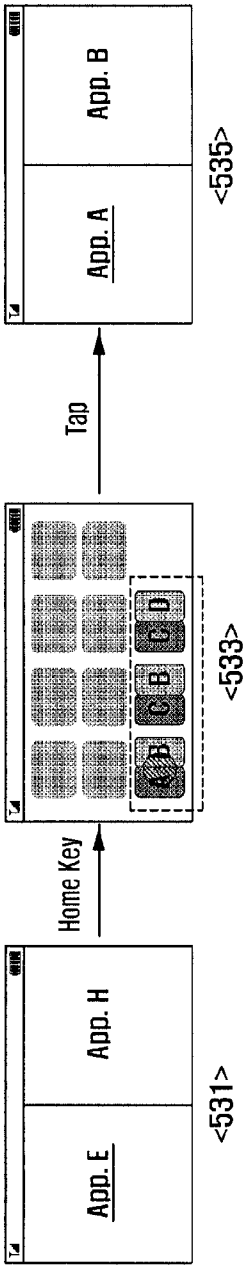

<521>
App. A
App. B
Home Key
<523>
C
B
Drag & Drop App.C
<525>
C
B
Tap Split Area
<527>
App. C
App. B

FIG. 5d


<531>
App. E
App. H
Home Key
<533>
Tap
<535>
App. A
App. B

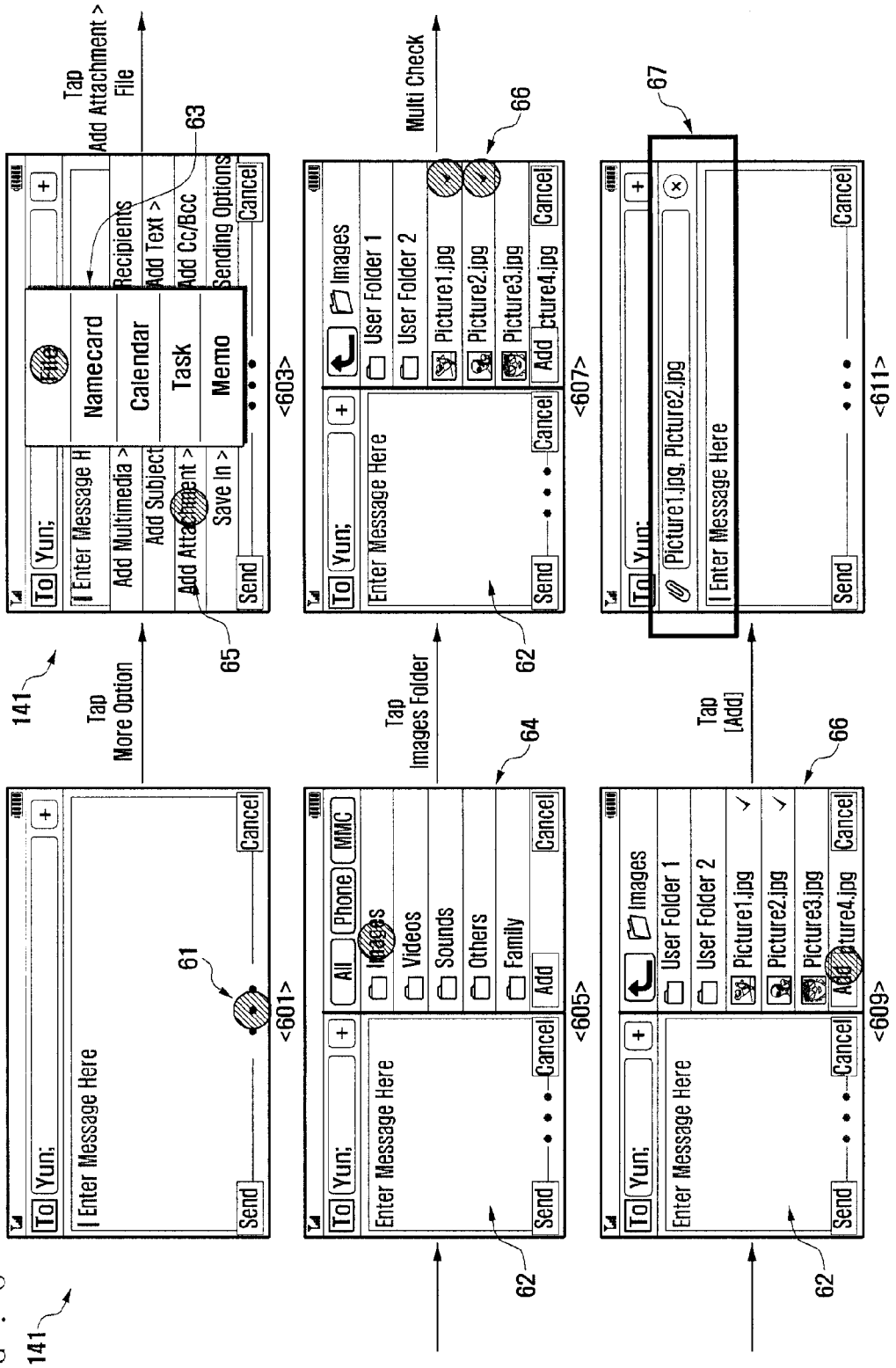

141
To
Yun;
Enter Message Here
Send
Cancel
61
<601>
Tap
More Option
Enter Message H
Add Multimedia >
Add Subject
Add Attachment >
Save In >
Namecard
Calendar
Task
Memo
Recipients
Add Text >
Add Cc/Bcc
Sending Options
65
63
<603>
Tap
Add Attachment >
File
All
Phone
MMC
Images
Videos
Sounds
Others
Family
Add
62
64
<605>
Tap
Images Folder
User Folder 1
User Folder 2
Picture1.jpg
Picture2.jpg
Picture3.jpg
Picture4.jpg
66
<607>
Multi Check
Picture1.jpg, Picture2.jpg
67
<611>
<609>
Tap
[Add]

FIG. 6

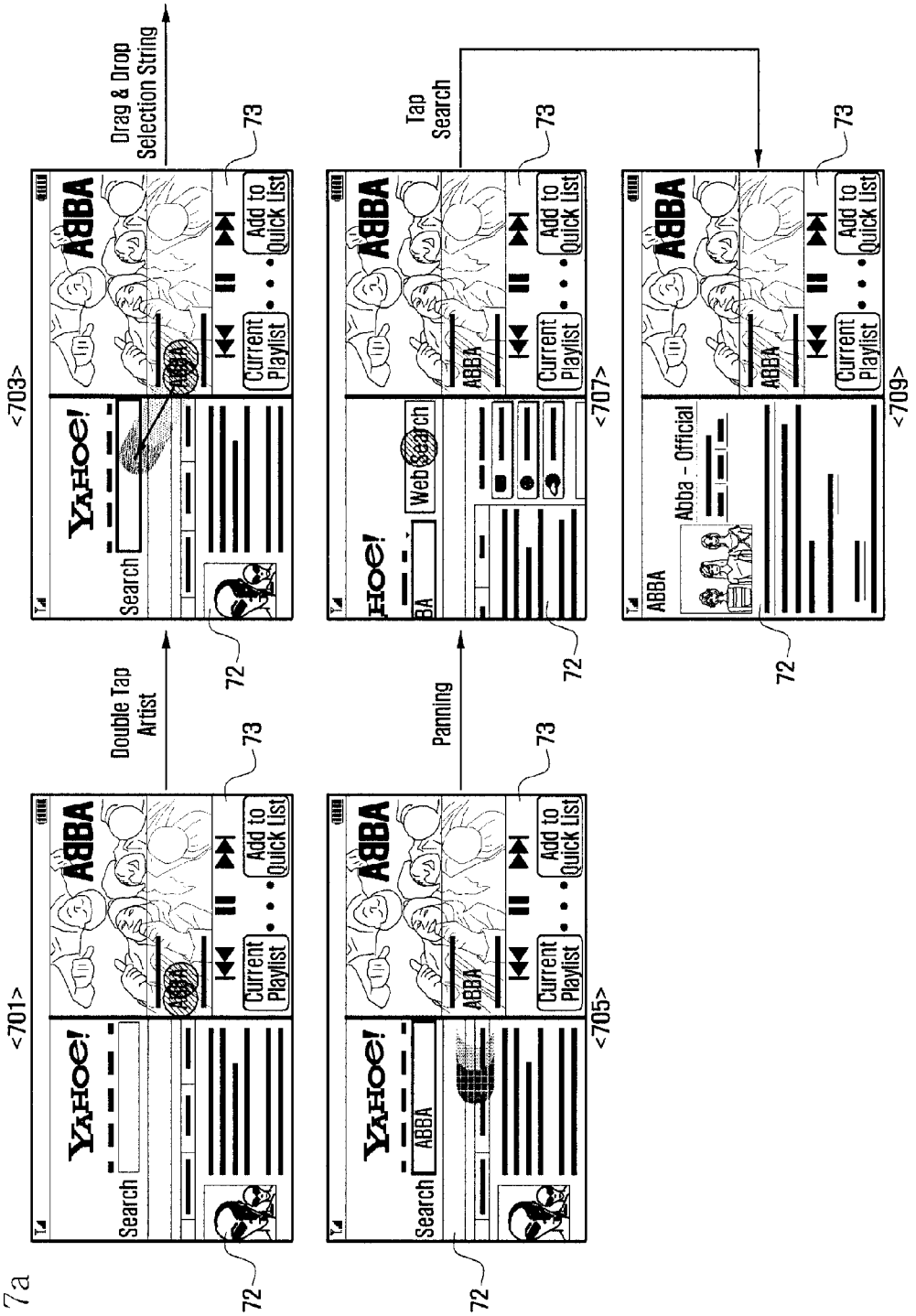

<701>
Search
ABBA
Current Playlist
Add to Quick List
72
73
Double Tap Artist
<703>
Drag & Drop Selection String
Panning
<705>
ABBA
Tap Search
<707>
Web Search
<709>
Abba - Official

FIG. 7a

FIG . 7b

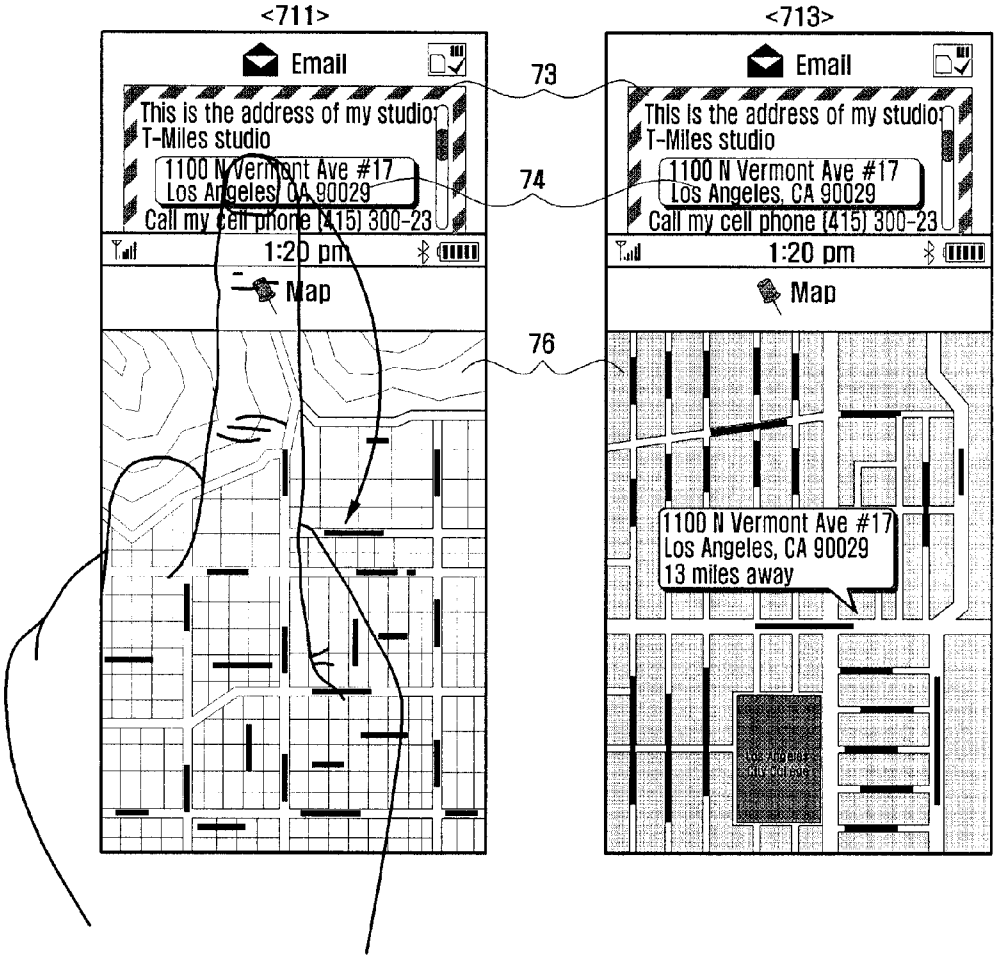
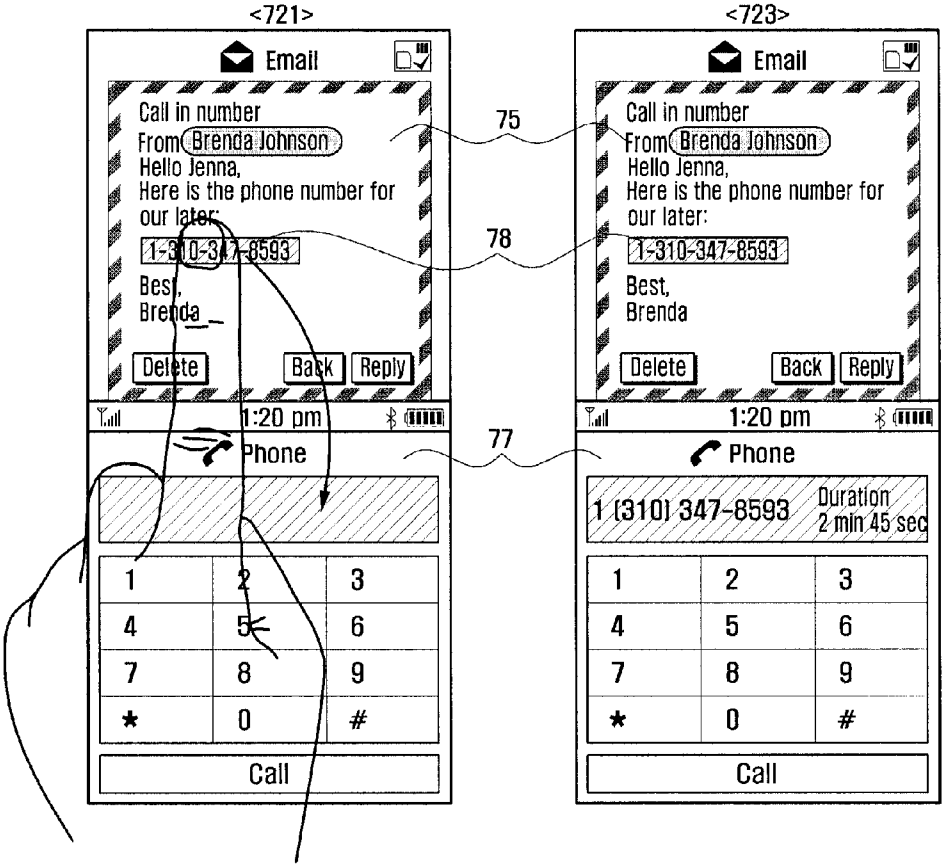

<711>
<713>
Email
This is the address of my studio:
T-Miles studio
1100 N Vermont Ave #17
Los Angeles, CA 90029
Call my cell phone (415) 300-23
1:20 pm
Map
73
74
76
1100 N Vermont Ave #17
Los Angeles, CA 90029
13 miles away

FIG . 7c


<721>
<723>
Email
Call in number
From Brenda Johnson
Hello Jenna,
Here is the phone number for our later:
1-310-347-8593
Best,
Brenda
Delete
Back
Reply
75
78
77
1:20 pm
Phone
1 (310) 347-8593
Duration 2 min 45 sec
1 2 3
4 5 6
7 8 9
* 0 #
Call

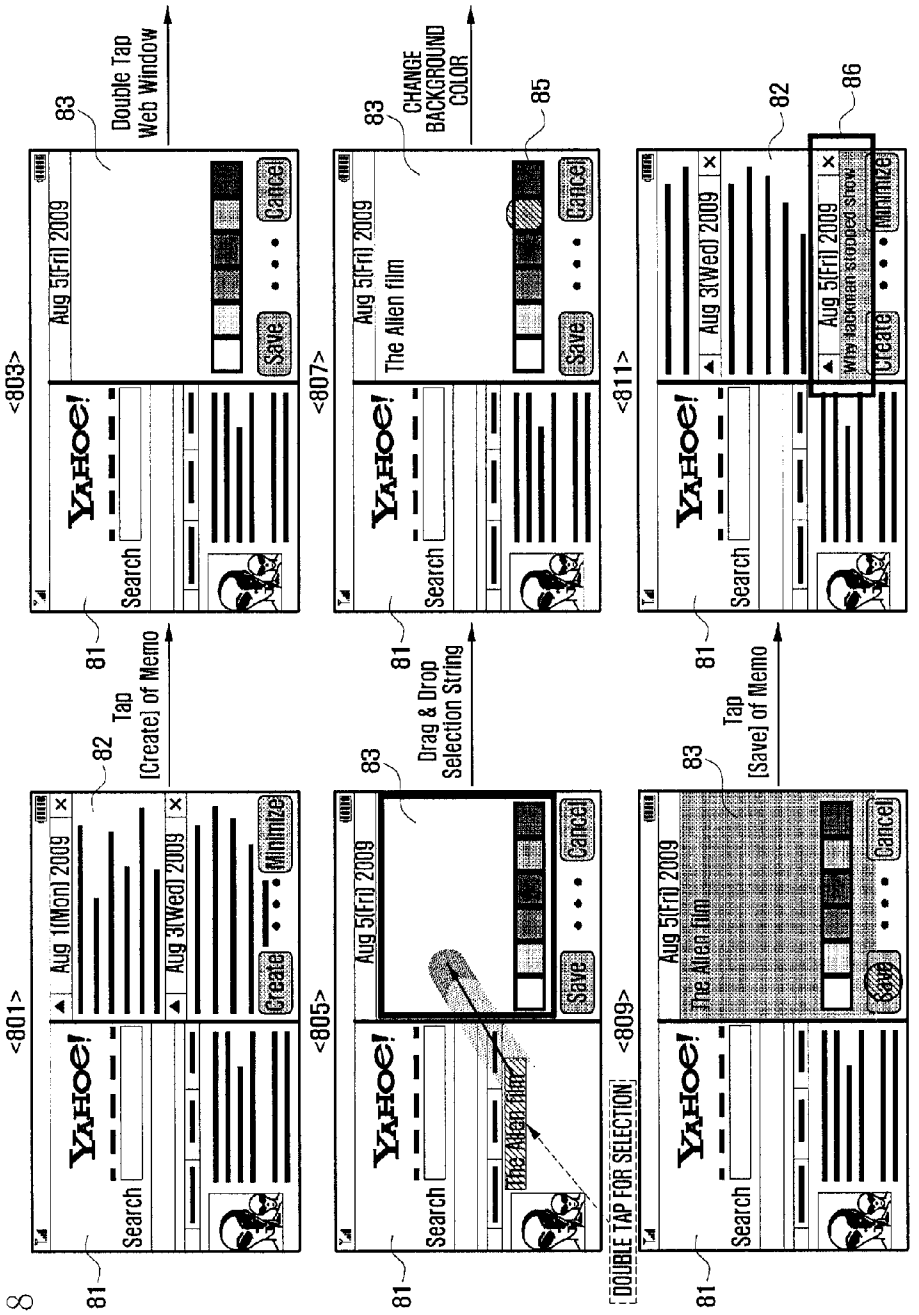

<801>
<803>
<805>
<807>
<809>
<811>
81
82
83
85
86
Search
Aug 1(Mon) 2009
Aug 3(Wed) 2009
Create
Minimize
Tap [Create] of Memo
Aug 5(Fri) 2009
Save
Cancel
Double Tap Web Window
The Alien film
Drag & Drop Selection String
CHANGE BACKGROUND COLOR
DOUBLE TAP FOR SELECTION
Tap [Save] of Memo
Why Jackman stopped show

FIG. 8

FIG. 9

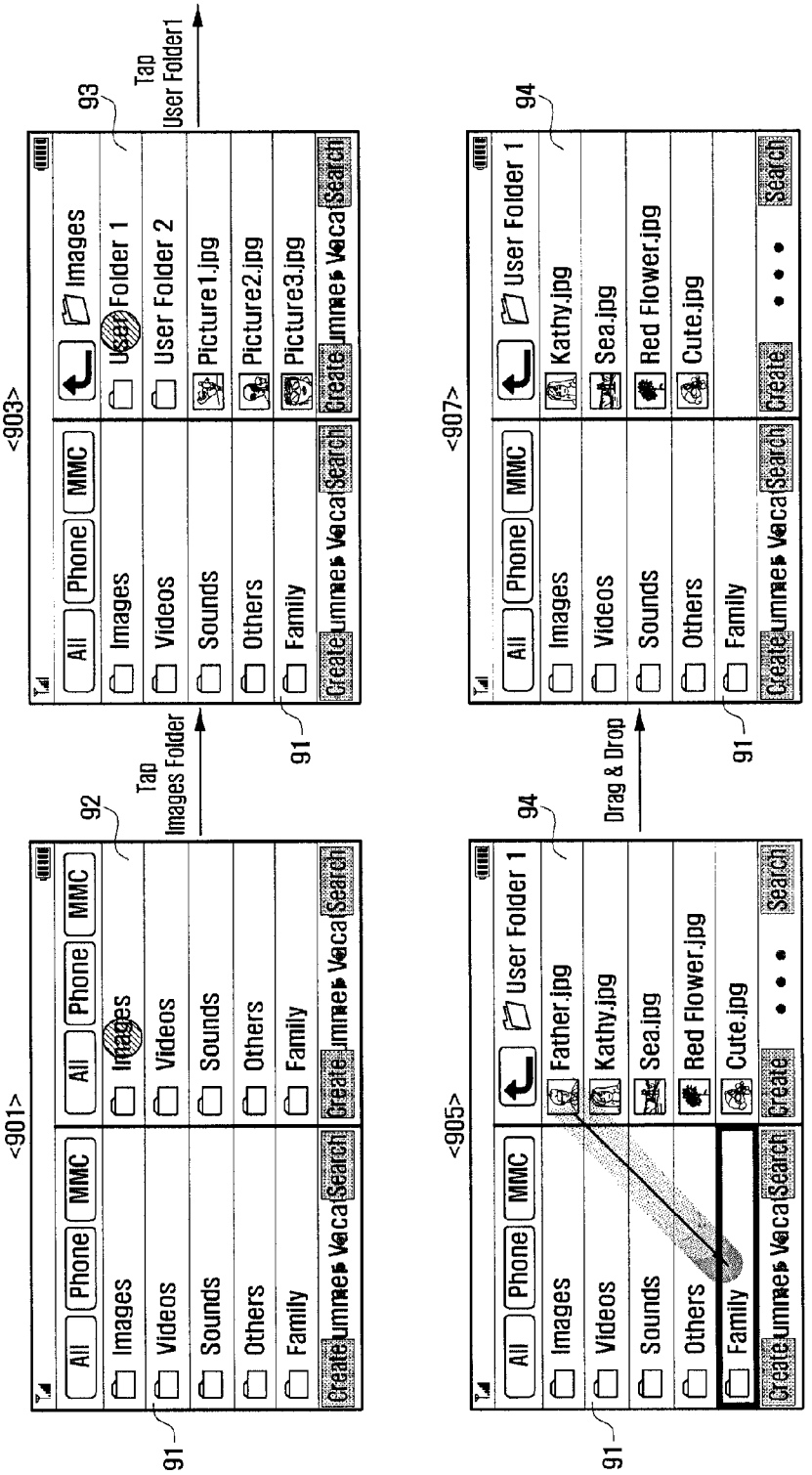

<901>
All
Phone
MMC
Images
Videos
Sounds
Others
Family
Create
Search
91
92
Tap
Images Folder
<903>
93
Tap
User Folder1
User Folder 1
User Folder 2
Picture1.jpg
Picture2.jpg
Picture3.jpg
<905>
User Folder 1
Father.jpg
Kathy.jpg
Sea.jpg
Red Flower.jpg
Cute.jpg
94
Drag & Drop
<907>

FIG. 10

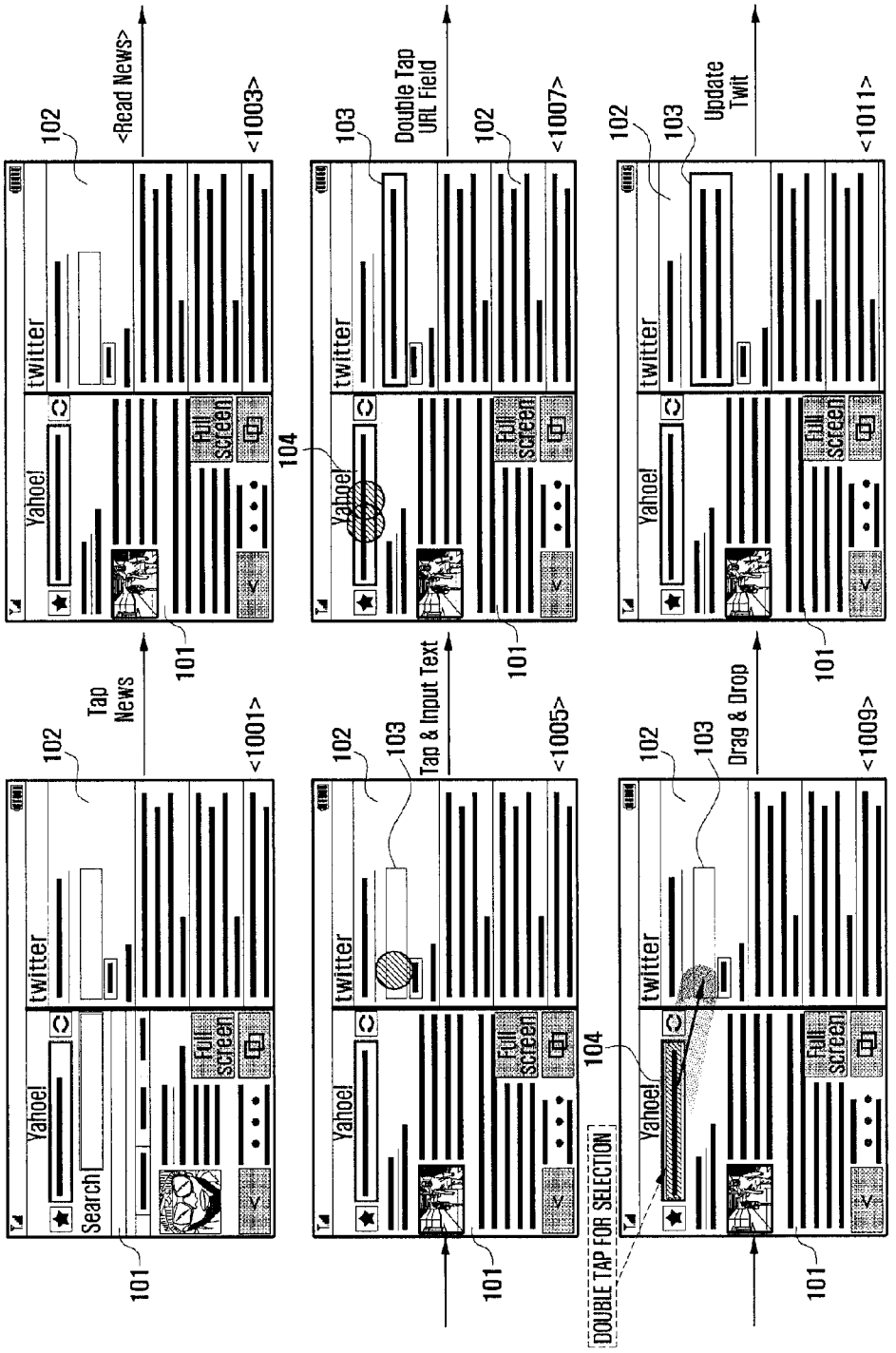

Yahoo!
twitter
Search
Full screen
101
102
103
104
Tap News
<1001>
<Read News>
<1003>
Tap & Input Text
<1005>
Double Tap URL Field
<1007>
DOUBLE TAP FOR SELECTION
Drag & Drop
<1009>
Update Twit
<1011>

FIG. 11

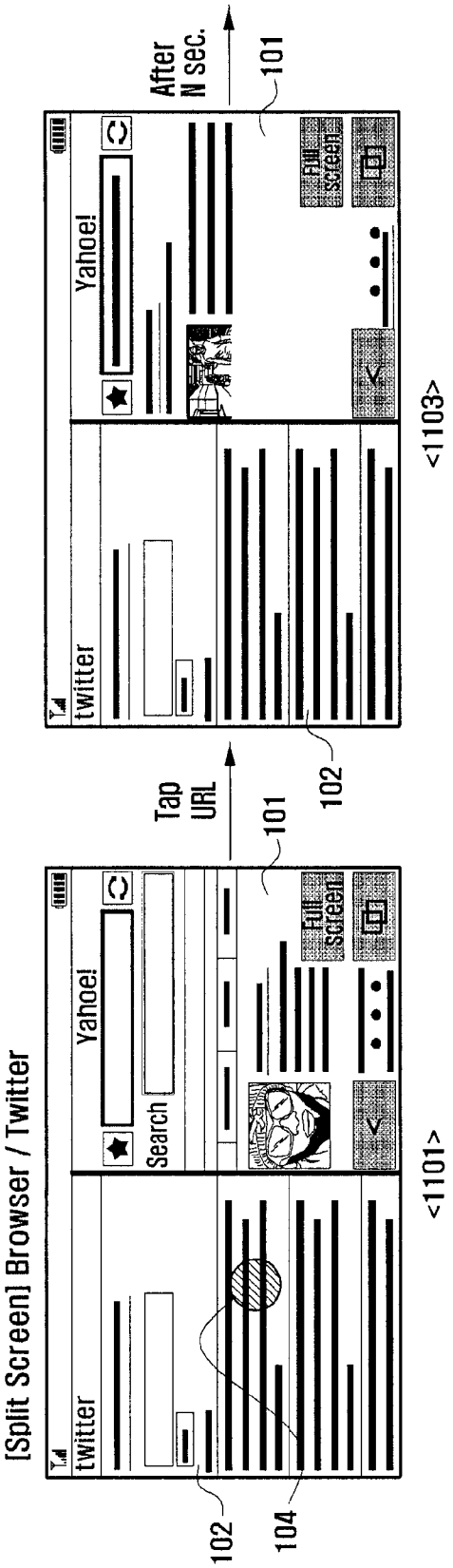

[Split Screen] Browser / Twitter
twitter
Yahoo!
Search
Full screen
102
104
<1101>
Tap URL
101
After N sec.
<1103>

FIG. 12

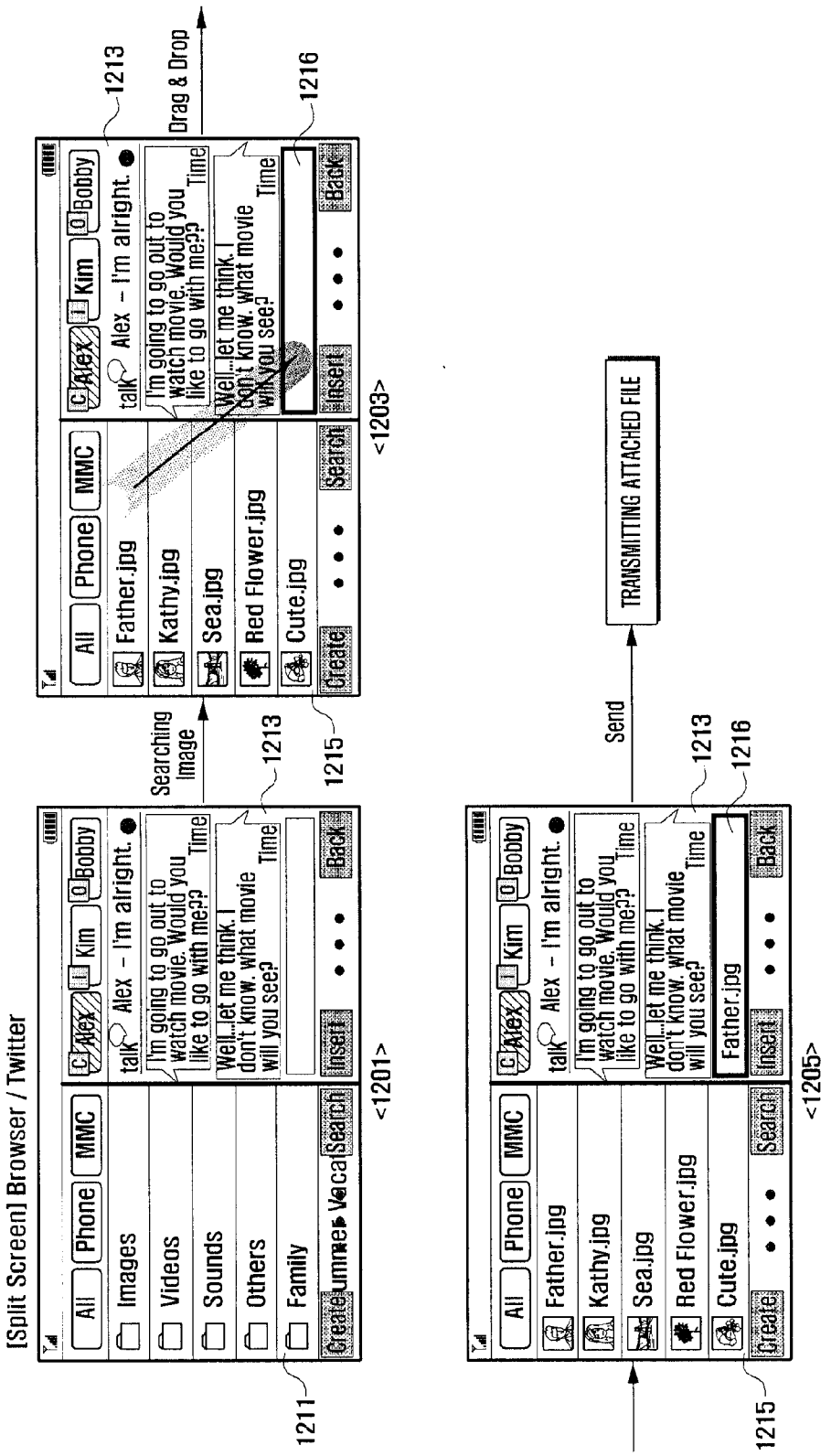
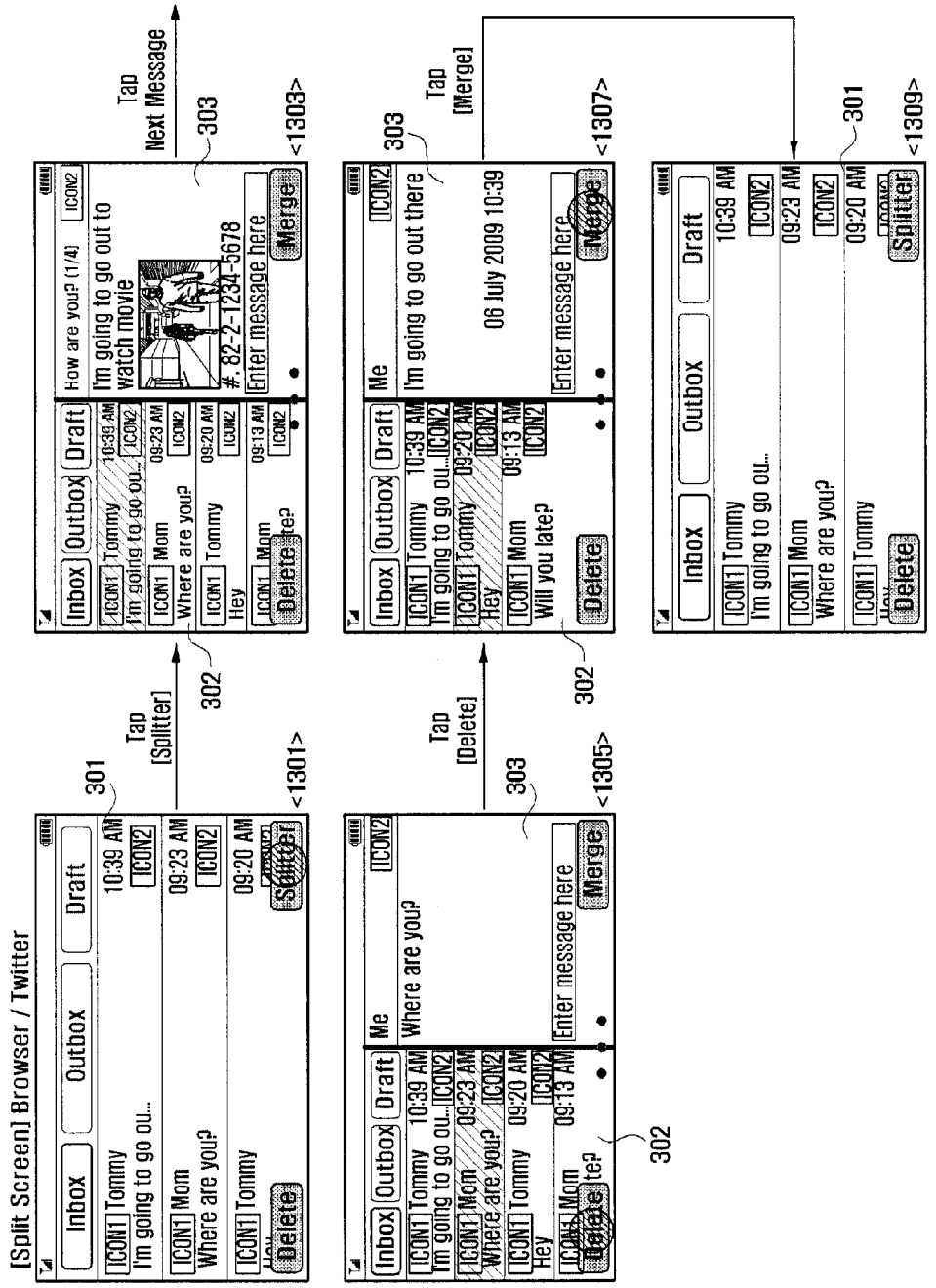

[Split Screen] Browser / Twitter
All
Phone
MMC
Images
Videos
Sounds
Others
Family
Create
Search
Back
Alex
Kim
Bobby
talk
Alex – I'm alright.
I'm going to go out to watch movie. Would you like to go with me??
Time
Well...let me think. I don't know. what movie will you see?
Insert
1211
1213
1215
<1201>
Searching Image
Father.jpg
Kathy.jpg
Sea.jpg
Red Flower.jpg
Cute.jpg
1216
<1203>
Drag & Drop
Send
TRANSMITTING ATTACHED FILE
<1205>

FIG. 13


[Split Screen] Browser / Twitter
Inbox
Outbox
Draft
ICON1 Tommy 10:39 AM
I'm going to go ou...
ICON2
ICON1 Mom 09:23 AM
Where are you?
ICON2
ICON1 Tommy 09:20 AM
Hey
ICON2
Delete
Splitter
301
<1301>
Tap [Splitter]
How are you? (1/4)
I'm going to go out to watch movie
#. 82-2-1234-5678
Enter message here
Merge
302
303
<1303>
Tap Next Message
Me
Where are you?
ICON1 Mom 09:13 AM
Will you late?
Tap [Delete]
<1305>
I'm going to go out there
06 July 2009 10:39
<1307>
Tap [Merge]
<1309>

METHOD OF DIVIDING SCREEN AREAS AND MOBILE TERMINAL EMPLOYING THE SAME

CLAIM OF PRIORITY

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 61/163,259 filed Mar. 25, 2009, and also claims the benefit of priority under 35 U.S.C. §119 from Korean patent application No. 10-2009-0128711 filed on Dec. 22, 2009, the contents of which are herein incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates generally to a mobile terminal and, more particularly, to a method and mobile terminal that can divide the screen into individual divided screen areas and simultaneously present user functions on the individual divided screen areas.

[0004] 2. Description of the Related Art

[0005] Recently, mobile terminals supporting mobility and various user functions have come into widespread use. To support user functions, mobile terminals can provide a variety of input means. For example, a mobile terminal can have a physical keypad for entering characters and numbers. To support portability, a mobile terminal can have a limited size. A mobile terminal can have a touch screen embedding a touch pad, in which case the screen size can be expanded by removing the keypad. Thanks to advances in display technology, screen sizes of mobile terminals have been significantly increased. Hence, there is a need for a method that enables a mobile terminal to effectively operate a large screen for user convenience.

SUMMARY OF THE INVENTION

[0006] The present invention provides a method and mobile terminal having a screen that can divide the screen into a plurality of divided screen areas and simultaneously present user functions on each of the individual divided screen areas according to usage conditions.

[0007] In accordance with an exemplary embodiment of the present invention, there is provided a screen area dividing method for a mobile terminal, including: generating input signals for one of sequentially and simultaneously activating a plurality of user functions; activating the plurality of user functions according to the generated input signals; in accordance with the activated functions, dividing the screen into corresponding divided screen areas; and outputting functional view areas associated with the activated user functions to the corresponding divided screen areas.

[0008] In accordance with another exemplary embodiment of the present invention, there is provided a mobile terminal capable of supporting a plurality of divided screen areas, including: a storage unit for storage of a plurality of application programs that implement user functions; an input unit for generation of a plurality of input signals for one of sequential and simultaneous activation of user functions; a control unit for activation of user functions according to the plurality of generated input signals, and for output of functional view areas associated with the user functions to be on the plurality of divided screen areas; and a display unit for display of the functional view areas.

[0009] The present invention provides a divided screen area function comprising a plurality of divided screen areas such that a user can execute user functions using divided screen areas in an easy and effective manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The 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:

[0011] FIG. **1** illustrates an external appearance of a mobile terminal according to an exemplary embodiment of the present invention;

[0012] FIG. **2** is an illustration of an exemplary block diagram of the mobile terminal of FIG. **1**;

[0013] FIG. **3** illustrates presentation of user functions on a plurality of divided screen areas, according to an exemplary embodiment of the present invention;

[0014] FIGS. **4**A to **4**E illustrate splitting and merging of screens, according to an exemplary embodiment of the present invention;

[0015] FIGS. **5**A to **5**D illustrate transitions between screens associated with user functions, in an exemplary embodiment of the present invention;

[0016] FIG. **6** illustrates a screen representation for a first example of user interaction, in an exemplary embodiment of the present invention;

[0017] FIGS. **7**A to **7**C illustrate screen representations for a second example of user interaction, in an exemplary embodiment of the present invention;

[0018] FIG. **8** illustrates a screen representation for a third example of user interaction, in an exemplary embodiment of the present invention;

[0019] FIG. **9** illustrates a screen representation for a fourth example of user interaction, in an exemplary embodiment of the present invention;

[0020] FIGS. **10** and **11** illustrate screen representations for a fifth example of user interaction, in an exemplary embodiment of the present invention;

[0021] FIG. **12** illustrates a screen representation for a sixth example of user interaction, in an exemplary embodiment of the present invention; and

[0022] FIG. **13** illustrates a screen representation for a seventh example of user interaction, in an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0023] Hereinafter, exemplary embodiments of the present invention are described in detail with reference to the accompanying drawings. The same reference symbols are used throughout the drawings to refer to the same or like parts. Detailed descriptions of well-known functions and structures incorporated herein are omitted to avoid obscuring the subject matter of the present invention. Particular terms are defined to describe the invention in the best manner. Accordingly, the meaning of specific terms or words used in the specification and the claims should not be limited to the literal or commonly employed sense, but should be construed in accordance with the spirit of the invention. The description of the various embodiments is to be construed as exemplary only and does not describe every possible instance of the invention.

Therefore, it should be understood that various changes can be made and equivalents can be substituted for elements of the invention.

[0024] FIG. **1** illustrates an external appearance of a mobile terminal **100** according to an exemplary embodiment of the present invention, and FIG. **2** illustrates an example of a block diagram of the mobile terminal **100**.

[0025] Referring to FIG. **1** and FIG. **2**, the mobile terminal **100** includes a radio frequency unit **110**, an input unit **120**, an audio processing unit **130**, a touch screen **140**, a storage unit **150**, and a control unit **160**. The mobile terminal **100** depicted in FIG. **1** is of a slide type. However, the present invention is not limited thereto. For example, the mobile terminal **100** composed of an upper slide body and a lower slide body can be transformed into a bar type mobile terminal by removing the lower slide body having the input unit **120**. The touch screen **140** with a key map can act as an input means for the bar type mobile terminal.

[0026] The mobile terminal **100** having the above configuration can activate a screen area management program stored in the storage unit **150** in response to a user request, divide the screen into divided screen areas if necessary, and output functional view areas related to activated user functions on the individual divided screen areas. The mobile terminal **100** can support information exchange between the functional view areas and perform subsequent operations using the exchanged information. Next, each component of the mobile terminal **100** is described in more detail.

[0027] The radio frequency unit **110** establishes a communication channel for voice, video and data communication under the control of the control unit **160**. That is, the radio frequency unit **110** establishes a communication channel for a voice call, a data call and a video call to a mobile communication system. To achieve this, the radio frequency unit can include a radio frequency transmitter for upconverting the frequency of a signal to be transmitted and amplifying the signal, and a radio frequency receiver for low-noise amplifying a received signal and downconverting the frequency of the received signal. For effective operation of the radio frequency unit **110**, the mobile terminal can display various information items including a phonebook on the display unit **141**. If the mobile terminal **100** is not designed to support mobile communication, the radio frequency unit **110** can be eliminated from the configuration. The functional view area related to the radio frequency unit **110** can be displayed on one of divided screen areas. For example, in response to a signal for one of an outgoing call and an incoming call requiring activation of the radio frequency unit **110**, the mobile terminal **100** can divide the screen of the display unit **141** into a plurality of divided screen areas, and output a functional view area related to a user function on one divided screen area and output a functional view area related to operation of the radio frequency unit **110** on another divided screen area.

[0028] The input unit **120** includes a plurality of alphanumeric and function keys for inputting alphanumeric information and for setting various functions. The function keys can include functions selected from the group consisting of direction, side, and shortcut keys associated with specific functions. In particular, as illustrated in FIG. **1**, the input unit **120** can include a touch pad **121** near the display unit **141** on an upper slide body, and a plurality of key buttons **123** on a lower slide body slidable under the upper slide body. The touch pad **121** arranged at the touch screen **140** can generate an input signal corresponding to a touch of the user and send the input signal to the control unit **160**. The plurality of key buttons **123** are placed on the front of the lower slide body, and can be arranged in a plurality of forms like a keyboard. The plurality of key buttons **123** can also be arranged on a metal keypad.

[0029] The audio processing unit **130** includes a speaker SPK for outputting incoming and outgoing audio data during a call and for outputting audio data contained in any of received messages and stored in the storage unit **150**, and a microphone MIC for collecting an audio signal such as a voice signal during a call. The audio processing unit **130** can generate a sound alert indicating formation of divided screen areas and output the audio component of functional view areas displayed in the divided screen areas. When each functional view area displayed in the divided screen areas contains audio data, the audio processing unit **130** can output audio data related to a particular divided screen area or simultaneously output audio data related to all the divided screen areas, according to any of user settings and user selections. The audio processing unit **130** can not generate a sound alert indicating formation of divided screen areas according to user settings.

[0030] The touch screen **140** includes a display unit **141** and a touch panel **143**. The touch panel **143** can be arranged on the front of the display unit **141**. The size of the touch screen **140** can depend on the size of the touch panel **143**. For example, the touch screen **140** can be a full touch screen completely covering the front of the display unit **141**.

[0031] The display unit **141** displays at least one of each of menus, information input by the user, and information to be provided to the user. For example, the display unit **141** can output a plurality of screens related to utilization of the mobile terminal **100**, such as any screen selected from the group consisting of an idle screen, menu screen, message composition screen, and call handling screen. The display unit **141** can be implemented using any of liquid crystal display (LCD) devices and organic light emitting diodes (OLED). As described before, the touch screen **140** including the touch panel **143** can act as an input means. In particular, under the control of the control unit **160**, the display unit **141** can divide the screen into a plurality of divided screen areas and output functional view areas related to user functions to the individual divided screen areas. Outputting functional view areas to the divided screen areas is described later in more detail.

[0032] The touch panel **143** is installed on the display unit **141**, and can generate a touch event corresponding to a touch on one of a specific image and item displayed on the display unit **141**. For example, in response to a touch on a displayed instrument image, the touch panel **143** generates a corresponding touch event and sends the touch event to the control unit **160**. A displayed image or item can be associated with a user function.

[0033] The storage unit **150** can store any of application programs related to the present invention, and key maps and menu maps for the touch screen capability. The key maps can correspond to various keyboards including any of a 3*4 keyboard and a Qwerty keyboard, and can include a control key map for controlling execution of an activated application program. The menu maps can include any of a menu map for controlling execution of an activated application program, and a menu map related to the menus of the mobile terminal **100**. The storage unit **150** can include any of a program zone and a data zone.

[0034] The program zone can store any of an operating system (OS) for booting and operating the mobile terminal **100**, application programs for reproduction of various files, application programs for call-related functions, a browser for accessing a web server, application programs for playback of MP3 data, and application programs for viewing still images and moving images. In particular, the storage unit **150** stores a screen area management program.

[0035] The screen area management program can be loaded on the control unit **160** in response to activation of a particular user function. The screen area management program is a control program that, when divided screen area formation is requested during execution of a user function, divides the screen of the display unit **141** into a plurality of divided screen areas and outputs functional view areas related to active user functions to the individual divided screen areas. To achieve this, the screen area management program can include any of a routine for detecting an input signal generated during execution of a user function, a routine for determining whether an input signal corresponds to a condition preset for divided screen area formation, and a routine for dividing the screen if the input signal corresponds to a condition preset for divided screen area formation. The screen area management program can further include any of an output routine for outputting two functional view areas related to a user function and the input signal to the corresponding divided screen areas of the display unit **141**, and an action routine for performing any of inserting, setting, searching, copying, moving, and invoking one of a data item in and a data item between the two displayed functional view areas for information exchange. The output routine can include any of a subroutine for reformatting the functional view area related to the user function according to the corresponding divided screen area, and a subroutine for adjusting the functional view area related to the input signal according to the corresponding divided screen area. The action routine is described in more detail later.

[0036] The data zone is an area that stores data generated by the use of the mobile terminal **100**, and can store any of phonebook information, at least one icon associated with widgets, and at least one content. The data zone can store user data input through the touch screen **140**. In particular, the data zone can temporarily store screen data related to user functions, and descriptive information regarding divided screen areas after divided screen area formation in response to a specific input signal.

[0037] The control unit **160** controls supply of power to the components of the mobile terminal **100** for initialization, and controls the components to provide a user interface for supporting divided screen areas and to perform requested operations. In particular, the control unit **160** controls an operation to demarcate the display unit **141** into two areas according to properties of activated user functions, and outputs functional view areas related to the user functions to the two areas.

[0038] Referring to FIG. **3**, when a first user function and a second user function, which are independent of each other, are activated at one of the same time and in sequence, as illustrated in screen **301**, the control unit **160** can control the display unit **141** to divide the screen into two areas, and cause a functional view area A.App for the first user function to be displayed on one area and cause a functional view area B.App for the second user function to be displayed on the other area. The functional view area A.App and the functional view area B.App can include an image and a text string depending upon the first and second user functions. For example, if the first user function is related to music playback, the functional view area A.App can include a control key map for controlling music playback and an image depicting the music file being played back. If the second user function is related to message composition, the functional view area B.App can include a key map and a message composition view area for composing a message.

[0039] When two instances of a user function are activated, the control unit **160** can control the display unit **141** to divide the screen into two areas, and cause two functional view areas to be displayed on the corresponding areas as illustrated in screen **302**. For example, when a first user function being a message composition function is activated, the control unit **160** can control the display unit **141** to display one of a message composition view area in a full screen format and to display a message composition view area and a key map in a full screen format. Thereafter, when the user activates a second user function being the message composition function, the control unit **160** controls the display unit **141** to divide the screen into two areas, to display a functional view area A**1**.App (i.e., resized message composition view area) for the first user function on one area, and to display a functional view area A**2**.App for the second user function on the other area. For another example, when the user activates an application requiring two Web connections, the control unit **160** can control the display unit **141** to display a functional view area A**1**.App as to one Web connection and a functional view area A**2**.App as to the other Web connection on the corresponding areas.

[0040] When related user functions are activated, the control unit **160** can control the display unit **141** to divide the screen into two areas, and cause two functional view areas to be displayed on the corresponding areas as illustrated in screen **303**. For example, when the user activates a message composition function first and then activates a file search function for message composition, the control unit **160** can control the display unit **141** to divide the screen into two areas, to display a functional view area A.App as to the message composition function on one area, and to display a functional view area LinkA.App as to the file search function on the other area. Hence, the user can compose a message using the functional view area A.App displayed on one area and can find and attach a necessary file using the functional view area LinkA.App displayed on the other area.

[0041] When a user function is activated first and then a sub function thereof is activated, the control unit **160** can control the display unit **141** to divide the screen into two areas, and cause two functional view areas to be displayed on the corresponding areas as illustrated in screen **304**. For example, when a message search function is activated for received messages, the control unit **160** can control the display unit **141** to display a list of all received messages in a full screen format. Thereafter, when a user input signal is generated to select and view a received message of the list, the control unit **160** can activate a sub user function for selecting and viewing a desired received message. Here, the control unit **160** can control the display unit **141** to divide the screen into two areas, to display a functional view area A.App as to the message search function on one area, and to display a functional view area SubA.App as to the message viewing function on the other area.

[0042] As described above, the control unit **160** can control the display unit **141** to divide the screen into different areas, and cause functional view areas associated with any of inde-

pendent user functions, instances of the same user function, related user functions, and main and subordinate user functions, to be displayed on the corresponding areas.

[0043] Next, a description is given of divided screen area formation in connection with FIGS. **4**A to **4**E.

[0044] Referring to FIG. **4**A, the user of the mobile terminal **100** can generate an input signal to display a plurality of one of menu items and widget items. As illustrated in screen **401**, the mobile terminal **100** can display a plurality of menu items on the screen in response to an input signal. The plurality of menu items can include a dual menu item, which is to be displayed on divided screen areas. Here, when a dual menu item is activated, the screen of the display unit **141** is divided into two areas and two functional view areas as to two menus are displayed on the two areas. A dual menu item can be one of created according to design settings and be created when the user combines two menu items together. The mobile terminal **100** can provide a special menu that enables the user to combine two selected menu items together into a dual menu item. In screen **401**, menu items E, F, G, H, I, J, K and L are a single menu item, and menu items "AB", "CB" and "CD" are a dual menu items.

[0045] When the user selects a dual menu item "AB" in screen **401**, the mobile terminal **100** can activate application programs related to the menu items A and B, display a functional view area App.A as to the application program related to the menu item A on a divided screen area, and display a functional view area App.B as to the application program related to the menu item B on the other divided screen area, as illustrated in screen **403**. As described above, the mobile terminal **100** can provide a feature for setting a dual menu item and output a functional view area related to the dual menu item to the divided screen areas.

[0046] Referring to FIG. **4**B, when the user generates an input signal to activate a menu 'C' or a function 'C', the mobile terminal **100** can display a functional view area App.C as to the menu 'C' or function 'C' on the screen, as illustrated in screen **411**. Thereafter, when the user generates an input signal to activate a function 'A' in screen **411**, the mobile terminal **100** can display a functional view area App.A as to the function 'A' on the display unit **141**, as illustrated in screen **413**. For example, when the user activates a Web browser, the mobile terminal **100** can access a Web server using a preset Web address and display a Web access view area received from the Web server as illustrated in screen **411**. Thereafter, when the user generates an input signal to select an item having a link from the Web access view area, the mobile terminal **100** can display a linked Web access view area on the display unit **141**, as illustrated in screen **413**.

[0047] The mobile terminal **100** can provide simultaneous presentation of two pieces of data related by an event history. For example, when the user generates an input signal corresponding to one of a particular key and a touch event like the 'Home' key in screen **413**, the mobile terminal **100** can simultaneously output two functional view areas App.C and App.A to the display unit **141** as illustrated in screen **415**, where the functional view area App.C is related by an event history to the functional view area App.A. In this case, the mobile terminal **100** can control the display unit **141** to divide the screen into two areas, and cause functional view areas to be displayed on the corresponding areas. That is, the mobile terminal **100** can display the functional view area App.A (presented immediately before pressing the 'Home' key) on the left divided screen area, and display the functional view area App.C (presented in relation to the function 'C' before the function 'A') on the right divided screen area. The mobile terminal **100** can move a functional view area to another divided screen area in response to occurrence of, for example, a drag event. When the 'Home' key is pressed again during display of divided screen areas, the mobile terminal **100** can return to the previous screen as illustrated in screen **413**. As described above, when two functional view areas are related to each other through an event history, the mobile terminal **100** can simultaneously present the two functional view areas on the divided screen areas.

[0048] Referring to FIG. **4**C, when the user generates an input signal to activate a function 'A', the mobile terminal **100** can display a functional view area App.A as to the function 'A' on the display unit **141**, as illustrated in screen **421**. Thereafter, when the user generates an input signal to activate a sub task of the function 'A' in screen **421**, the mobile terminal **100** activates the sub task, and can display a functional view area A_Main as to the function 'A' on one divided screen area and display a functional view area A_Sub as to the sub task on the other divided screen area as illustrated in screen **423**. Here, the functional view area A_Main in screen **423** is one of a resized and a simplified version of the functional view area App.A in screen **421**. The divided screen areas to which the functional view area A_Main and functional view area A_Sub are output can be any of fixed, altered, and randomly determined according to user settings.

[0049] When the sub task A_Sub one of ends and is terminated by the user, the mobile terminal **100** can output a functional view area App.A-**1** reflecting the result of the sub task A_Sub to the display unit **141** in a full screen format, as illustrated in screen **425**.

[0050] As an example for the case in FIG. **4**C, when the user generates an input signal to activate a message composition program, the mobile terminal **100** can display a functional view area App.A (a message composition view area) as to the message composition program on the screen, as illustrated in screen **421**. Thereafter, when the user generates an input signal for finding an attached file, the mobile terminal **100** can output a functional view area A_Sub as to the file search function as illustrated in screen **423**. Here, the functional view area App.A (message composition view area) in screen **421** can be one of resized and changed in attribute into the functional view area A_Main as illustrated in screen **423**. Thereafter, when the user selects an image in the functional view area A_Sub and attaches the selected image to the functional view area A_Main, the mobile terminal **100** can output a functional view area App.A-**1** as to a message with an attached image in a full screen format as illustrated in screen **425**. When the user generates an input signal for ending file search, the mobile terminal **100** can return to screen **421**. As described above, when a function and subordinate function are activated, the mobile terminal **100** can output functional view areas related to the function and subordinate function to divided screen areas.

[0051] Referring to FIG. **4**D, the user of the mobile terminal **100** can generate an input signal for activating a function 'A', the mobile terminal **100** can display a functional view area App.A as to the function 'A' on the display unit **141**, as illustrated in screen **431**. Thereafter, when an event corresponding to one of a schedule and a condition is generated, the mobile terminal **100** can activate an application program for handling the event and output a functional view area as to the event handling application program to the display unit

141. Here, as illustrated in screen **433**, the mobile terminal **100** can display the functional view area App.A as to the function 'A' on one divided screen area through resizing, and display a functional view area Event as to the event handling application program on the other divided screen area.

[0052] As an example for the case in FIG. **4**C, when the user generates an input signal to activate a function 'A' for moving image playback, the mobile terminal **100** can display a functional view area App.A as to moving image playback on the display unit **141** in a full screen format, as illustrated in screen **431**. Thereafter, when an incoming call is received, the mobile terminal **100** can generate an alert for call reception, and output a functional view area related to call event handling to the display unit **141**. Here, as illustrated in screen **433**, the mobile terminal **100** can display the functional view area App.A as to the function 'A' on one divided screen area, and display a functional view area Event as to call event handling on the other divided screen area.

[0053] As depicted above, in response to reception of an incoming call, the mobile terminal **100** can output a functional view area related to call event handling to the display unit **141**. In the case of a call event, as the user normally grips the mobile terminal **100** and moves it close to the user's face, the mobile terminal **100** can pause moving image playback and turn off the display unit **141** to save battery power. When the incoming call is ended, the mobile terminal **100** can return to screen **431**.

[0054] In response to a schedule alert event, the mobile terminal **100** can output a functional view area (an alert message) related to schedule alert handling to the left divided screen area, as illustrated in screen **433**. Here, as handling of a schedule alert event is not in conflict with playback of moving images, the functional view area related to playback of moving images can be retained. Options for playback of moving images including continue and pause can be set by the design and changed by the user. As described above, in response to occurrence of one of an external and internal event when a functional view area related to a user function is output in a full screen format, the mobile terminal can display the functional view area related to the event and the functional view area related to the user function on divided screen areas.

[0055] Referring to FIG. **4**E, the user of the mobile terminal **100** can generate an input signal for activating a listing function, the mobile terminal **100** can display a functional view area "List A" as to the listing function on the display unit **141** and further display a splitter icon for divided screen areas, as illustrated in screen **441**. Thereafter, when the user touches the splitter icon, the mobile terminal **100** can output a functional view area (items of List A) related to detailed viewing as illustrated in screen **443**. That is, the mobile terminal **100** can divide the screens, output a resized functional view area "List A" to the display unit **141**, and output the functional view area related to detailed viewing to the display unit **141** together with the functional view area "List A". Here, in the mobile terminal **100**, divided screen areas can be formed in portrait mode as illustrated in screen **445** and screen **447**.

[0056] The mobile terminal **100** can provide a "merge" icon for returning to the previous screen as illustrated in screen **445** or screen **447**. When the user selects the "merge" icon, the mobile terminal **100** can return to screen **441** or screen **445**.

[0057] Hereinabove, a description is given of divided screen area formation in connection with FIGS. **4**A to **4**E. Next, transitions between divided screen areas are described.

[0058] FIGS. **5**A to **5**D illustrate transitions between divided screen areas associated with user functions.

[0059] Referring to FIG. **5**A, when the user activates a file search function, the mobile terminal **100** can display a functional view area as to the file search function on the display unit **141**. Here, when the user activates the file search function based on divided screen areas, the mobile terminal **100** can divide the screen into divided screen areas and output functional view areas related to files on the divided screen areas as illustrated in screen **501**. For example, after display of dual menu items, the user can generate an input signal for selecting a dual menu item. Then, the mobile terminal **100** can output functional view areas related to the dual menu item on the divided screen areas as illustrated in screen **501**. Alternatively, as described before in connection with FIG. **4**, in response to activation of a user function, the mobile terminal **100** can output a functional view area related to the user function on the divided screen areas. The mobile terminal **100** can divide the screen of the display unit **141** into two divided screen areas, and output two functional view areas A.App and B.App related to the selected files on the divided screen areas. The mobile terminal **100** can further output a search view area, which can overlap with the divided screen areas, on the display unit **141**. The search view area can be output in response to a given touch event occurring when a functional view area is displayed on the display unit **141**, and can be removed from the display unit **141** after expiration of a preset time. The mobile terminal **100** can also divide the screen of the display unit **141** into three areas, and output a functional view area A.App, a functional view area B.App, and the search view area on the three areas, respectively. In the search view area, icons associated with the functional view area being currently displayed on the display unit **141**, and icons associated with other files can be present. The icons associated with the functional view area being currently displayed can be highlighted to indicate the files being selected and output.

[0060] In screen **501**, when the user generates an input signal for selecting an icon App.C, the mobile terminal **100** can output a functional view area C.App related to the icon App.C to the display unit **141** as illustrated in screen **503**. During this process, the mobile terminal **100** can replace the functional view area A.App with the functional view area C.App. To output a new functional view area, the mobile terminal **100** can identify the oldest functional view area on display and replace the oldest functional view area with the new functional view area.

[0061] As described above, to support divided-screen area transition, the mobile terminal **100** can perform any one or more of display a separate search view area, select a desired icon in the search view area, and replace one functional view area being output with a functional view area related to the selected icon.

[0062] Referring to FIG. **5**B, the mobile terminal **100** can also output a functional view area when the user selects a file in the search view area. To be more specific, as illustrated in screen **511**, it is assumed that the mobile terminal **100** displays functional view areas A.App and B.App in response to selection of an icon App.A and icon App.B in the search view area. The user can select an icon App.C and move the icon App.C to the location where the functional view area A.App is displayed through touch and drag. The user can also select

an icon App.F and move the icon App.F to the location where the functional view area B.App is displayed through touch and drag.

[0063] In response to the user actions, as illustrated in screen **513**, the mobile terminal **100** can replace the functional view area A.App with a functional view area C.App related to the icon App.C, and replace the functional view area B.App with a functional view area F.App related to the icon App.F.

[0064] As described above, when the user selects an icon in the search view area and directly moves the selected icon to a desired location on the screen, the mobile terminal **100** can display a functional view area related to the selected icon at the desired location.

[0065] Referring to FIG. **5**C, as described before in connection with FIG. **4**, in response to activation of user functions, the mobile terminal **100** can divide the screen of the display unit **141** into two divided screen areas, and output two functional view areas App.A and App.B related to the user functions on the divided screen areas as illustrated in screen **521**.

[0066] Thereafter, the user can enter the "Home" key provided on the mobile terminal **100**. In response, the mobile terminal **100** can resize the functional view areas App.A and App.B into functional view areas 'A' and 'B' and place the functional view areas 'A' and 'B' at preset locations, and can output a menu view area corresponding to the "Home" key on the display unit **141**. That is, as illustrated in screen **523**, the mobile terminal **100** can display the resized functional view area 'A' at a left area on the display unit **141**, display the resized functional view area 'B' at a right area, and output the menu view area related to the "Home" key between the functional view area 'A' and the functional view area 'B'. In screen **523**, the user can select a function icon 'C' among at least one function icon in the menu view area and move the function icon 'C' to the functional view area 'A' through drag and drop.

[0067] In response to movement of the function icon 'C', as illustrated in screen **525**, the mobile terminal **100** can replace the functional view area 'A' with the functional view area 'C' related to the function icon 'C'. Thereafter, when the user generates an input signal for tapping a split area in screen **525**, the mobile terminal **100** can remove the menu view area and resize the functional view area being output to fit in the corresponding split area of the display unit **141** as illustrated in screen **527**. For example, the menu view area is hidden in screen **527**; the functional view area 'C' in screen **525** is resized into a functional view area App.C fitting in the corresponding split area in screen **527**; and the functional view area 'B' in screen **525** is resized into a functional view area App.B fitting in the corresponding split area in screen **527**.

[0068] Referring to FIG. **5**D, the mobile terminal **100** can replace existing functional view areas with new functional view areas at once through the menu view area. To be more specific, as described before in connection with FIG. **4**, in response to activation of user functions, the mobile terminal **100** can divide the screen of the display unit **141** into two divided screen areas, and output two functional view areas App.E and App.H related to the user functions on the divided screen areas as illustrated in screen **531**.

[0069] The user can cause a menu view area containing at least one function icon to be displayed on the display unit **141**. To achieve this, the mobile terminal **100** can provide a special key like the "Home" key. When the user enters the "Home" key, the mobile terminal **100** can display a menu view area containing at least one function icon on the display unit **141** in a full screen format as illustrated in screen **533**. As described before, the menu view area can include a dual menu item. A dual menu item can be created and destroyed in a manner selected from the group consisting of automatically and according to user settings. The mobile terminal **100** can provide a special interface that enables the user to create a dual menu item.

[0070] When the user generates an input signal for selecting a dual menu item "AB" in the menu view area illustrated in screen **533**, the mobile terminal **100** can output two functional view areas App.A and App.B related to the dual menu item "AB" on the divided screen areas as illustrated in screen **535**. Here, when the user selects a dual menu item in screen **533**, the mobile terminal **100** can directly output a functional view area related to the selected dual menu item as illustrated in screen **535**. Alternatively, when the user selects a dual menu item in screen **533** and generates one of a given key signal and touch event for outputting functional view areas related to the selected dual menu item, the mobile terminal **100** can output the functional view areas as illustrated in screen **535**.

[0071] As described above, the mobile terminal **100** can perform screen transition according to one of the methods selected from the group consisting of selection of an icon in a search view area, movement of an icon in a search view area to a desired split area, output of a menu view area through rearrangement of divided screen areas and selection of an icon in the menu view area, and output of a menu view area through display of divided screen areas and selection of a dual menu item in the menu view area.

[0072] Hereinabove, a description is given of the configuration of the mobile terminal **100**. A description is also given of divided screen areas and screen transitions. Next, a description is given of a plurality of user interactions using divided screen areas with reference to the drawings.

[0073] FIG. **6** illustrates a screen representation for a first example of user interaction, in an exemplary embodiment of the present invention.

[0074] In FIG. **6**, user interaction is related to a message composition view area. The message composition view area can be displayed on the display unit by any of activating a user menu and selecting a message composition function through the user menu, and by entering a given key associated with message composition. For example, as illustrated in screen **601**, when the user selects an information item registered as "Yun" in the phonebook and activates a message composition function, the mobile terminal **100** can output a message composition view area.

[0075] When the user touches a zone **61** reserved for more options as illustrated in screen **601**, the mobile terminal **100** can display an option view area **63** on the display unit **141** as illustrated in screen **603**. The option view area **63** can include a plurality of items related to the message composition view area, selected from the group including "File", "Namecard", "Calendar", "Task", and "Memo". When the user selects the item "File" in the option view area **63**, the mobile terminal **100** can display subordinates items of the item "File" on the display unit **141**. For example, the mobile terminal **100** can display a subordinate item view area **65** selected from the group including "Add multimedia", "Add subject", "Add attachment", "Save in", "Recipients", "Add test", "Add Cc/Bcc", and "Sending Options". Here, the mobile terminal **100** can display the subordinate item view area **65** of the item

"File" in an overlay format on the message composition view area, and arrange the subordinate item view area **65** and the option view area **63** so that they do not overlap with each other.

[0076] When the user selects an item "Add Attachment" in the subordinate item view area **65**, the mobile terminal **100** can divide the screen of the display unit **141** into split areas and output a first functional view area **62** related to message composition and a second functional view area **64** related to file attachment on the split areas as illustrated in screen **605**. When the user selects a folder "Images" in the second functional view area **64**, the mobile terminal **100** can display a listing view area **66** containing a list of files in the folder "Images" on the corresponding split area as illustrated in screen **607**. Here, display of the second functional view area **64** can be replaced with display of the listing view area **66**. When the user selects specific files "Picture**1**.jpg" and "Picture**2**.jpg" in the listing view area **66** and selects an icon "Add" for file attachment as illustrated in screen **609**, the mobile terminal **100** can display the message composition view area containing the selected files on the display unit **141** in a full screen format as illustrated in screen **611**. Here, to clearly indicate the attached files, the mobile terminal **100** can display a file attach view area **67** at a region of the message composition view area. The file attach view area **67** can include information indicating selected files such as "Picture**1**.jpg" and "Picture**2**.jpg".

[0077] FIGS. **7**A to **7**C illustrate screen representations for a second example of user interaction, and are related to transferring information between functional view areas, in an exemplary embodiment of the present invention.

[0078] Referring to FIG. **7**A, the user of the mobile terminal **100** can cause activation of two user functions related to, for example, Web access and music file playback in one of sequentially and in parallel by the use of one of a dual menu item and a single menu item. In response to the user action, the mobile terminal **100** can activate a Web access function and connect to a server using a preset address. After Web connection establishment, the mobile terminal **100** can display a Web access view area **72** for outputting data provided by the server on one divided screen area as illustrated in screen **701**. In addition, the mobile terminal **100** can activate a music file player and display a music file play view area **73** related to the music file player on the other divided screen area.

[0079] A illustrated in screen **701**, the user generates an input signal for selecting artist information "ABBA" in the Web access view area **72**, extracts the selected artist information "ABBA" (double tap), and moves the extracted artist information "ABBA" to a search box of the Web access view area **72** (drag and drop) as illustrated in screen **703**. Then, the mobile terminal **100** can display the selected information at the search box of the Web access view area **72** as illustrated in screen **705**.

[0080] When the user generates an input signal "Panning" for shifting the Web access view area **72** at the divided screen area, the touch panel of the display unit **141** generates a corresponding touch event and sends the touch event to the control unit **160**. Then, the mobile terminal **100** can shift the Web access view area **72** according to the input signal as illustrated in screen **707**. Thereafter, when the user selects an item "Web search" of the Web access view area **72** for searching the Web, the mobile terminal **100** can perform Web search using the artist information input to the search box as a search keyword and outputs Web search results to the Web access view area **72** as illustrated in screen **709**. Here, the mobile terminal **100** can send a message containing the artist information input to the search box to a given Web server, and can receive corresponding Web search results from the Web server through the radio frequency unit **110** and output the received Web search results to the display unit **141**.

[0081] Referring to FIG. **7**B, the user can make an activation request for a mail check function of the mobile terminal **100**. In response to the user request, the mobile terminal **100** can display a list of received electronic mail on the display unit **141**, and, upon selection of an electronic mail, output the contents of the selected electronic mail on a given area of the display unit **141** as illustrated in screen **711**. When the user makes an activation request for a map viewing function, the mobile terminal **100** can activate the map viewing function and display a preset map on the display unit **141**. Here, the mobile terminal **100** can output an email handling view area **73** related to the mail check function on one divided screen area of the display unit **141**, and output a map viewing view area **76** related to the map viewing function on the other divided screen area. Here, the mobile terminal **100** can control the email handling view area **73** and the map viewing view area **76** to have different sizes. That is, when the user generates an input signal through the touch pad **121** for resizing at least one of the email handling view area **73** and the map viewing view area **76**, the mobile terminal **100** can adjust the size of at least one of the email handling view area **73** and the map viewing view area **76**.

[0082] As illustrated in screen **711**, the user can select a desired information element of the email handling view area **73**. For example, the user can select address information **74** of the email handling view area **73** in a plurality of ways. That is, when the user drags a region where the address information **74** is output and when a block covering the address information **74** is set, the user can select the address information **74** by tapping the block. After selecting the address information **74**, the user can move the address information **74** to the map viewing view area **76** by dragging.

[0083] Then, the mobile terminal **100** can execute the map viewing function using the address information **74** transferred from the email handling view area **73** to the map viewing view area **76**, and output the map of the geographical region indicated by the address information **74** at a given scale on the map viewing view area **76** as illustrated in screen **713**. In other words, the mobile terminal **100** can treat the address information **74** transferred from the email handling view area **73** to the map viewing view area **76** as a search word, and invoke the map viewing function on the basis of the address information **74**. Then, the mobile terminal **100** can adjust the scale of the map of the geographical region indicated by the address information **74** at a preset value, and display the scale-adjusted map on the map viewing view area **76**. Here, the size of the email handling view area **73** and the map viewing view area **76** can be adjusted according to one of an input signal from the input unit **120** and according to a touch event from the touch screen **140**. For example, the boundary region between the email handling view area **73** and the map viewing view area **76** can be moved upwards or downwards according to a touch and drag event, and the email handling view area **73** and the map viewing view area **76** can be adjusted in size according to movement of the boundary region. In response to size adjustment of a view area, one of

additional information can be displayed in the view area, and a portion of information displayed on the view area can be hidden.

[0084] Referring to FIG. **7**C, when the user make an electronic mail request, the mobile terminal **100** can activate an electronic mail function and output a list of electronic mail. Thereafter, when the user selects a specific electronic mail, the mobile terminal **100** can output the contents of the selected electronic mail to the email handling view area **75** on the display unit **141** as illustrated in screen **721**. When the user generates an input signal for making a call while the electronic mail function is activated, the mobile terminal **100** can output a dialing view area **77** for call making on the display unit **141**.

[0085] The user can generate an input signal for selecting specific information such as a phone number **78** in the email handling view area **75**. That is, the user can select the phone number **78** in the email handling view area **75** by dragging or tapping. After selecting the phone number **78**, the user can transfer the phone number **78** to the dialing view area **77** by dragging.

[0086] Then, the mobile terminal **100** can display the phone number **78** transferred by the user in the dialing view area **77** as depicted by screen **723**. Thereafter, the mobile terminal **100** can one of automatically make a call using the phone number **78**, and can make a call using a newly dialed pone number, if present.

[0087] As described above, the mobile terminal **100** can output a plurality of functional view areas on divided screen areas of the display unit **141** according to a user request. The mobile terminal **100** enables the user to select an information item displayed on a first functional view area and to move the selected information item to a second functional view area, and invokes the function associated with the second functional view area using the transferred information item. In the case of the example illustrated in FIG. **7**B, the user transfers the address information **74** to the map viewing view area **76**. When the address information **74** does not match geographical information stored in the storage unit **150**, the mobile terminal **100** can output a message indicating "not found". In the case of FIG. **7**C, the user transfers the phone number **78** to the dialing view area **77**. When the phone number **78** is wrong due to the presence of one of a special character and other invalid character, the mobile terminal **100** can output an error message indicating such a situation.

[0088] FIG. **8** illustrates a screen representation for a third exemplary embodiment of user interaction according to the present invention that is embodies copying and transferring information between functional view areas.

[0089] Referring to FIG. **8**, when the user generates an input signal for activating a Web access function, the mobile terminal **100** can activate the Web access function. Here, the mobile terminal **100** can connect to a server using one of a preset address and an input address, and display a Web access view area **81** for outputting data provided by the server on the display unit **141** as illustrated in screen **801**. When the user generates an input signal for activating a memo function, the mobile terminal **100** can divide the screen of the display unit **141** into split areas, display the Web access view area **81** on one split area, and display a memo function view area **82** on the other split area.

[0090] When the user generates an input signal for activating a memo create function in the memo function view area **82**, the mobile terminal **100** can output a memo writing view area **83** on the display unit **141** as illustrated in screen **803**. To achieve this, the mobile terminal **100** can provide one of a menu item for memo writing and output a memo writing icon to the memo function view area **82**, as illustrated in screen **801**.

[0091] When the user selects an information item displayed in the Web access view area **81** and transfers the selected information item to the memo writing view area **83**, as illustrated in screen **805**, the mobile terminal **100** can display the transferred information item in the memo writing view area **83** as illustrated in screen **807**. Here, the user can select a piece of information in the Web access view area **81** by generating a touch drag event.

[0092] Thereafter, as illustrated in screen **807**, the mobile terminal **100** can display a color selection bar **85** to enable the user to set the color of the memo writing view area **83**. When the user selects a color of the color selection bar **85** through a tap, the mobile terminal **100** can set the color of the memo writing view area **83** to the selected color as illustrated in screen **809**. When the user selects a "save" icon of the memo writing view area **83**, the mobile terminal **100** can return to the memo function view area **82** as illustrated in screen **811**. Here, the memo function view area **82** includes a new memo **86** written by the memo writing function.

[0093] FIG. **9** illustrates a screen representation for a fourth exemplary embodiment of user interaction according to the present invention of file transfer between functional view areas.

[0094] Referring to FIG. **9**, when the user generates an input signal for activating a file search function, the mobile terminal **100** can display a first file search view area **91** on the display unit **141** as illustrated in screen **901**. When the user generates an input signal for activating another file search function, the mobile terminal **100** can divide the screen of the display unit **141** into split areas, display the first file search view area **91** on one split area, and display a second file search view area **92** related to the file search function activated later on the other split area.

[0095] When the user selects an item "Images" in the second file search view area **92**, the mobile terminal **100** can display a first listing view area **93** containing subordinate items of the selected item "Images" including any of "User Folder **1**", "User Folder **2**", "Picture**1**.jpg", "Picture**2**.jpg" and "Picture**3**.jpg" as illustrated in screen **903**. When the user selects a folder item "User Folder **1**" in the first listing view area **93**, the mobile terminal **100** can display a second listing view area **94** containing subordinate items of the selected folder item "User Folder **1**" as illustrated in screen **905**. The second listing view area **94** can contain items including any of "Father.jpg", "Kathy.jpg", "Sea.jpg", "Fed Flower.jpg", and "Cute.jpg". The user can generate an input signal for moving a selected item in the second listing view area **94** to a folder item "Family" in the first file search view area **91**. For example, the user can generate an input signal for selecting an item "Father.jpg" in the second listing view area **94** and for moving the selected item to the folder item "Family" in the first file search view area **91** through drag. Then, the mobile terminal **100** can move the selected item "Father.jpg" from the folder "User Folder **1**" displayed in the first listing view area **93** to the folder "Family" displayed in the first file search view area **91** as illustrated in screen **907**. The mobile terminal **100** can then remove the item "Father.jpg" from the folder "User Folder **1**" (i.e. from the second listing view area **94**).

[0096] FIG. **10** illustrates a screen representation for a fifth exemplary of user interaction according to the present invention, of interworking between functional view areas supporting Web access.

[0097] Referring to FIG. **10**, when the user generates an input signal for activating a Web access function, the mobile terminal **100** can connect to a Web server using one of a preset address and an input address and display a Web access view area for outputting data provided by the Web server on the display unit **141**. When the user generates an input signal for activating the "Twitter" function, the mobile terminal **100** can connect to a Twitter server and display a Twitter view area for outputting data provided by the Twitter server on the display unit **141**. Hence, as illustrated in screen **1001**, the mobile terminal **100** can display a Web access view area **101** and a Twitter view area **102** on corresponding divided screen areas of the display unit **141**.

[0098] The user can browse news in the Web access view area **101** by generating a touch event such as a tap. For example, when the user selects a link "Health care", the mobile terminal **100** can send the link selection information to the Web server, receive a news item related to "Health care" from the Web server, and output the received news item in the Web access view area **101**, as illustrated in screen **1003**.

[0099] As illustrated in screen **1005**, when the user select an update field **103** in the Twitter view area **102**, the mobile terminal **100** can allow the user to enter an input in the update field **103**. That is, the user can generate an input signal for entering a text string "Health care yahoe news is here!" in the update field **103** as illustrated in screen **1007**. The user can generate an input signal for selecting, for example, a URL address **104** displayed in the Web access view area **101** through a double tap, and for entering the selected URL address **104** in the update field **103** of the access view area **102** through a drag event, as illustrated in screen **1009**.

[0100] The mobile terminal **100** can enter both the text string (screen **1005**) and the URL address **104** (screen **1009**) in the update field **103** as illustrated in screen **1011**. Thereafter, when the user generates an input signal for uploading the input information to the Twitter server, the mobile terminal **100** can upload the input information to the Twitter server.

[0101] In FIG. **10**, information obtained from the Web access view area is applied to the Twitter view area. Information obtained from the Twitter view area can also be applied to the Web access view area as described below in connection with FIG. **11**.

[0102] Referring to FIG. **11**, when the user activates a Web access function and a Twitter function, the mobile terminal **100** can display a Twitter view area **102** and a Web access view area **101** on the corresponding divided screen areas of the display unit **141** as illustrated in screen **1101**.

[0103] When the user generates an input signal (a touch event) for selecting, for example, a URL address **104** displayed in the Twitter view area **102**, the mobile terminal **100** can display Web data received from a Web server indicated by the URL address **104** in the Web access view area **101** as illustrated in screen **1103**.

[0104] FIG. **12** illustrates a screen representation for a sixth exemplary embodiment of user interaction according to the present invention, of interaction between a file search function and a twitter function.

[0105] Referring to FIG. **12**, when the user generates an input signal for selecting a file search function, the mobile terminal **100** can display a file search view area **1211** related to the file search function on the display unit **141**. When the user generates an input signal for activating the Twitter function, the mobile terminal **100** can connect to a given Twitter server and display a Twitter view area **1213** for outputting data provided by the Twitter server on the display unit **141**. Hence, as illustrated in screen **1201**, the mobile terminal **100** can display the file search view area **1211** and the Twitter view area **1213** on the corresponding divided screen areas of the display unit **141**.

[0106] When the user generates an input signal for selecting, for example, a folder "Images", the mobile terminal **100** can display on the display unit **141** a listing view area **1215** containing subordinate items of the folder "Images" including any of "Father.jpg", "kathy.jpg", "Sea.jpg", "Red flower.jpg" and "cute.jpg", as illustrated in screen **1203**. When the user generates an input signal for selecting, for example, an item "Father.jpg" and moving the item "Father.jpg" to an upload field **1216** of the Twitter view area **1213**, the mobile terminal **100** can enter the item "Father.jpg" in the upload field **1216** of the Twitter view area **1213** as illustrated in screen **1205**. Here, the mobile terminal **100** notifies the user of the upload file by outputting information on the uploaded file (i.e., "Father.jpg").

[0107] Thereafter, in response to a sending request, the mobile terminal **100** can transmit the upload file to the Twitter server.

[0108] FIG. **13** illustrates a screen representation for a seventh exemplary embodiment of user interaction according to the present invention for a Twitter function with divided screen areas.

[0109] Referring to FIG. **13**, when the user generates an input signal for activating the "Twitter" function, the mobile terminal **100** can connect to a Twitter server using a preset Twitter address and display a Twitter view area **301** for outputting data provided by the Twitter server on the display unit **141**. The Twitter view area **301** can contain a list of messages registered with the Twitter server. Here, the mobile terminal **100** can provide a menu containing one of an icon and a key for generating an input signal for activating the Twitter function to permit the user to utilize the Twitter function.

[0110] As illustrated in screen **1301**, the mobile terminal **100** can display a "Splitter" icon for divided screen area formation at a corner of the screen. When the user generates an input signal for selecting the "Splitter" icon (through a tap), the mobile terminal **100** can divide the screen into divided screen areas and display a first Twitter view area **302** and a second Twitter view area **303** in the corresponding divided screen areas as illustrated in screen **1303**. Here, the first Twitter view area **302** can be a resized version of the Twitter view area **301** illustrated in screen **1301**, and the second Twitter view area **303** can be a viewing view area related to a message selected by one of a preset default and the user in the first Twitter view area **302**. Thus, when the user generates an input signal for selecting another message in the first Twitter view area **302**, the mobile terminal **100** can output the contents of the newly selected message to the second Twitter view area **303** as illustrated in screen **1305**.

[0111] As illustrated in screen **1305**, when the user generates an input signal for deleting the selected message by selecting a "Delete" icon in the first Twitter view area **302**, the mobile terminal **100** can delete the selected message and update the first Twitter view area **302** by deleting the selected message.

[0112] As illustrated in screen **307**, the mobile terminal **100** can display a "Merge" icon at a corner of the display unit **141** for returning to a full screen format. When the user generates an input signal for selecting the "Merge" icon, the mobile terminal **100** can end divided screen area formation and enlarge the first Twitter view area **302** into the Twitter view area **301** as illustrated in screen **1309**. With enlargement, existing images and text in the first Twitter view area **302** can be expanded and new images and text can be added to the Twitter view area **301**.

[0113] Hereinabove, a description is given of the method of supporting divided screen areas. When user functions are activated in response to user input signals, the screen is divided into divided screen areas on the basis of the properties of the user functions, temporal relations between the user functions, and explicit requests for divided screen area formation, and functional view areas including view areaa first and second functional view area are displayed on the corresponding divided screen areas.

[0114] In the above description, several exemplary forms of user interaction according to the present invention are illustrated and described. However, the present invention is not limited to these. For an effective user interface, additional forms of user interaction including automatic transition between the divided screen areas and the full screen can also be supported according to one of the design and user settings.

[0115] Although not shown, if necessary, the mobile terminal **100** can further include at least one of a short-range communication module for short-range communication, a camera module for capturing still and moving images of a target object, a data communication interface based on wired and wireless communication, an Internet communication module for Internet access, and a digital broadcast receiving module. With the digital convergence trend, it should be apparent to those skilled in the art that the mobile terminal **100** of the present invention can further include a unit comparable to the above-described units, and one unit of the mobile terminal **100** can be one of removed and replaced with another unit.

[0116] The mobile terminal of the present invention can be a touch-enabled device, and can be any information and communication appliance and multimedia appliance, including any of a mobile communication terminal, a portable multimedia player (PMP), a personal digital assistant (PDA), a music player like an MP3 player, a portable game console, a smart phone, a notebook computer, or a handheld computer.

[0117] The above-described methods according to the present invention can be realized in hardware or as software or computer code that can be stored in a recording medium such as a CD ROM, a RAM, a floppy disk, a hard disk, or a magneto-optical disk or downloaded over a network, so that the methods described herein can be executed by such software using a general purpose computer, or a special processor or in programmable or dedicated hardware, such as an ASIC or FPGA. As would be understood in the art, the computer, the processor or the programmable hardware include memory components, e.g., RAM, ROM, Flash, etc. that may store or receive software or computer code that when accessed and executed by the computer, processor or hardware implement the processing methods described herein.

[0118] Although exemplary embodiments of the present invention have been described in detail hereinabove, it should be understood that many variations and modifications of the basic inventive concept herein described, which can occur to those skilled in the art, will still fall within the spirit and scope of the present invention as defined in the appended claims.

What is claimed is:

1. A screen area dividing method for a mobile terminal, comprising:

generating a plurality of input signals for any of sequentially and simultaneously activating a plurality of user functions;

activating the plurality of user functions according to at least one of the plurality of generated input signals;

dividing the screen into a plurality of divided screen areas each corresponding to at least one of the plurality of user functions; and

outputting a functional view area associated with each of the plurality of activated user functions to the corresponding divided screen area of the plurality of divided screen areas.

2. The screen area dividing method of claim **1**, wherein dividing the screen into a plurality of divided screen areas is invoked by at least one of:

when a dual menu item that is created for at least one of divided screen area formation and for outputting functional view areas associated with menus is activated, performing—

first, activating user functions in sequence, and

generating an input signal for requesting to make a divided screen area;

formation after activating user functions in sequence;

after a first user function is activated, performing—

generating an input signal for activating a subordinate function of the first user function, and

activating an event generation function on the basis of one of an internal and external system event; and

generating an input signal for activating a user function and a subordinate function of the user function.

3. The screen area dividing method of claim **1**, wherein outputting a functional view area comprises one of:

displaying, according to activation of independent user functions, a functional view area associated with the independent user functions on the corresponding divided screen area;

displaying, according to repeated activation of a user function, a functional view area associated with each instance of the user function on the corresponding divided screen area;

displaying a functional view area associated with a first user function and a functional view area associated with a second user function related to the first user function on the corresponding divided screen area; and

displaying a functional view area associated with a user function and a functional view area associated with a subordinate user function of the user function on the corresponding divided screen area.

4. The screen area dividing method of claim **1**, further comprising transitioning between functional view areas on the divided screen areas according to an input signal.

5. The screen area dividing method of claim **4**, wherein transitioning between functional view areas comprises one of:

when a search view area is output in response to an input signal after divided screen area formation and a new user function is selected from the search view area, replacing one of the functional view areas being output on the

divided screen areas with a functional view area associated with the newly selected user function; and

when a menu view area is output in response to an input signal after divided screen area formation and a new menu item is selected from the menu view area, replacing one of the functional view areas being output on the divided screen areas with a functional view area associated with the newly selected menu item.

6. The screen area dividing method of claim **5**, wherein outputting the menu view area comprises:

resizing each functional view area being output on the divided screen areas; and

displaying the menu view area among the resized functional view areas.

7. The screen area dividing method of claim **5**, wherein, when the new menu item selected from the menu view area is a dual menu item, the functional view areas being output on the corresponding divided screen areas are replaced with functional view areas associated with the selected dual menu item.

8. The screen area dividing method of claim **1**, further comprising performing function interworking by carrying out at least one of insertion, search, copy, transfer, and invoking of information between the functional view areas on the divided screen areas.

9. The screen area dividing method of claim **8**, wherein performing function interworking between a first and a second functional view area, comprises at least one of:

copying an information item displayed in the first functional view area to the second functional view area;

utilizing an information item displayed in the first functional view area, carrying out a search in the second functional view area;

finding at least one file listed in the first functional view area and attaching the found file in the second functional view area;

utilizing an information item displayed in the first functional view area to one of make a call and view a map in the second functional view area;

moving and saving an information item displayed in the first functional view area to the second functional view area;

using an information item displayed in the first functional view area, connecting to a server from the second functional view area; and

moving a list item displayed in the first functional view area to a selected folder in the second functional view area.

10. The screen area dividing method of claim **1**, further comprising outputting a dual menu item that combines two items together, wherein the dual menu item is capable of activating a plurality of user functions.

11. A mobile terminal capable of supporting divided screen areas, comprising:

a storage unit for storage of a plurality of application programs realizing user functions;

an input unit for generation of input signals for one of sequentially and simultaneously activating user functions;

a control unit for activation of user functions according to input signals, and output of functional view areas associated with the user functions on the divided screen areas; and

a display unit for display of the functional view areas.

12. The mobile terminal of claim **11**, wherein the input unit performs at least one of:

generation of an input signal for—

selection of a dual menu item that is created for divided screen area formation,

output of functional view areas associated with menus, and

request of divided screen area formation after activation of user functions in sequence;

after a first user function is activated, generation of an input signal to activate a subordinate function of the first user function; and

generation of an input signal for activation of a user function and a subordinate function of the activated user function.

13. The mobile terminal of claim **11**, wherein the display unit provides at least one of:

display of functional view areas associated with the independent user functions on the corresponding divided screen areas according to activation of independent user functions;

display of functional view areas associated with instances of the user function on the corresponding divided screen areas according to repeated activation of a user function;

display of a functional view area associated with a first user function and a functional view area associated with a second user function related to the first user function on the corresponding divided screen area;

display of a functional view area associated with a user function and a functional view area associated with a subordinate user function of the displayed user function on the corresponding divided screen area; and

display of a functional view area associated with an activated first user function and a functional view area associated with an event generation function corresponding to one of an internal and external system event on the corresponding divided screen area.

14. The mobile terminal of claim **11**, wherein the display unit outputs a search view area containing at least one icon for display of a functional view area after divided screen area formation, and outputs a menu view area containing at least one menu for display of a functional view area after divided screen area formation.

15. The mobile terminal of claim **14**, wherein the control unit controls, in response to an input signal for output of the menu view area, the display unit to resize each of the functional view areas being output on the divided screen areas and to display the menu view area among the resized functional view areas, and controls, when a dual menu item is selected from the menu view area, the display unit to replace the functional view areas being output on the divided screen areas with functional view areas associated with the selected dual menu item.

16. The mobile terminal of claim **11**, wherein the control unit controls an operation through the display unit for output of a first functional view area and a second functional view area to:

copy an information item displayed in the first functional view area to the second functional view area;

carry out, utilizing an information item displayed in the first functional view area, a search in the second functional view area;

find at least one file listed in the first functional view area and attach the found file in the second functional view area;

utilize an information item displayed in the first functional view area to one of make a call and view a map in the second functional view area;

move an information item displayed in the first functional view area to the second functional view area and store the moved information item;

connect to, using an information item displayed in the first functional view area, a server from the second functional view area; and

move a list item displayed in the first functional view area to a selected folder in the second functional view area.

17. The mobile terminal of claim **11**, wherein the display unit outputs an icon for generation of an input signal to request divided screen area formation.

18. The mobile terminal of claim **17**, wherein the display unit outputs an icon for generation of an input signal to return from divided screen area formation to a full screen format.

19. The mobile terminal of claim **11**, wherein the display unit adjusts the size of the functional view areas displayed in the divided screen areas in accordance with an input signal.

20. The mobile terminal of claim **11**, wherein the display unit outputs a dual menu item that combines two items together that is capable of activation of a plurality of user functions.

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