Electronic Acknowledgement Receipt	
EFS ID:	9420575
Application Number:	61441491
International Application Number:	
Confirmation Number:	1451
Title of Invention:	DUAL DISPLAY UI
First Named Inventor/Applicant Name:	Joon Kyu SEO
Customer Number:	23373
Filer:	Peter A. McKenna/madeliene leahy
Filer Authorized By:	Peter A. McKenna
Attorney Docket Number:	P123118
Receipt Date:	10-FEB-2011
Filing Date:	
Time Stamp:	16:33:43
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$3460
RAM confirmation Number	3118
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Provisional Cover Sheet (SB16)	PROV_APP_TRANSMITTAL.PDF	96442 d7d0838d18c2bb7cd7bb4d358dca7c7d6dfdb15e	no	1
Warnings:					
This is not a USPTO supplied Provisional Cover Sheet SB16 form.					
Information:					
2	Fee Worksheet (PTO-875)	FEE_TRANSMITTAL.PDF	130242 1c4237651adab2eeff530777c3ee450c51cde338	no	1
Warnings:					
Information:					
3	Application Data Sheet	ADS.pdf	1032078 bab139eb68361574f5cdfdcf11dbeaabed2e951f	no	7
Warnings:					
Information:					
4	Specification - Not in English	SPEC_AS_FILED_PP_SLIDES_1-15.pdf	24291295 80f75acf8b5f26f99ea7df4c311623eef90af109	no	341
Warnings:					
Information:					
5	Specification - Not in English	SPEC_AS_FILED_JPEG_DRAWINGS_1.pdf	11576486 8b0485e85805c3a97a748de11babe77f7e0d6e8c	no	127
Warnings:					
Information:					
6	Specification - Not in English	SPEC_AS_FILED_JPEG_DRAWINGS_2.pdf	11509690 4458b341c20ac131cd6cf033a8afa0acd4e492af	no	122
Warnings:					
Information:					
7	Specification - Not in English	SPEC_AS_FILED_JPEG_DRAWINGS_3.pdf	10248590 5590247ecf5d4bb48722e7ffbb1b89854ea4e222	no	113
Warnings:					
Information:					
8	Specification - Not in English	SPEC_AS_FILED_JPEG_DRAWINGS_4.pdf	11417591 3968b45a8e4312fa78f45d4fcf6fb8588b102cf7	no	126
Warnings:					
Information:					
9	Specification - Not in English	SPEC_AS_FILED_JPEG_DRAWINGS_5.pdf	8050417 32ca1e071e8220c4534bd5bd4101e0c4ec1dbdbf	no	89

Warnings:					
Information:					
10	Fee Worksheet (PTO-875)	fee-info.pdf	31131 5b63fe2c91def62dc3d7f67b53f6bedd6ae6c26b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	78383962	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Invention Disclosure Form

Title of Invention * Write a title of the invention expressing contents of the invention in a simple and clear way				
Scroll Method in Dual Display Device				
Related technology and prior application		* Note 1) Published documents related to the present invention (patent, paper, product, specification, manual, document on the Internet, etc.) * Note 2) Completed prior application (application number), and prepared application (receipt number) of an inventor related to the present invention		
Origin of technology * Select and write corresponding parts	**Registered/published patent** * Note1)			
	Related document or product *Note 1)			
	Prior application of an inventor related to the present invention * Note 2)	**Completed application**	**Title of invention**	
			Application No.	
		Preparing application draft	**Title of invention**	
			Receipt No.	
Name of relevant task		Dual Display		
Applicable product of the present invention		Mobile Device, etc.		
Contact of inventor		**[Tel.] Office(required): 010-2431-1289 (no extension number)** **Cell Phone(option): 010-2431-1289** **[E-mail Account]:** joonkyu.seo@samsung.com		

1/33

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

1. Object of the invention (background)

[redacted]

- Field: Input method, display method, etc. in device
- Trend

1. Competition for pre-occupation of the new generation display technique is strong according to the spread of the full touch smart phone.
2. Devices having dual displays have been released, but an accurate solution for the effective controlling of the two displays by a user is not drawn.
3. There is a need for a UI through which a user can excitingly and intuitively input instructions in a device with various methods.

[redacted]

- Object: Improve conventional inconvenient problems through a novel input method in a terminal employing dual displays

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

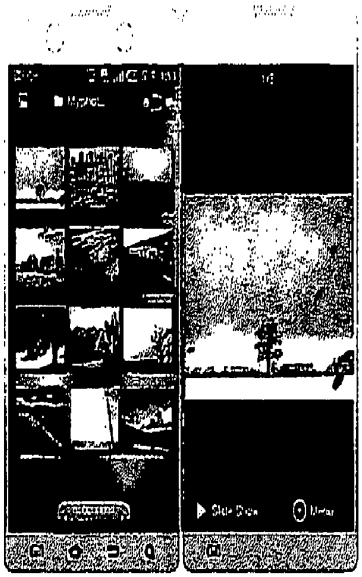
2. Explanation of relevant technique

2.1 New-generation display

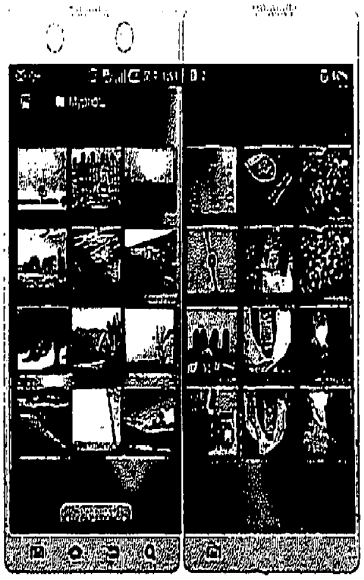
Device capable of providing more various user experiences by using two displays
It is possible to use various view modes by using two displays.



Multi-Mode
Different Apps are displayed in dual displays, respectively.



Split-Mode
One App is displayed with different depths or differently displayed depending on a function



Expand-Mode
One screen is expanded and displayed over two displays.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

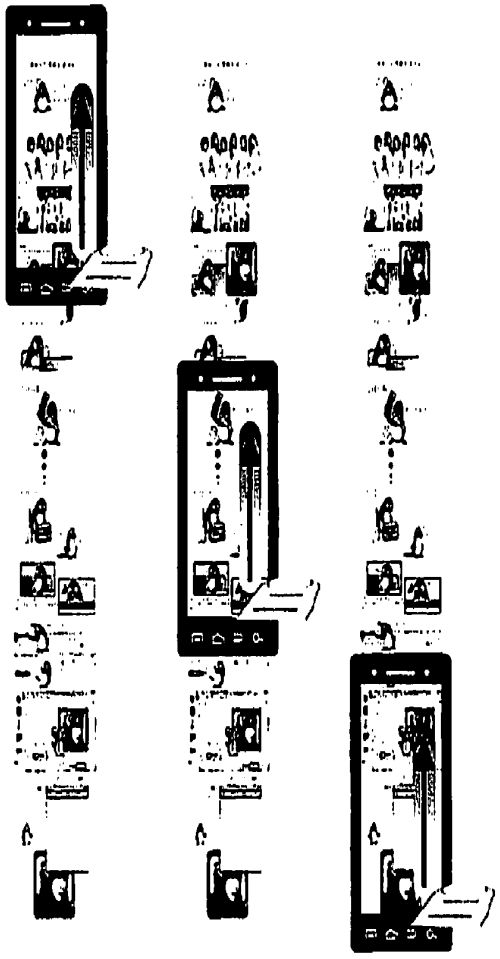
2. Explanation of relevant technique

2.2 Touch Gesture

In a case of the touch screen device, it is possible to scroll the screen through flicking or Touch&Move(Drag).

Flick : To touch , hold, move and release the screen quickly
The contact point had a velocity throughout the entire path
The motion is typically made along a single vector.

Touch & Move : To touch , hold, move and release the screen with straight line



※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

2. Explanation of relevant technique

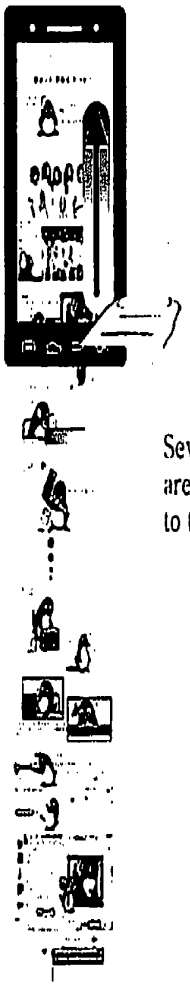
2.3 Problems of prior technique

[redacted]

Scroll is a useful function for viewing a web page or a list.

However, when the web page or the list is long, it is inconvenient to rapidly move the scroll to the end in a desired direction. There are many cases in which the web page has a button inquiring a user's selection at an upper end or a lower end thereof so that needs for moving to a front or an end part of the page are incurred.

In a case of PCs, it is possible to rapidly move to the front and end part through the keyboard buttons, such as page up button and page down button, but in a case of mobile devices in which touch gestures are usually used, if a separate button is not displayed in the screen, it is difficult to rapidly switch in the screen.



Several times of flicks are needed so as to move to the end.

※지번이 부족한 경우 쪽 주가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

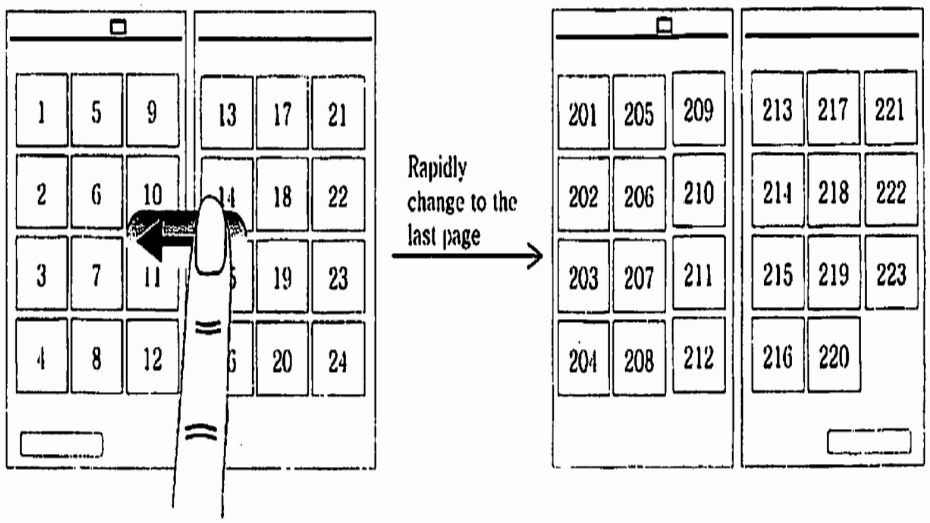
3. Explanation of the invention

3.1 Summary of the invention

- Construction: Touch screen input device
- Summary of the operation:

- A touch gesture is defined according to a screen mode in the dual displays.
- A method of recognizing a touch gesture of crossing of the hinge is defined.
- When a motion of crossing of the hinge is the flick, it is recognized as power scroll, and when a motion of crossing of the hinge if the drag, it is recognized as focus movement.

* When a user flicks in a left direction crossing over the hinge in the thumbnail list scrolled in a horizontal direction, it moves to the last page of the list.



6/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

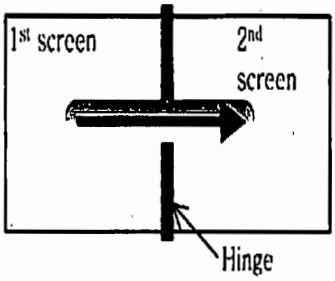
Copied from 13370939 on 05/11/2012

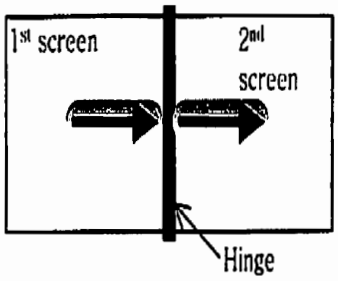
3. Explanation of the invention

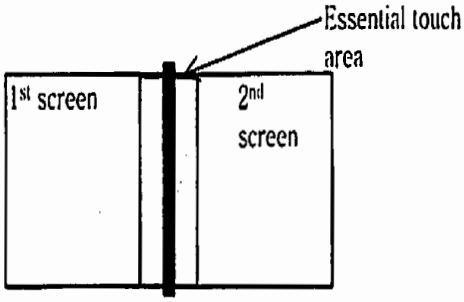
3.2 Construction of the invention: Power Scroll recognizing method

- The hinge portion has no touch sensor, so a rule for recognizing a connection of the gesture is necessary.
- There are two input methods capable of employing power scroll based on the power scroll recognizing technique.

1. In a case of progressing a single flick input with crossing the hinge
   - Input the touch in the 1st screen, rapidly move to the 2nd screen, and release in the 2nd screen.
   - When a difference between the time of the input release in the 1st screen due to the hinge and the time of the touch connection in the 2nd screen is less than a threshold, the input gesture is recognized as the flick gesture.
   - In a case of the separated motion, not the single flick, as illustrated in the right figure, when the time difference during the passage of the essential touch area is less than a power scroll threshold, the input gesture is recognized as the power scroll.







7/22 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

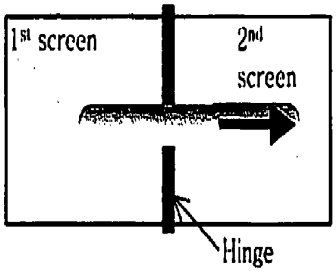
Copied from 13370939 on 05/11/2012

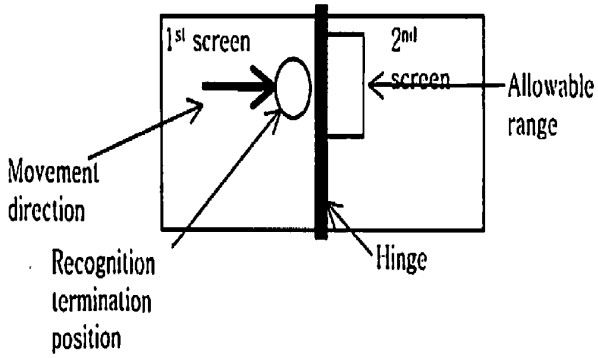
3. Explanation of the invention

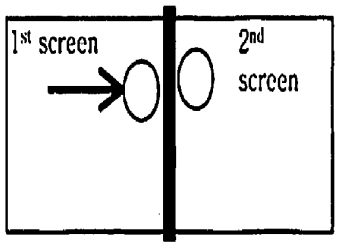
3.2 Construction of the invention : Power Scroll recognizing method

2. In a case of inputting a combination of drag and flick

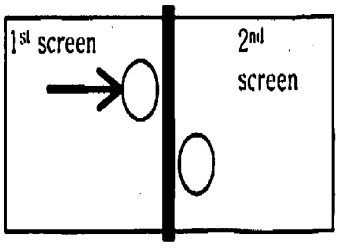
- In a case of touching and dragging in the 1st screen, crossing the hinge, and rapidly flicking in the 2nd screen
- Differently from Case 1, the time difference is larger than the power scroll threshold in this case, the input gesture conforms to the reference of the connection of the general gesture in the dual displays.
- The gesture connection reference can be recognized based on the time at which the gesture is not recognized as the screen switch, a direction of the gestures between the two displays, and the connection of the positions between the connected areas.
- In the case of a single connection of the gesture, when a combination of drag and flick is input, the power scroll input is applied.







< connected motion>



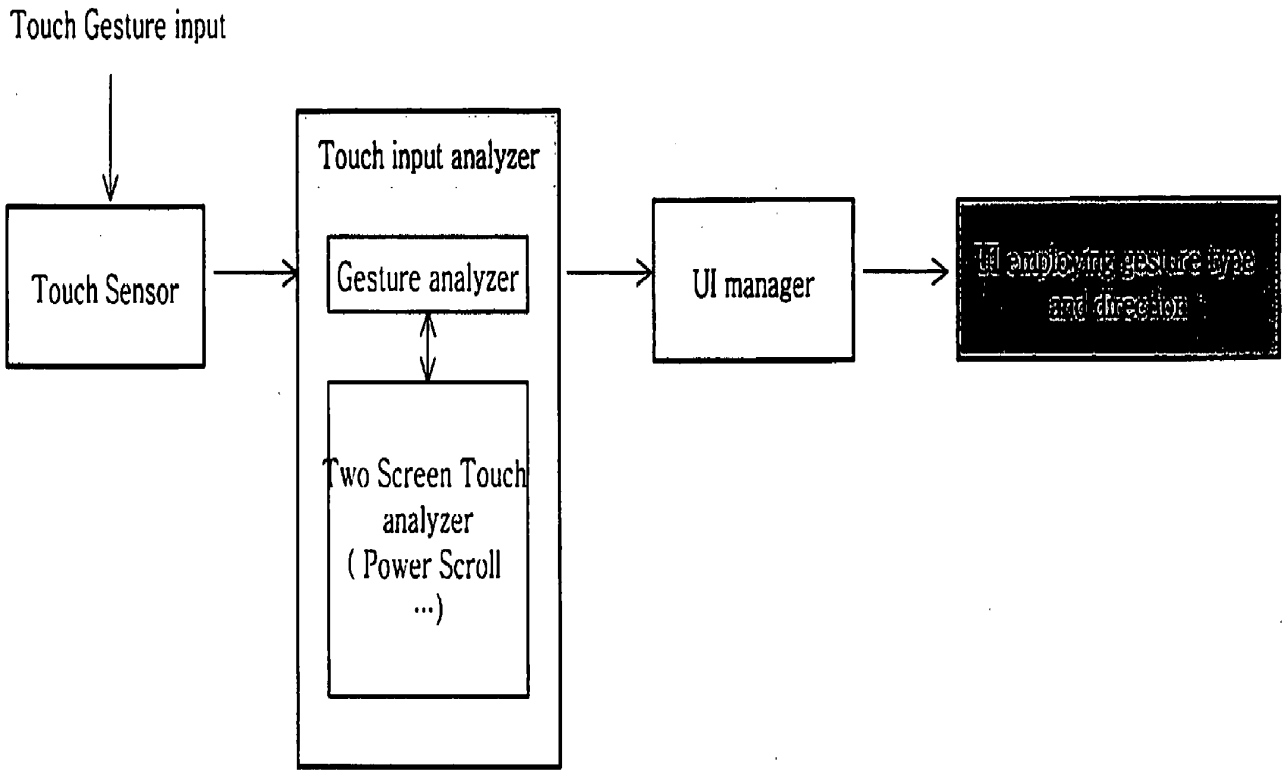
<Not connected motion>

8/28 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention : S/W structure diagram



9/23 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

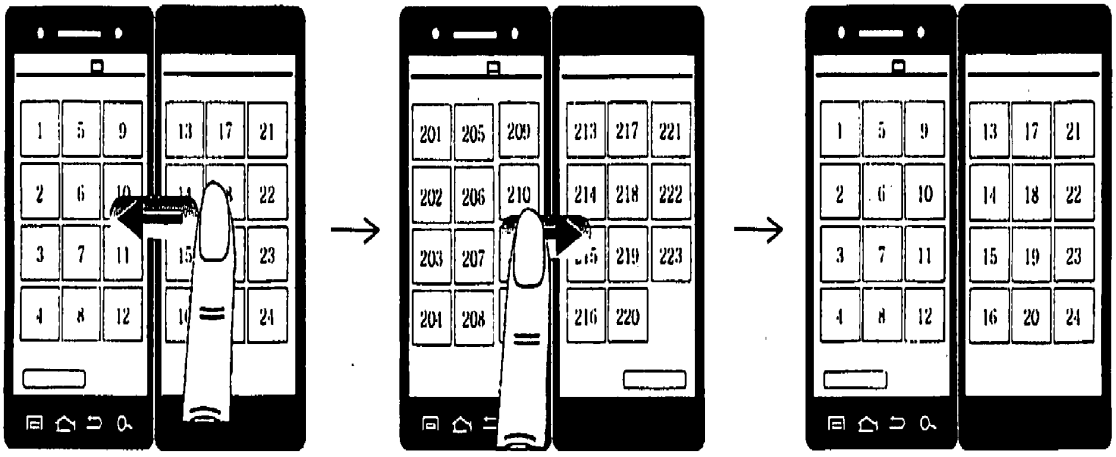
Copied from 13370939 on 05/11/2012

3. Explanation of the invention

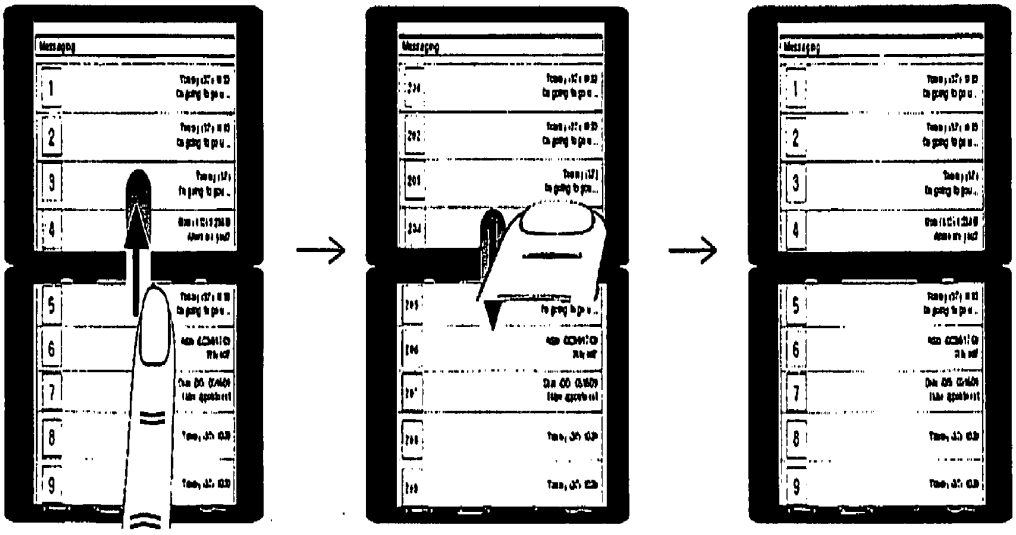
3.3 Example of the invention

Power Scroll

1. Power Scroll in vertical dual displays



2. Power Scroll in horizontal dual displays



10/22 ※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

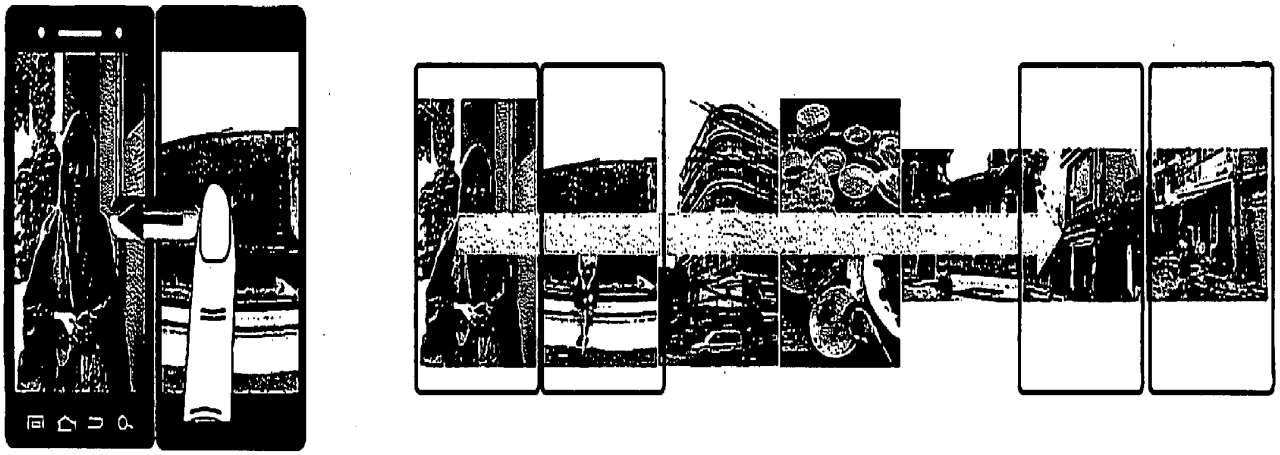
Copied from 13370939 on 05/11/2012

3. Explanation of the invention

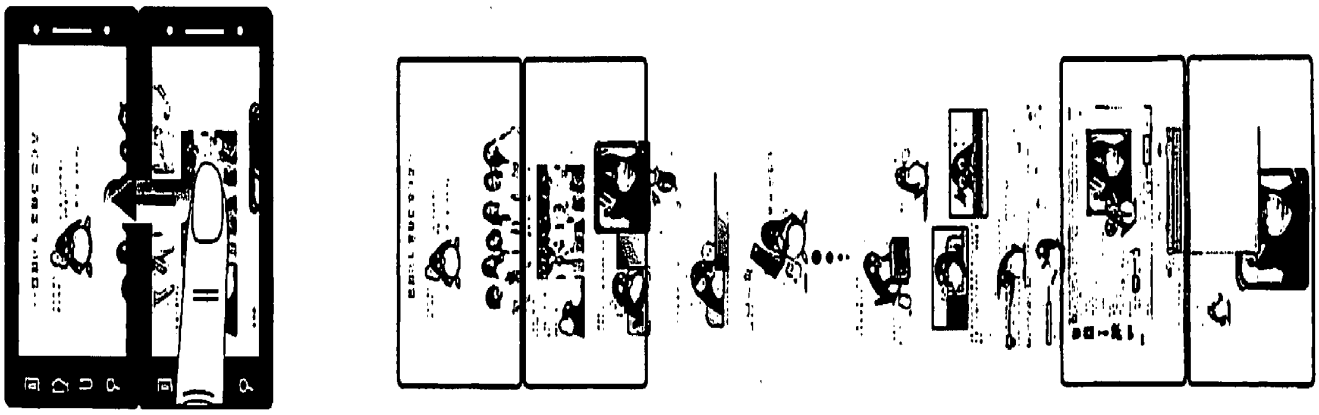
3.3 Example of the invention

Power Scroll

3. Move to a front part and an end part of the full-screen Image



4. Move to a front page and an end page of the web-page



* Example in which the dual displays are horizontally positioned and a vertical scroll motion is performed

11/22 ※지번이 부족한 경우 쪽 추가하여 작성바랍니다.

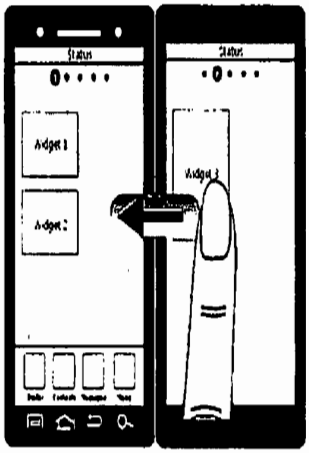
Copied from 13370939 on 05/11/2012

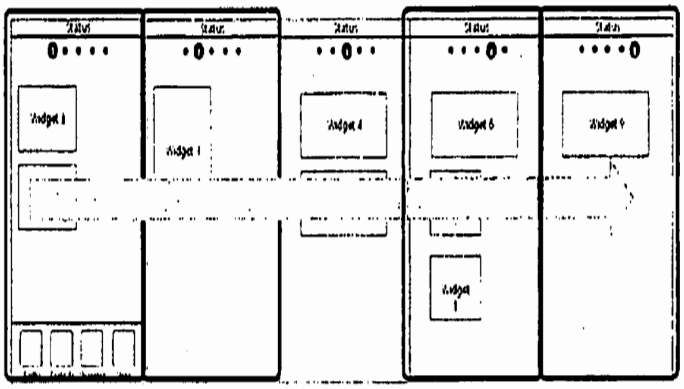
3. Explanation of the invention

3.3 Example of the invention

Power Scroll

5. Move to a front page and an end page of a home-page





※지면이 부족한 경우 쭉 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Expected effect of the invention

- The invention can provide a method of rapidly moving to a front/end part of a list, thereby solving conventional inconveniences by using an intuitive gesture.
- The invention can provide new interaction by using an input crossing a hinge.

3.5 Application field of the invention

- Device capable of employing dual displays

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

Page 16 of 825

4. Claims

1. A method of moving to a front/end page of a list or a web page with a flick gesture passing a hinge in a dual display device
2. A method of moving to a front/end page of a list or a web page when a drag gesture passing a hinge is changed to a flick gesture in a next display in a dual display device
3. A method of moving to a front/end page of a list or a web page with a flick gesture passing a hinge in a dual screen device
4. A method of moving to a front/end page of a list or a web page when a drag gesture passing a hinge is changed to a flick gesture in a next screen in a dual screen device

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

Invention Disclosure Form

Title of Invention * Write a title of the invention expressing contents of the invention in a simple and clear way				
Dual screen task control method using two screen touch gesture				
Related technology and prior application		* Note 1) Published documents related to the present invention (patent, paper, product, specification, manual, document on the Internet, etc.) * Note 2) Completed prior application (application number), and prepared application (receipt number) of an inventor related to the present invention		
Origin of technology * Select and write corresponding parts	**Registered/published patent** * Note1)			
	Related document or product *Note 1)			
	Prior application of an inventor related to the present invention * Note 2)	**Completed application**	**Title of invention**	
			Application No.	
		Preparing application draft	**Title of invention**	
			Receipt No.	
Name of relevant task		Dual Display		
Applicable product of the present invention		Mobile Device, etc.		
Contact of inventor		[Tel.] Office(required): 010-2431-1289 (no extension number) Cell Phone(option): 010-2431-1289 [E-mail Account] : joonkyu.seo@samsung.com		

1/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

1. Object of the invention (background)

[redacted]

- Field: Input method, display method, etc. in device
- Trend

1. Competition for pre-occupation of the new generation display technique is strong according to the spread of the full touch smart phone.
2. Devices having dual displays have been released, but an accurate solution for the effective controlling of the two displays by a user is not drawn.
3. There is a need for a UI through which a user can excitingly and intuitively input instructions in a device with various methods.

[redacted]

- Object: Provide a user with new experiences through a novel input method in a terminal employing dual displays

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

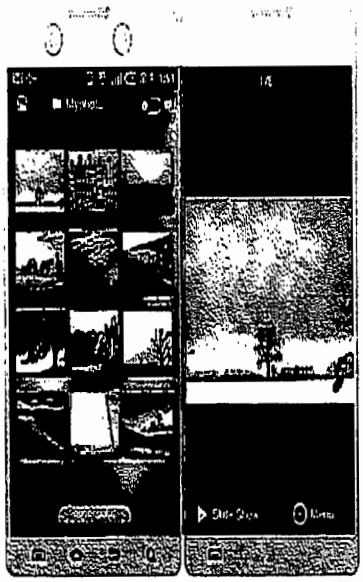
2. Explanation of relevant technique

2.1 Next generation display

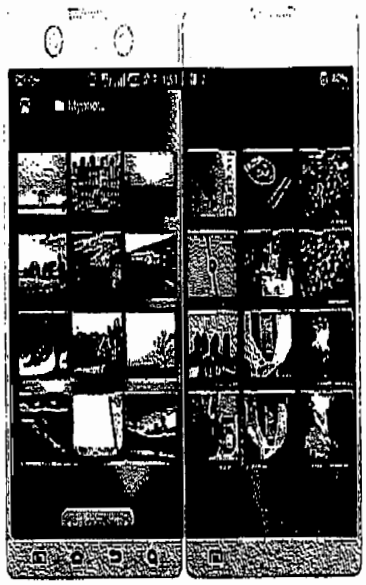
Device capable of providing more various user experiences by using two displays
It is possible to use various view modes by using two displays.



Multi-Mode
Different Apps are displayed in dual displays, respectively.



Split-Mode
One App is displayed with different depths or differently displayed depending on a function



Expand-Mode
One screen is expanded and displayed over two displays.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

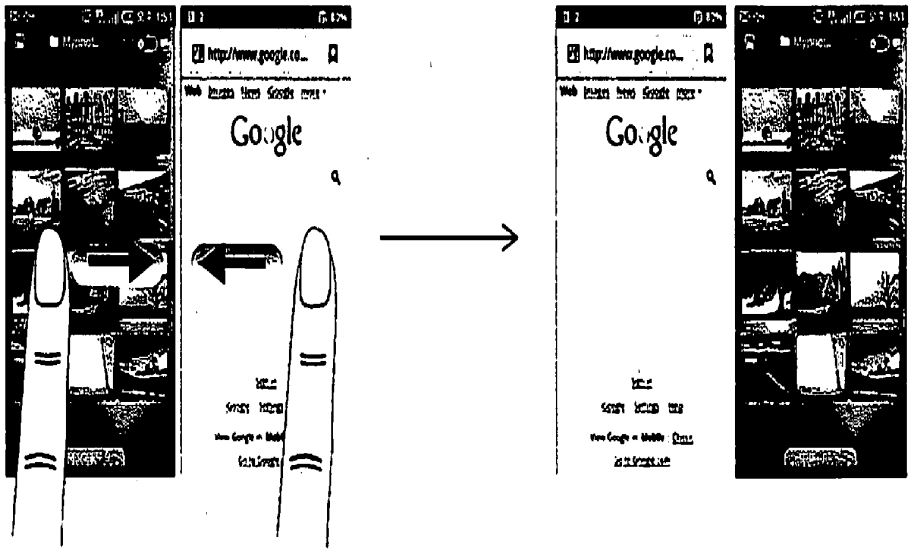
3. Explanation of the invention

3.1 Summary of the invention

- Construction: Touch screen input device
- Summary of the operation:

- When touch inputs are simultaneously performed in the dual displays, the inputs are recognized as a separate gesture.
- When touch inputs are performed in the dual displays, the inputs are recognized as a two screen gesture.
- The inputs are processed through recognizing motion methods and speeds of the input touch inputs.
- A user can make more simple and full interaction according to user's intention.

* When a user simultaneously touches two displays and flicks/drags in a direction of the hinge, two displays are swapped.



※지면이 부족한 경우 폭 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

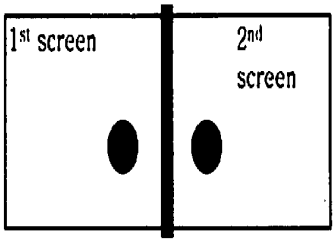
3. Explanation of the invention

3.2 Construction of the invention: Two Screen Touches

- Two Screen Touches treats an operation generated in a case of the input of two or more touches in screens separated by hardware or software.
- A gesture is recognized based on a time of each touch in two screens.
- When a touch gesture is being interacted in one screen, the touch gesture is changed to two screen touches when another screen is touched and an existing input interaction is cancelled.

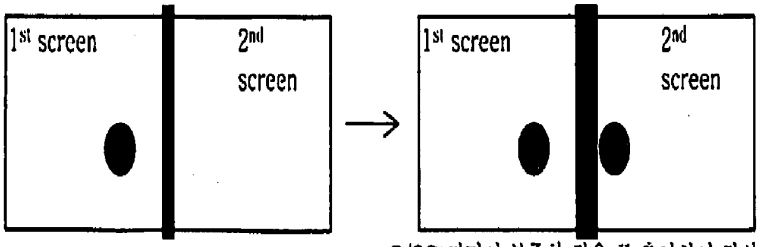
〈Recognizing method〉

1. In a case of simultaneous touch of two screens



2. In a case of touching one screen just after touching the other screen

: App on the first touched screen is controlled.

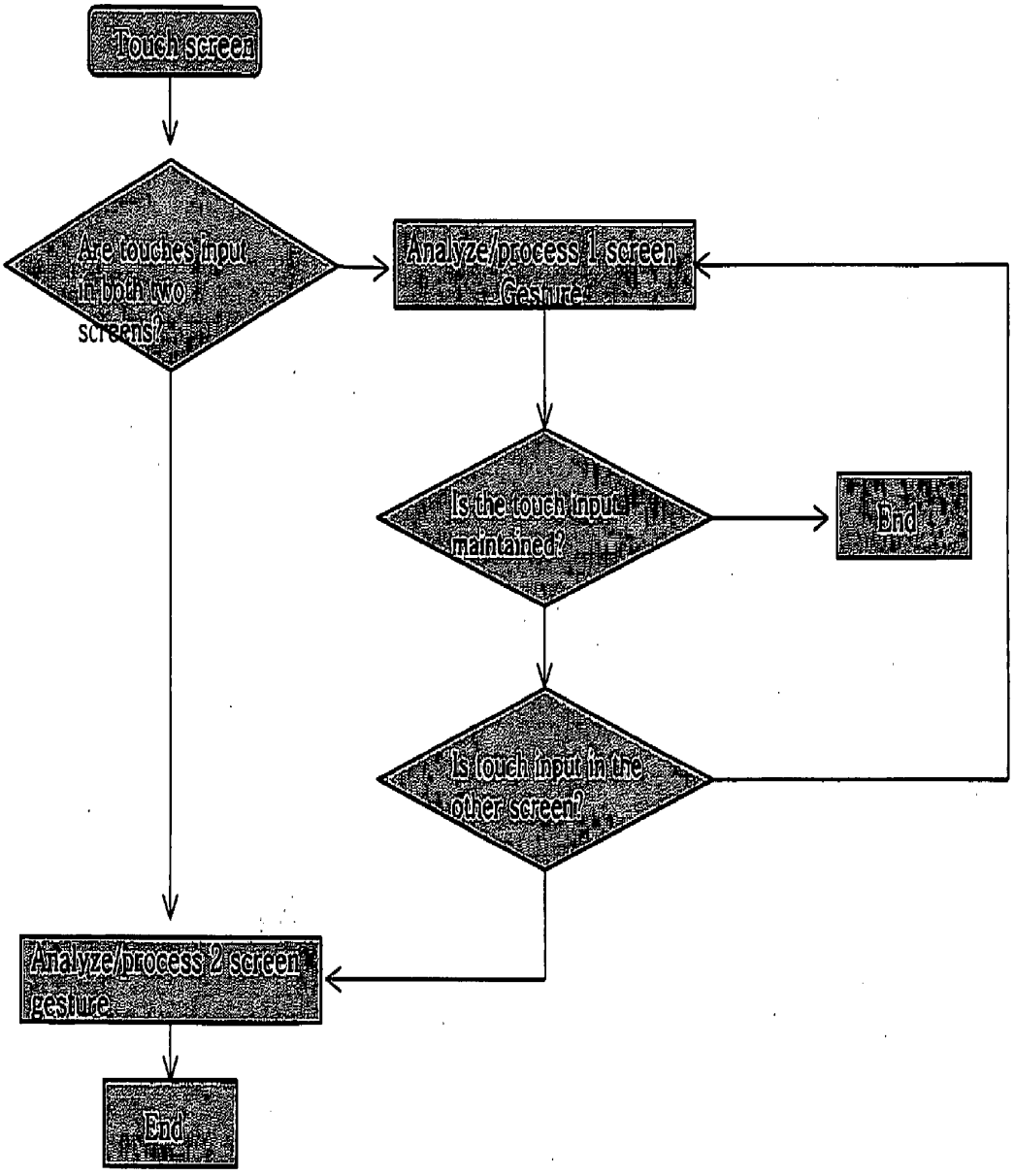


5/22 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention : 2 Screen Touch

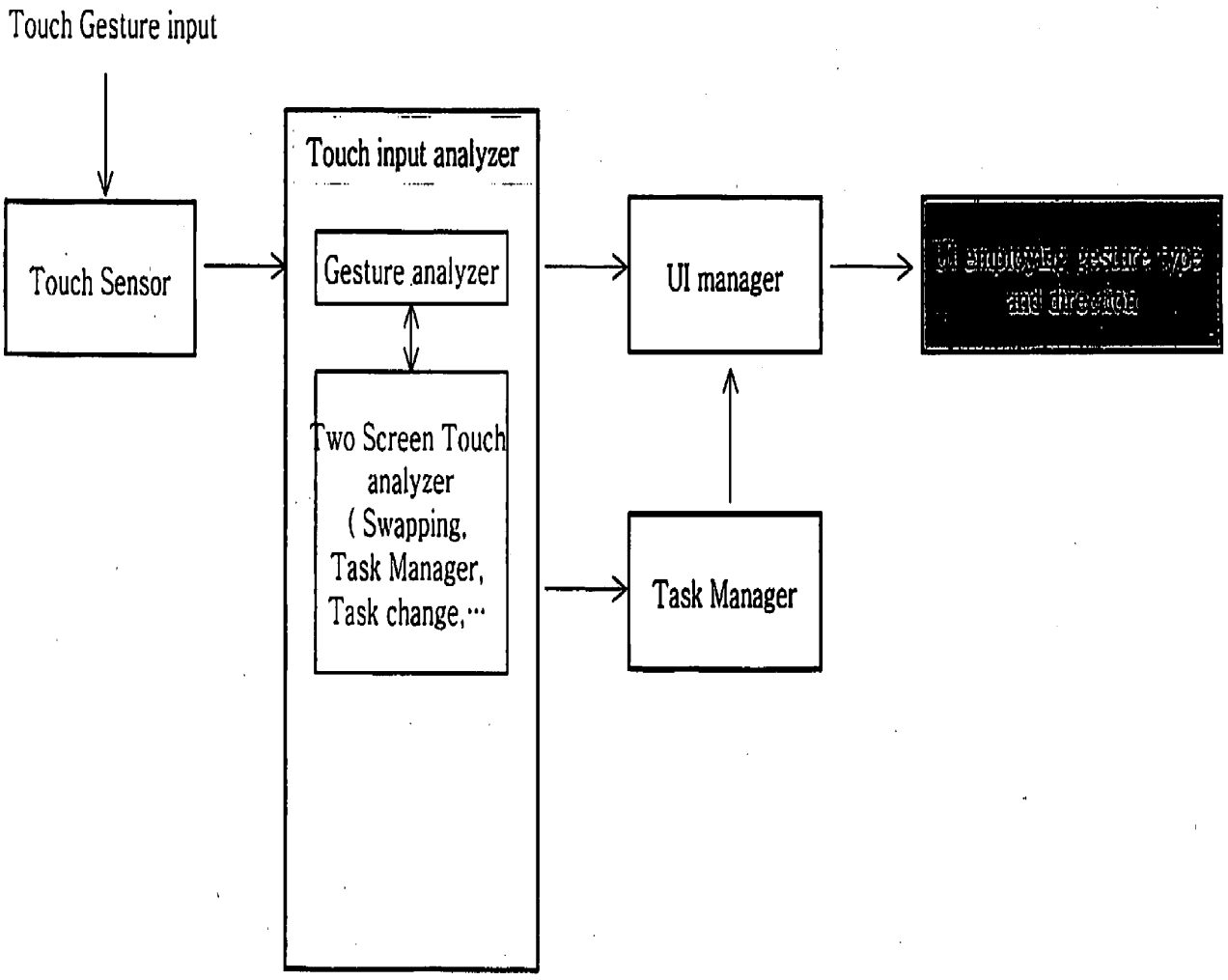


6/22 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention : S/W structure diagram



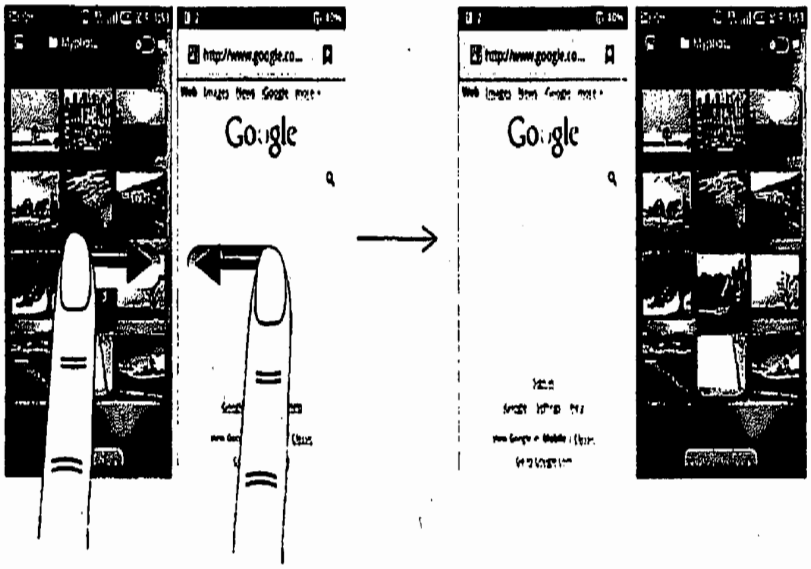
7/28 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

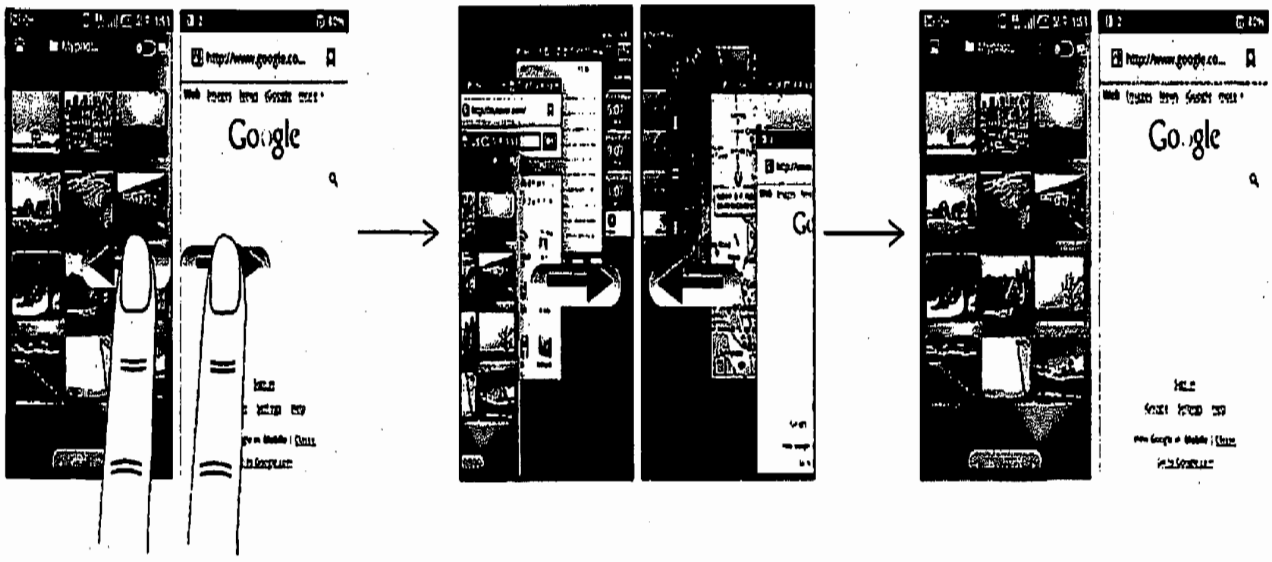
3. Explanation of the invention

3.3 Example of the invention

1. 2 Screen 2 Finger Pinch Close



2. 2 Screen 2 Finger Pinch Open : Task Manager



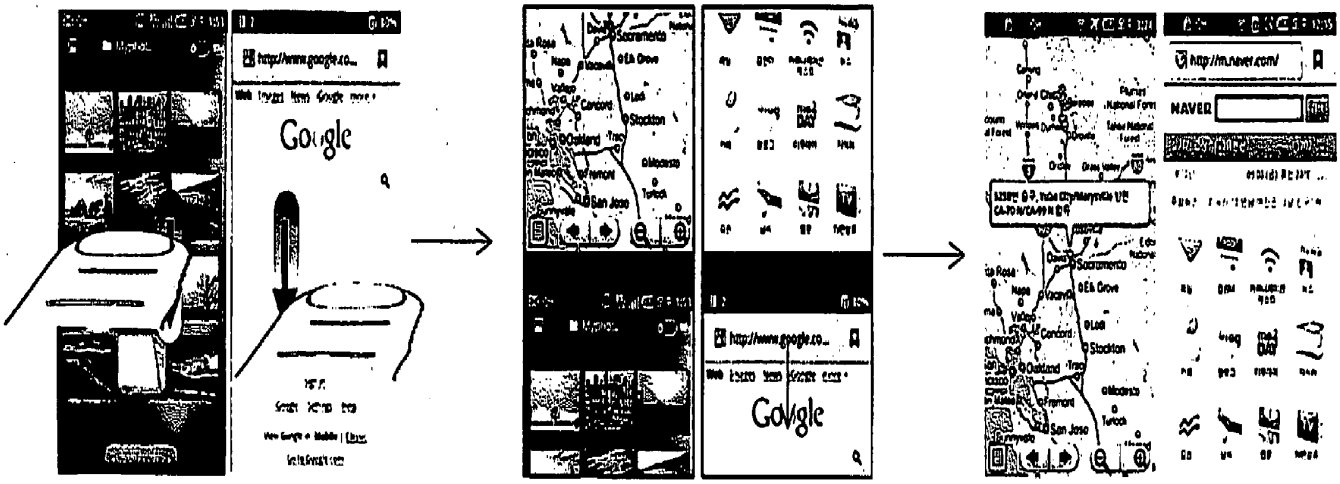
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

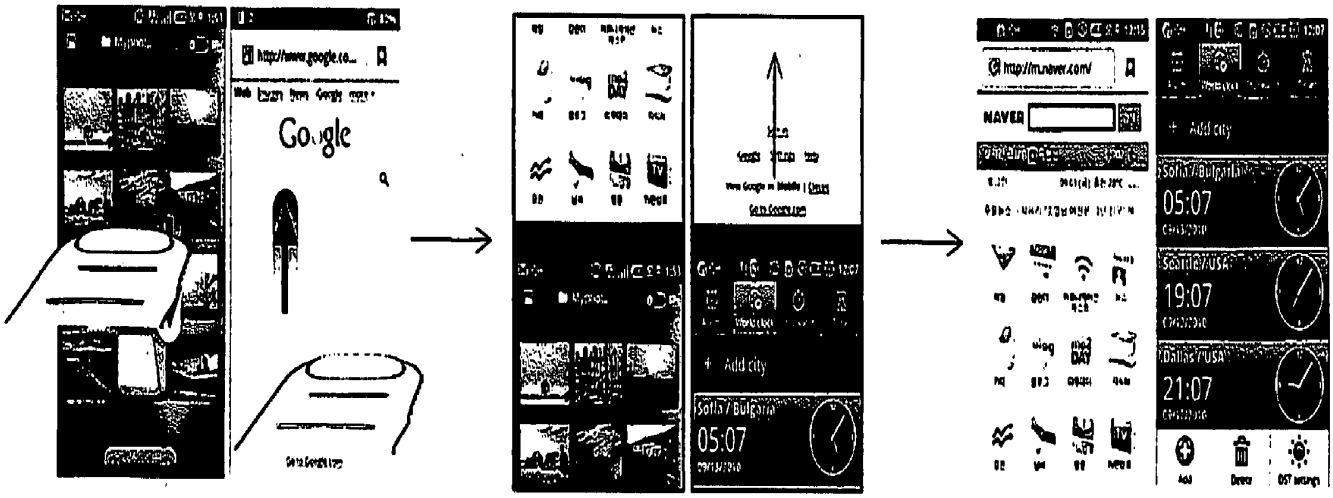
3.3 Example of the invention

3. 2 Screen 2 Finger Drag : Task Change #1



Task change in both screens
(same direction)

4. 2 Screen 2 Finger Drag : Task Change #2



Task change in both screens
(different directions)

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

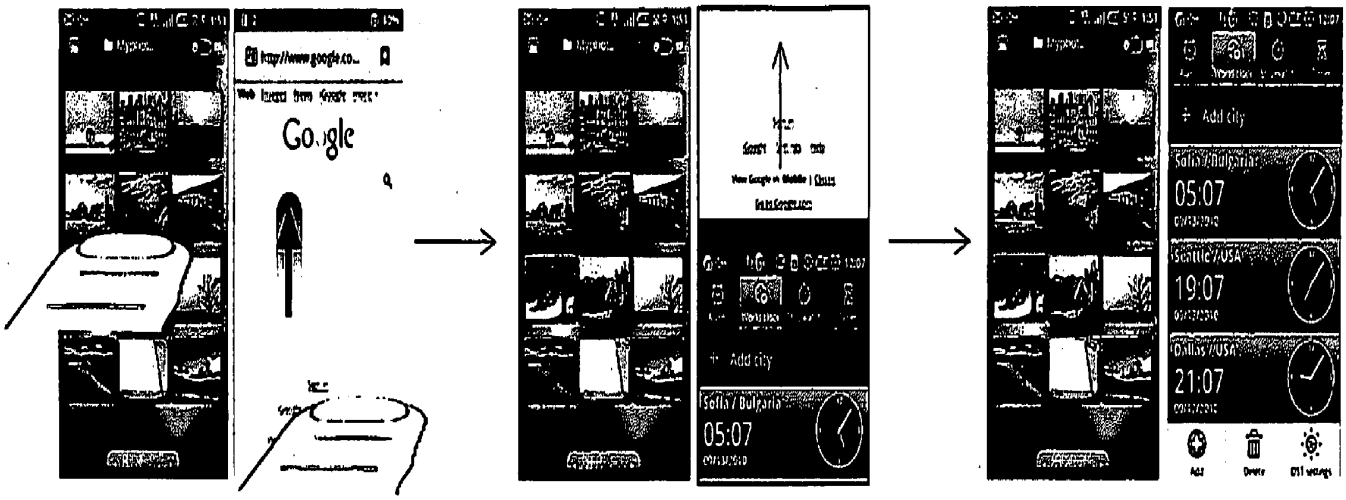
9/22

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Example of the invention

5. 2 Screen 1-Finger Hold another Drag : 1 Screen Task Change



Change the right screen

10/22 ※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Expected effect of the invention

- The present invention can solve the inconvenience in changing the screens of the dual display mobile device by using an intuitive gesture.
- The present invention can provide new interaction by using touch gestures in the two screens.

3.5 Application field of the invention

- Device capable of employing dual displays

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

4. Claims

1. A method of performing interaction when a user touches two screens and drags/flicks in a predetermined direction in a dual display/screen device.
2. A method of determining a single screen touch and a dual screen touch in a dual display/screen device.
3. A method of swapping a screen with a gesture in a dual display/screen device.
4. A method of changing a task with a gesture in a dual display/screen device.
5. A method of managing a task with a gesture in a dual display/screen device.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

Page 29 of 825

Invention Disclosure Form

Title of Invention * Write a title of the invention expressing contents of the invention in a simple and clear way				
Screen control method using gesture in dual screen touch device				
Related technology and prior application		* Note 1) Published documents related to the present invention (patent, paper, product, specification, manual, document on the Internet, etc.) * Note 2) Completed prior application (application number), and prepared application (receipt number) of an inventor related to the present invention		
Origin of technology * Select and write corresponding parts	**Registered/published patent** * Note1)			
	Related document or product *Note 1)			
	Prior application of an inventor related to the present invention * Note 2)	**Completed application**	**Title of invention**	
			Application No.	
		Preparing application draft	**Title of invention**	
			Receipt No.	
Name of relevant task		Dual Display		
Applicable product of the present invention		Mobile Device, etc.		
Contact of inventor		**[Tel.] Office(required): 010-2431-1289 (no extension number)** **Cell Phone(option): 010-2431-1289** **[E-mail Account]** : joonkyu.seo@samsung.com		

1/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

1. Object of the invention (background)

[redacted]

- Field: Input method, display method, etc. in device
- Trend

1. Competition for pre-occupation of the new generation display technique is strong according to the spread of the full touch smart phone.
2. Devices having dual displays have been released, but an accurate solution for the effective controlling of the two displays by a user is not drawn.
3. There is a need for a UI through which a user can excitingly and intuitively input instructions in a device with various methods.

[redacted]

- Object: Enable a user to easily use various view modes using two screens in a terminal employing dual displays

※지면이 부족한 경우 쪽 주기하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

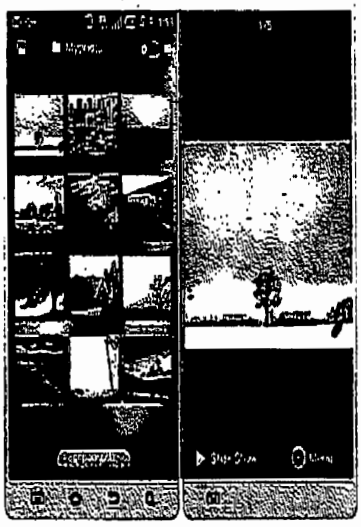
2. Explanation of relevant technique

2.1 New generation Display

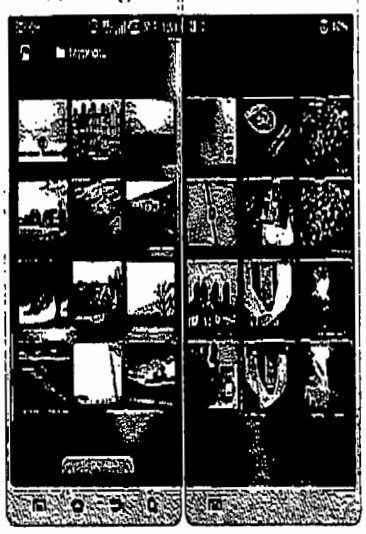
Device capable of providing more various user experiences by using two displays
It is possible to use various view modes by using two displays.



Multi-Mode
Different Apps are displayed in dual displays, respectively.



Split-Mode
One App is displayed with different depths or differently displayed depending on a function.



Expand-Mode
One screen is expanded and displayed over two displays.

3/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

2. Explanation of relevant technique

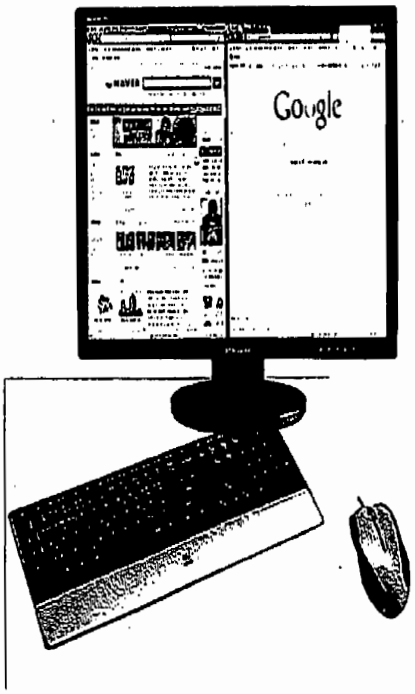
2.3 Problems of prior technique

[redacted]

Existing devices capable of employing dual screens were products in which an input can be performed by means of a mouse and a keyboard, such as a PC.

A PC has no problem in configuring a screen mode because a size of a window can be changed and a plurality of screens can be displayed based on a window-based environment. However, a mobile device cannot employ the display scheme of the PC due to the limitation of the input device and the display.

- A mobile device is difficult to provide a method, such as a keyboard shortcut key.
- Since App of a mobile device is not based on a window, like a PC, it is difficult to provide a function of decreasing and controlling a window with a mouse.



※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

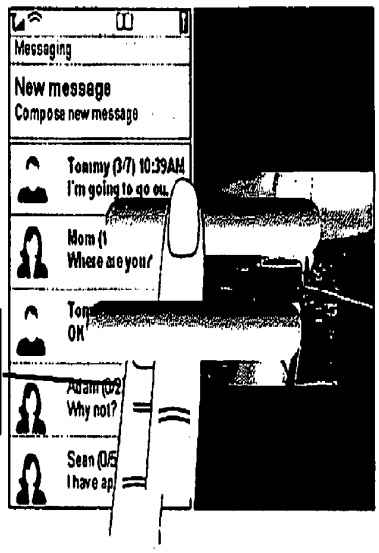
3.1 Summary of the invention

- Construction: Touch screen input device
- Summary of the operation:

- When touch input gestures input in dual touch screens have connectivity and are operated, an input controller receives the touch input gestures as a single input.
- Each touch input is processed through recognizing a motion direction and the number of touch inputs.
- Screens are changed in accordance with a motion direction based on an analyzed touch input.

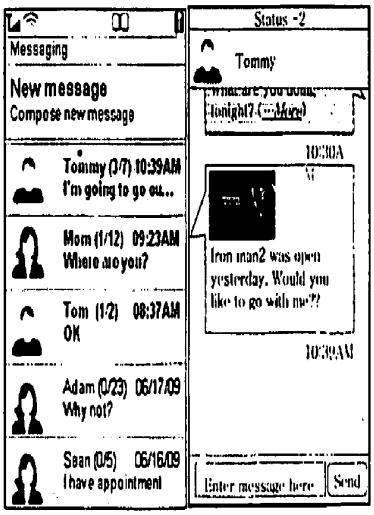
•Case: In a case of different Apps displayed in two screen, two screen touch gestures are input in the two screens and then one App is displayed in the two screens.

* Display Message, Gallery App



Drag is initiated in the left screen, passes the hinge, and released in the right screen.

* Display Message App in two screens



5/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

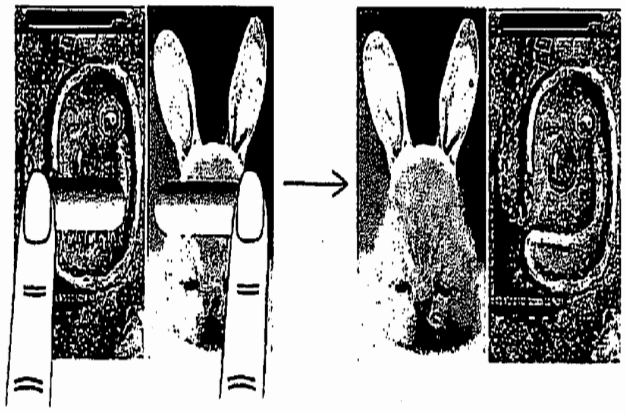
Copied from 13370939 on 05/11/2012

3. Explanation of the invention

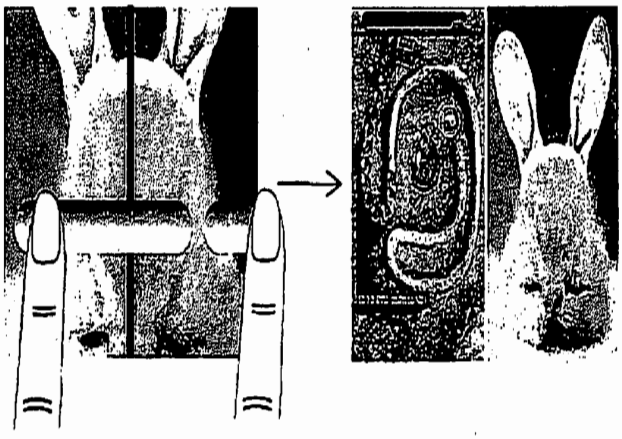
3.2 Construction of the invention: touch input recognition

Two Screen Touch Gestures

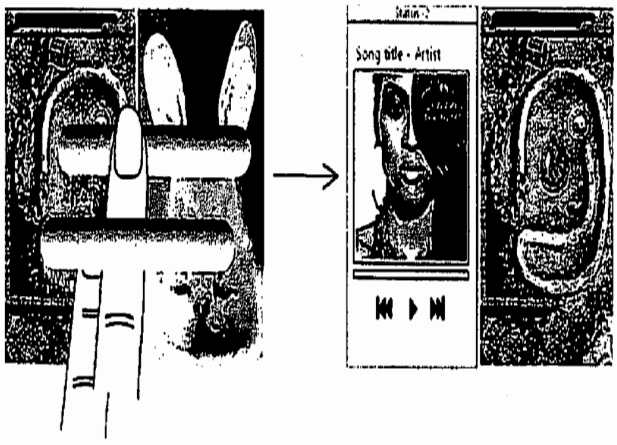
1.Simultaneously input touches in separated two screens



3. Complex input



2. Input a single touch over two screens



6/22 ※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention: Connected motion recognizing method

-Method of recognizing a connectivity of a motion in a case of inputting touches over two screens

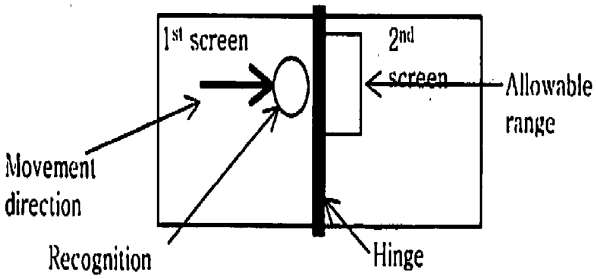
Physically separated dual touch screens has a space between the screens due to the hinge. Since it is difficult to recognize the touch in the space, a connectivity of a touch motion passing the space can be recognized using three types of information, i.e. time, direction, and position. The three types of information may be selected according to a necessity.

1.Recognition through time

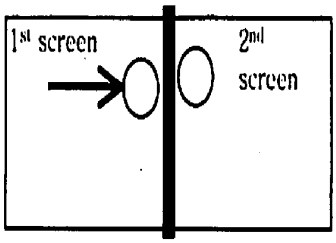
In a case where a time from a time of termination of the touch recognition due to the hinge to a time of touch re-recognition is within an allowable range

2.Position

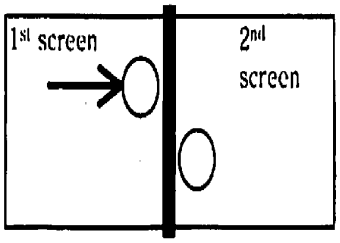
In a case where a re-recognized position calculated based on a direction of the motion at the time of the termination of the touch recognition due to the hinge is within an allowable range



3. Direction termination position

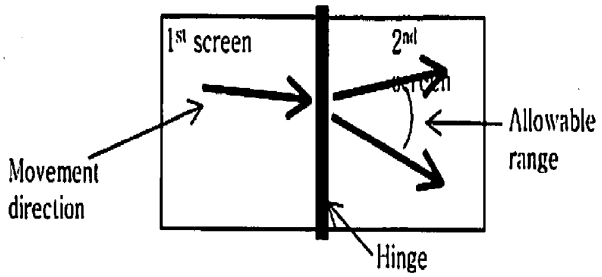


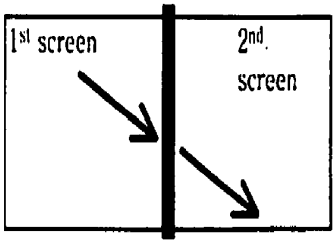
<Connected motion>



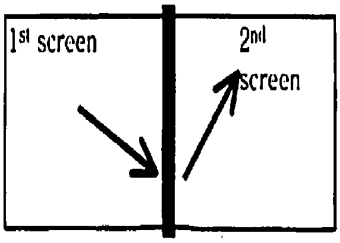
<Not connected motion>

In a case where a difference between a motion direction in a previous screen and a motion direction in a next screen is within an allowable range





<Connected motion>



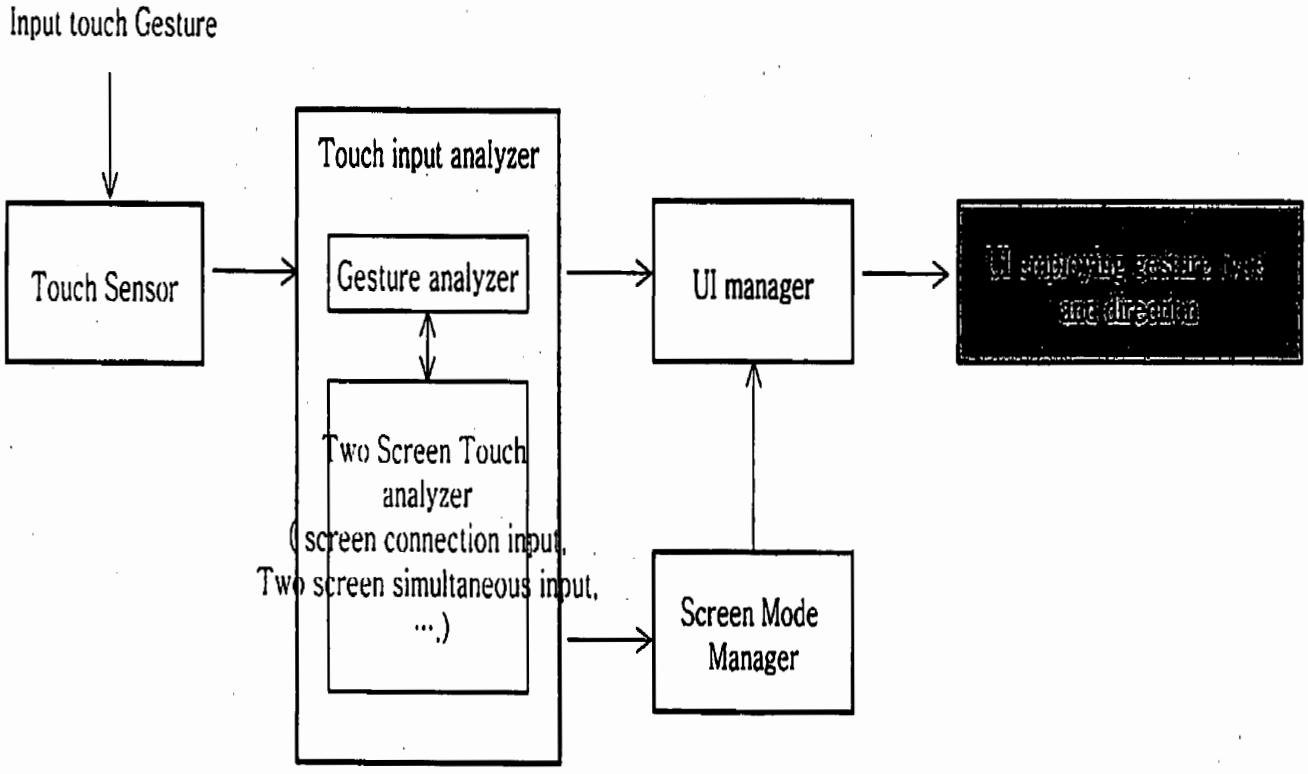
<Not connected motion>

7/28 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention: S/W construction diagram



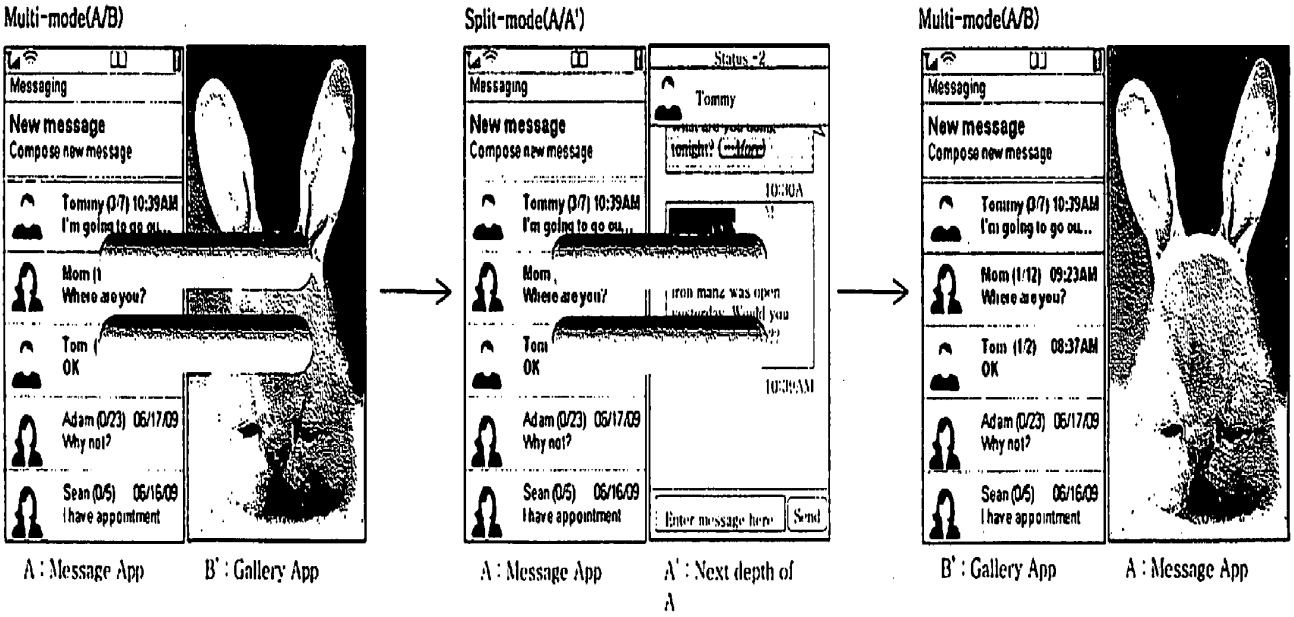
8/28 * 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Example of the invention - 1. View mode change from multi-mode to split-mode

-Drag & Drop to a different screen passing the hinge in a state where one screen is two touched
-When drag is performed in a direction of the hinge in a state of input of the two touches, an effect of shifting of a screen is displayed as a feedback for a mode change.
- When the two touch drag is not passed the hinge, the view mode is not changed.



9/22

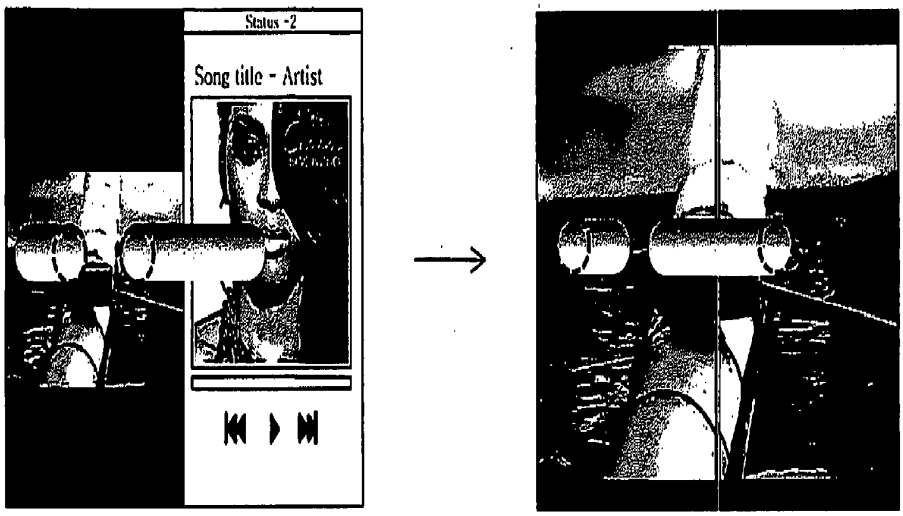
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

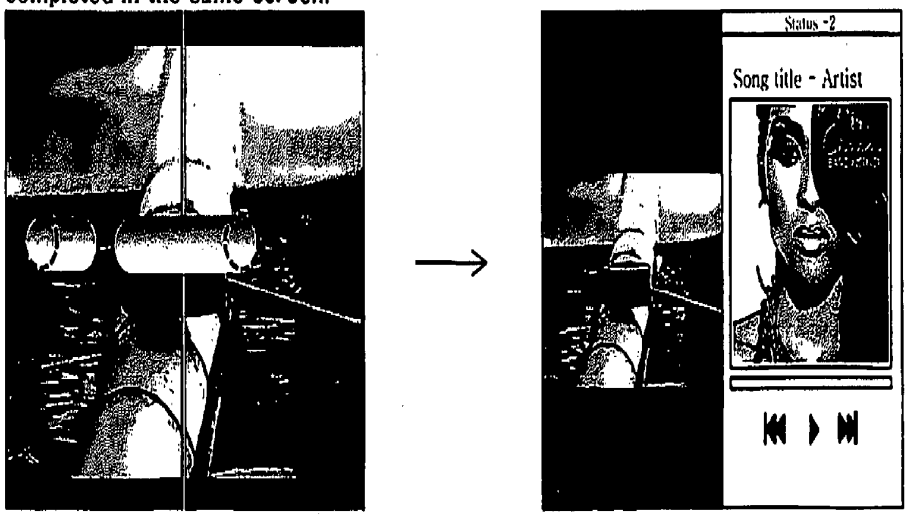
3.3 Explanation of the invention - 2. Expand-mode change

- After simultaneously inputting two touches in one screen, one touch is dragged and dropped in an opposite direction of the hinge and the other touch is dragged and dropped passing the hinge.



B' : Gallery App C : Music App B' : Fit to horizontal of two screen

- After simultaneously inputting two touches in different screens, the touches are dragged and dropped in the same position and completed in the same screen.



10/22 ※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Expected effect of the invention

- The present invention can solve inconvenience in changing screens in a dual display mobile device by using an intuitive gesture.
- The present invention can provide various interactions by using input passing the hinge.

3.5 Application field of the invention

- Device capable of employing dual displays

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

4. Claims

1. A method of changing a view mode and performing a special input by using two screen touch gestures in dual touch screens capable of providing multiple view modes.
2. A method of determining a connectivity of a gesture in order to determine two screen touch gestures.
3. A method of providing three types of view modes and changing view modes by using two screen touch gestures.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

Invention Disclosure Form

Title of Invention * Write a title of the invention expressing contents of the invention in a simple and clear way				
Method of Hinge Interaction of Mobile Device				
Related technology and prior application		* Note 1) Published documents related to the present invention (patent, paper, product, specification, manual, document on the Internet, etc.) * Note 2) Completed prior application (application number), and prepared application (receipt number) of an inventor related to the present invention		
Origin of technology * Select and write corresponding parts	**Registered/published patent** * Note1)			
	Related document or product *Note 1)			
	Prior application of an inventor related to the present invention * Note 2)	**Completed application**	**Title of invention**	
			Application No.	
		Preparing application draft	**Title of invention**	
			Receipt No.	
Name of relevant task		Dual Display		
Applicable product of the present invention		Mobile Device, etc.		
Contact of inventor		**[Tel.] Office(required): 031-301-9399 Cell Phone(option): 010-7207-0071** **[E-mail Account]** : ka1007.kang@samsung.com		

1/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

1. Object of the present invention (Background)

[redacted]

- Field: Input and display scheme of device, etc.
- Trend

1. According to expansion of a full touch smart phone, competition for preoccupancy of next-generation display technology is intense.
2. New concepts related to a scheme of changing a UI by using a mechanical characteristic, i.e. two screens, has been emerged.
3. Interaction in a new scheme using a hinge has been needed.

[redacted]

- Object: Provide a new input method using an operation of folding and unfolding a hinge and touch screens in a terminal including two screens which are mechanically folded and unfolded (through a hinge)

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

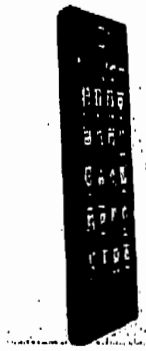
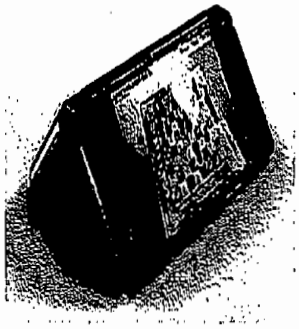
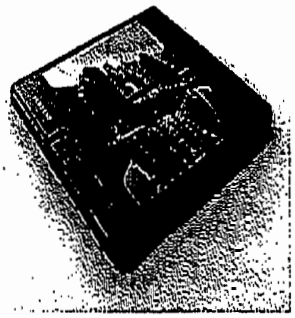
Copied from 13370939 on 05/11/2012

2. Explanation of relevant technology

2.1 Next generation device

[redacted]

Provide various use experience by using two displays
Use the device by changing a mode according to a folding angle of two displays

Single Screen | 0°	Out-Folded Screen | 60°	Double Screen | 180°	In-Folded Screen | 210°
			
Two screens are completely overlapped while facing outside.	Both screens are folded while facing outside by 60°. The device can be stood on a floor in a triangle form.	Both screens are flatly unfolded to serve a single large screen.	Both screens are folded while facing inside by 210°. The device has a form similar to that of a laptop or an E-book.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

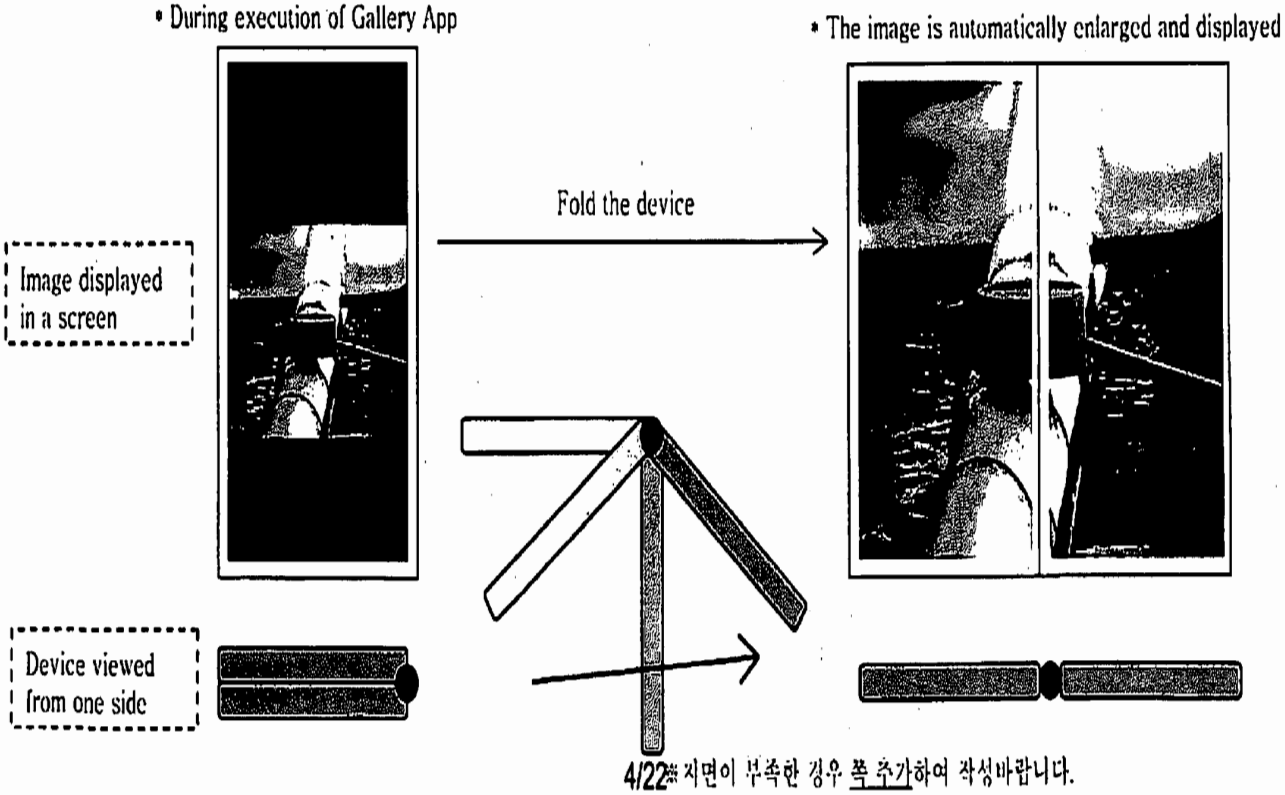
Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.1 Summary of the invention

- Construction: Device including two screens connected by a hinge to allow a folding and unfolding operation
- Summary of operation:
  - An operation of folding and unfolding the hinge of the dual screens is recognized as a single hinge-input.
  - When the hinge of the dual screens is folded and returns to an original position within an effective time, it is recognized as a Folding & Back Input (hereinafter, referred to as the F & B Input).
  - When an unfolded state of the hinge of the dual screens maintains an effective time or more, it is recognized as a Folding & Holding Input (hereinafter, referred to as the F&H Input).
  - When the F&H Input and a touch input of a screen are simultaneously generated, this situation is recognized as one new input.
  - The operation is discriminated through reorganization of 1) an folded angle of the hinge, 2) maintenance of an folded state, 3) a position of moved screen, and 4) existence of a touch input.

• When the device is unfolded by 180°, i.e. to be flat, during the execution of an application with one screen in a folded state, the device recognizes a changed hinge angle and the screen is automatically enlarged and changed.



4/22※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention: Method of discriminating an input

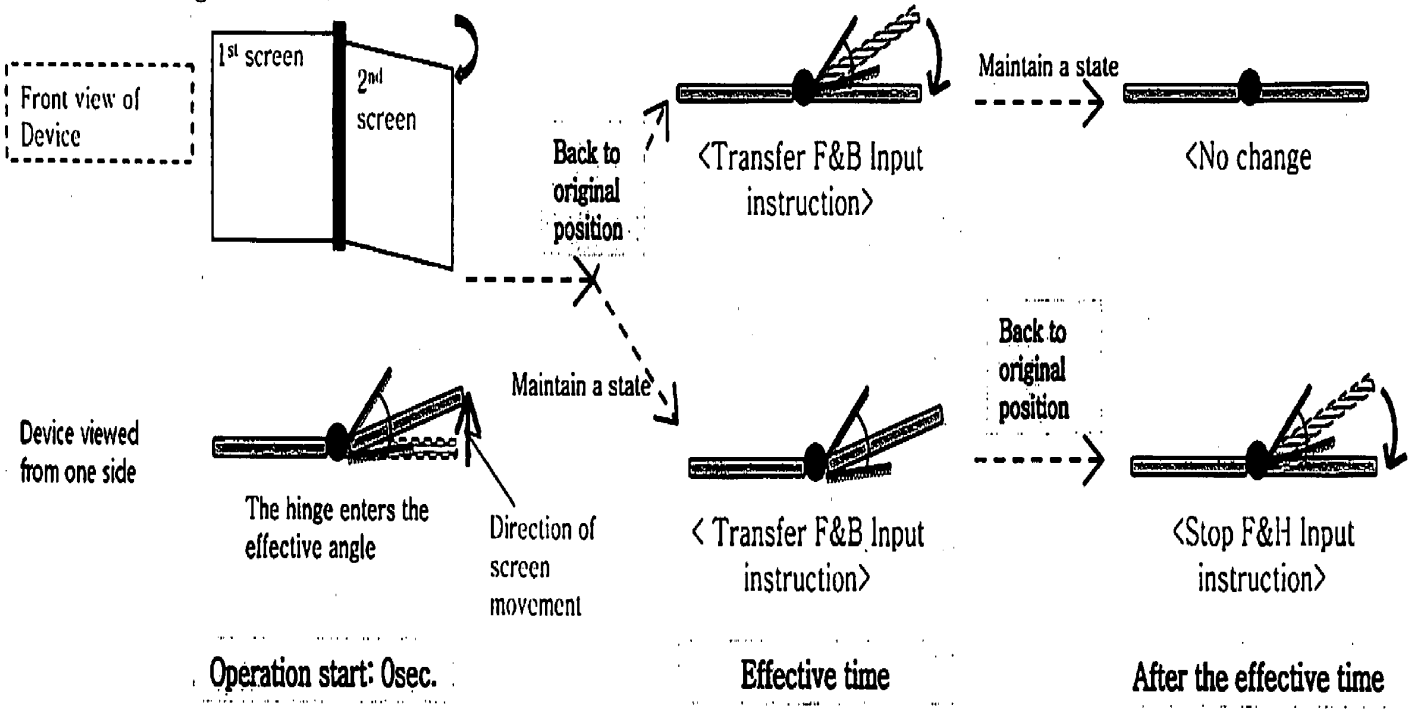
- A motion sensor, such as a six-axial sensor, is required for recognizing a change of an angle of the hinge .

- There are three references for discriminating an input.

1.Discrimination through a time

a) An operation within an effective time is recognized as an input instruction.

b) In the F&H Input, a holding state must be maintained for the effective time, and the input is continuously transferred for the time of the holding maintenance.



5/22 *지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

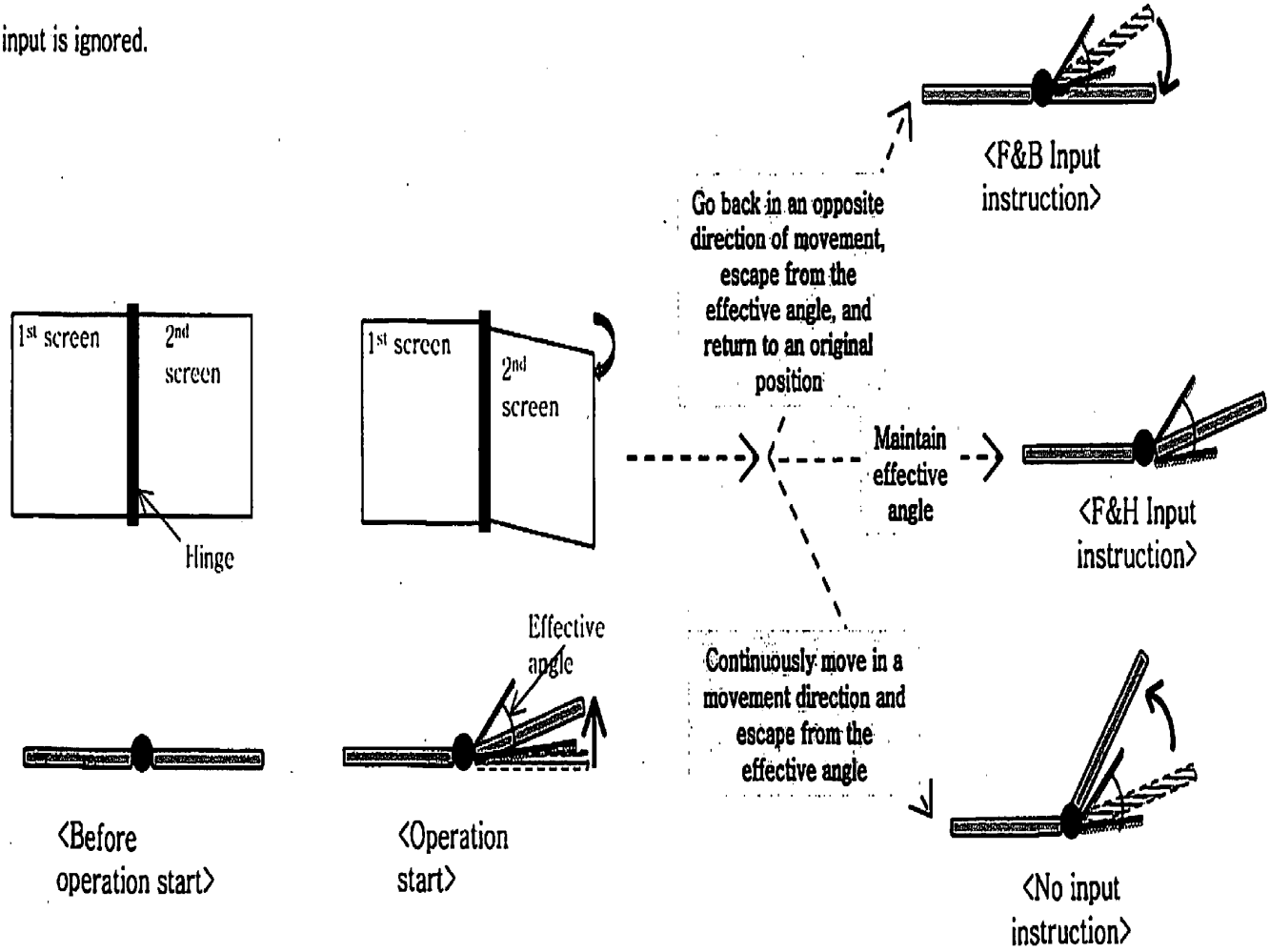
3. Explanation of the invention

3.2 Construction of the invention: Method of discriminating an input

2.Discrimination based on an angle

a) A type of an input is discriminated based on whether the angle of the hinge escapes from the effective angle and returns to an original position or remains within the effective angle after the angle of the hinge enters an effective position.

b) When the hinge is continuously moved in a movement direction and the angle of the hinge escapes the effective angle, the input is ignored.



6/22 *지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

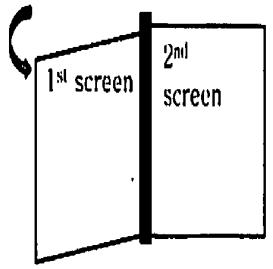
3. Explanation of the invention

3.2 Construction of the invention : Method of discriminating an input

3. Discrimination based on a position of a moved screen

a) Identify a screen toward which an angle of the hinge is changed to map to another input instruction

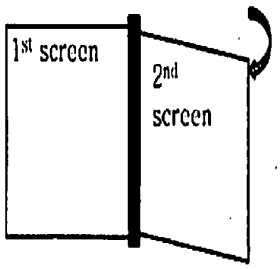
b) Discrimination of the input based on three types, a left screen (1st screen), a right screen (2nd screen), both screens





An angle of a left screen enters an effective angle

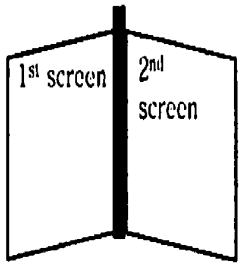
Input through a left screen





An angle of a right screen enters an effective angle

Input through a right screen





Angles of both screens enter effective angles

Simultaneous input through both screen

7/22 * 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

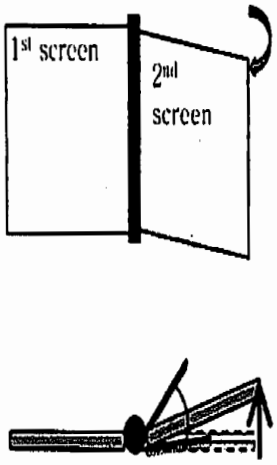
Copied from 13370939 on 05/11/2012

3. Explanation of the invention

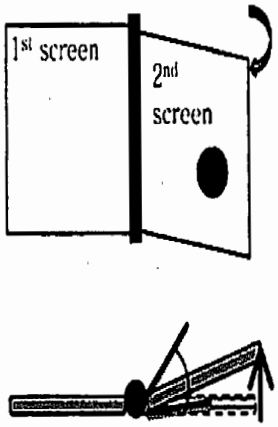
3.2 Construction of the invention : Method of discriminating an input

4. Whether to generate a touch input during the F&H Input

a) In this case, the touch input and the F&H Input can be discriminated as a new input instruction.



F&H Input



An angle of a right screen enters the effective angle

F&H Input + Touch Input

※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

8/22

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention : Example of 9 types of applicable interaction and mapping

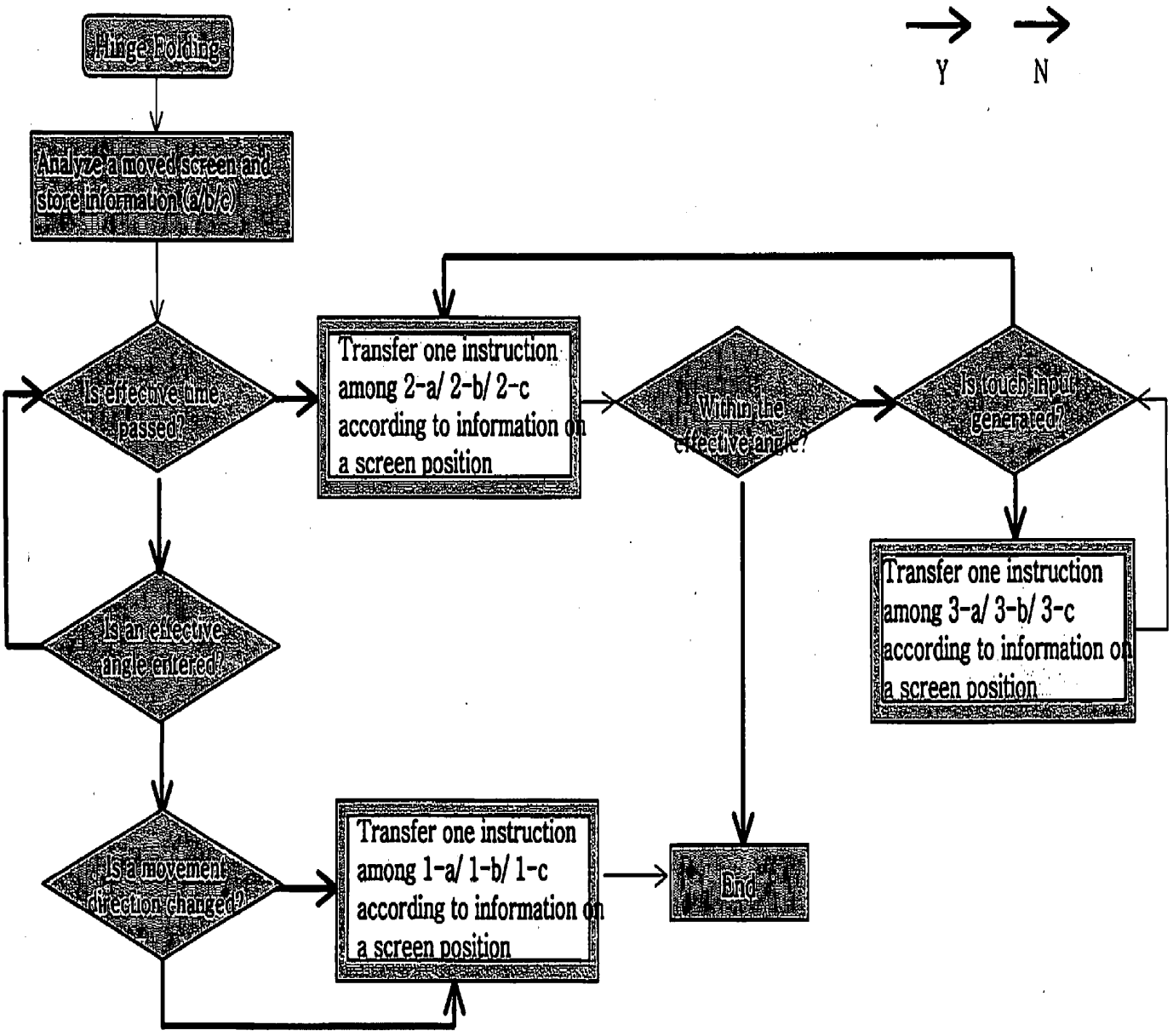
Type of input / Position of touched screen	Folding & Back Input	Folding & Holding Input	Folding & Holding Input + Touch Input
Movement of left screen	1-a Load Task-Manager	2-a Change to a previous task among executed multitasks	3-a Change a chapter of an E-book
Movement of right screen	1-b Load Clipboard	2-b Effect of leafing through pages in an E-book	3-b Set a page in an E-book in detail
Movement of both screens	1-c Capture a current screen	2-c Zoom-In/Out a screen	3-c Change to another book in an E-book

9/22 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.2 Construction of the invention: S/W process for discriminating a type of input



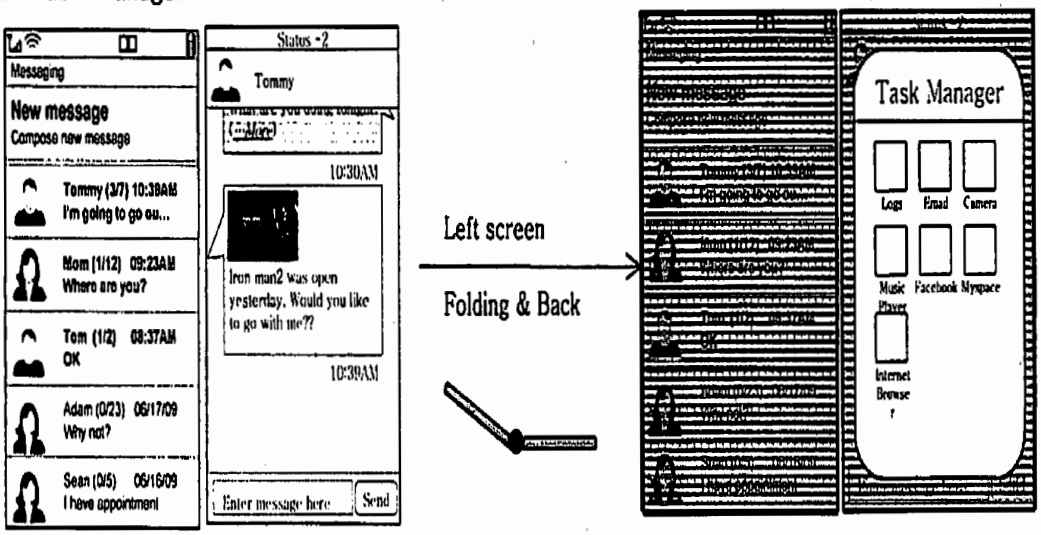
10/22 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

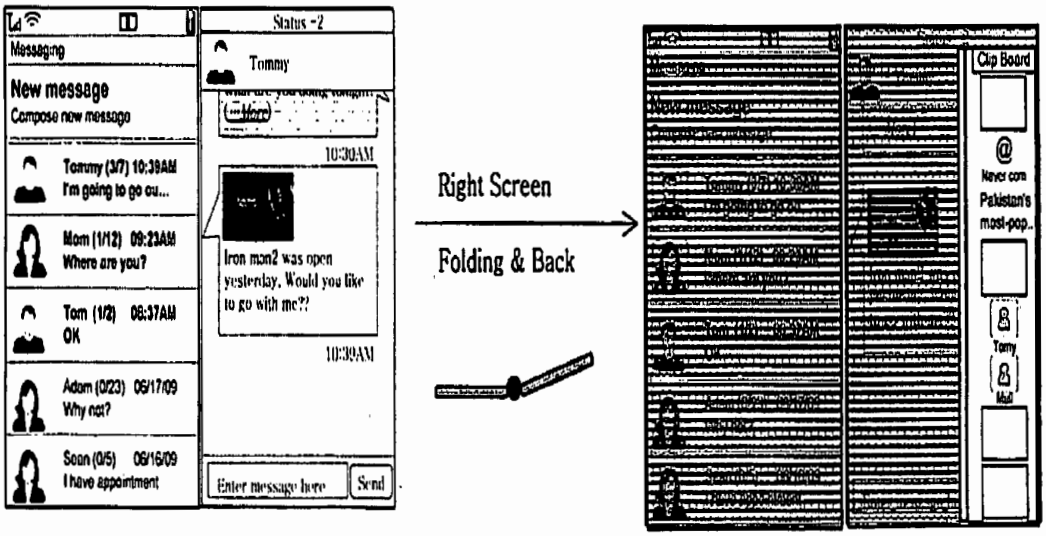
3. Explanation of the invention

3.3 Example of the invention (1)

1-a) Load Task-Manager



2-b) Load Clipboard



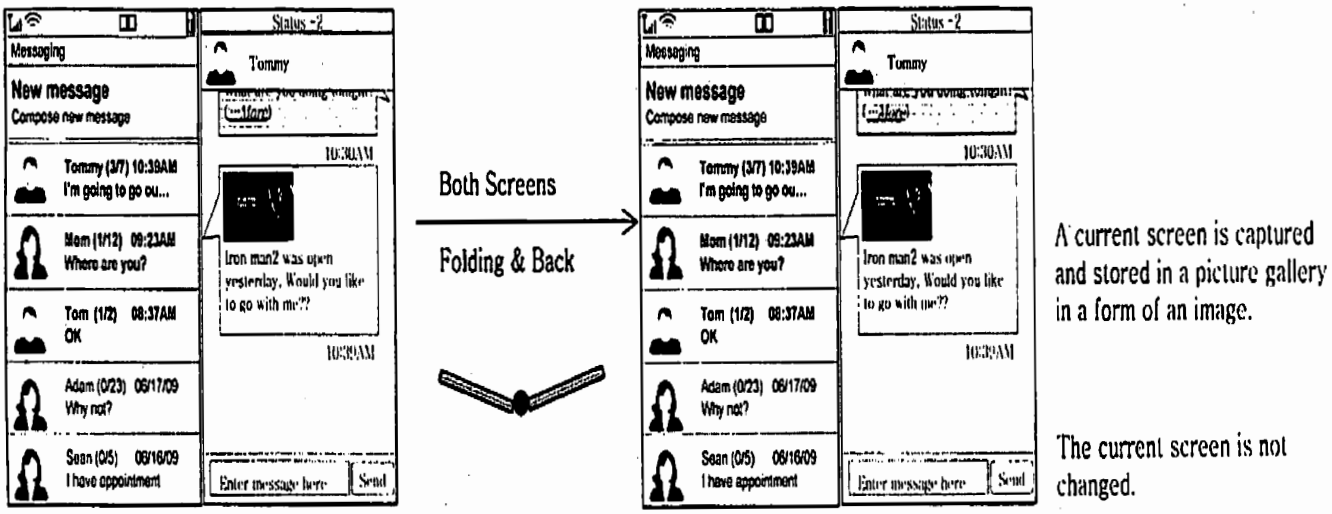
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Example of the invention (2)

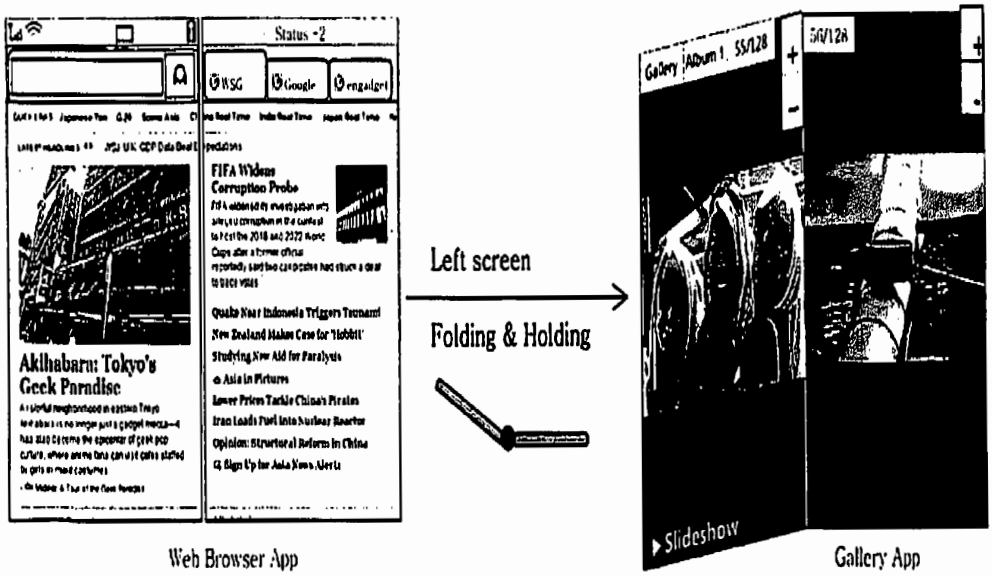
1-c) Capture current screen



A current screen is captured and stored in a picture gallery in a form of an image.

The current screen is not changed.

2-a) Change to previous task among executed multi tasks



Web Browser App

Gallery App

When a previously executed App is the Gallery, the task is changed.

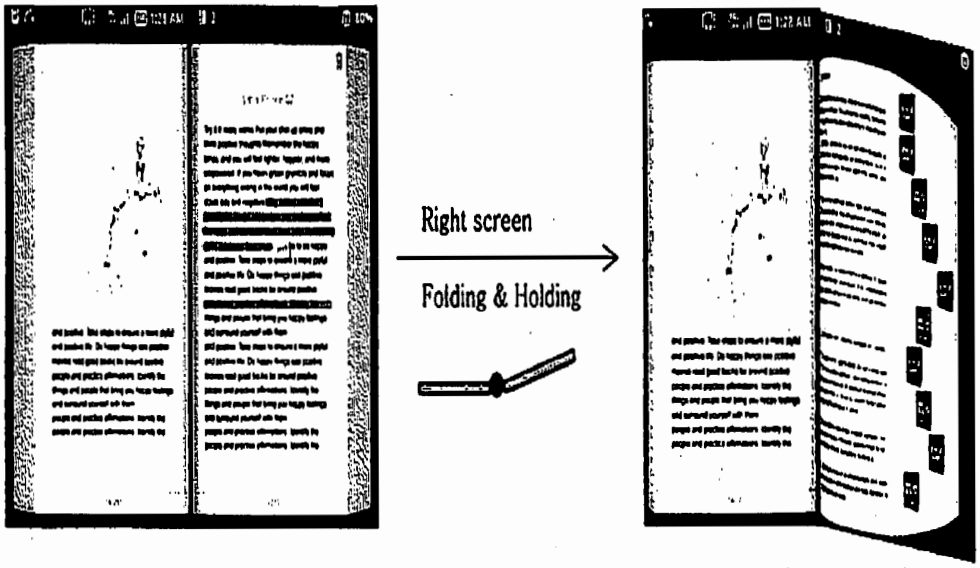
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Example of the invention (3)

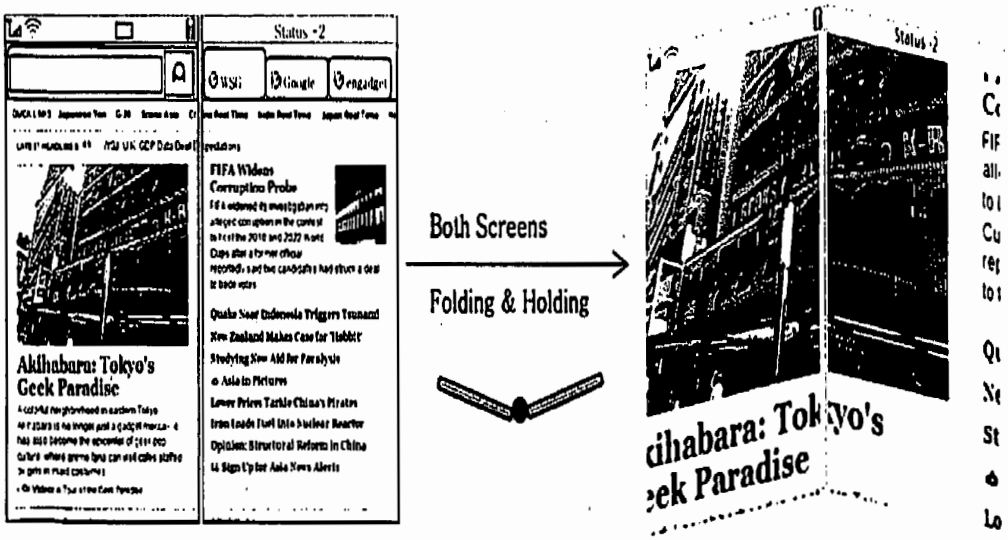
2-b) Effect of leafing through pages in an E-book



Effect of enlarging an index region and leafing through pages

Index

2-c) Zoom-In/Out screen



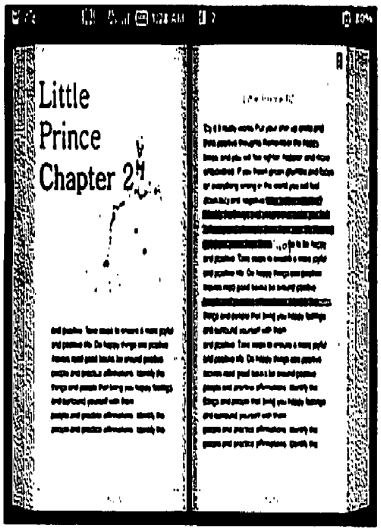
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

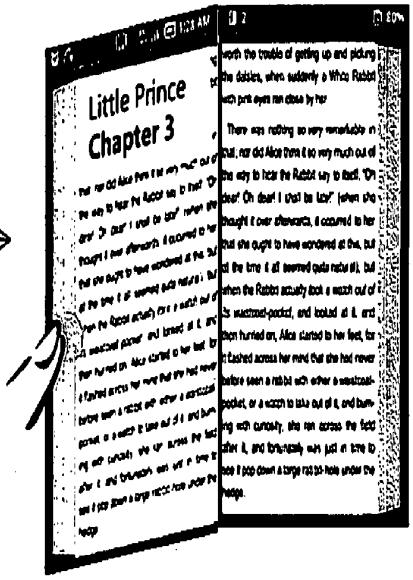
3.3 Example of the invention (4)

3-a) Change a chapter in an E-book



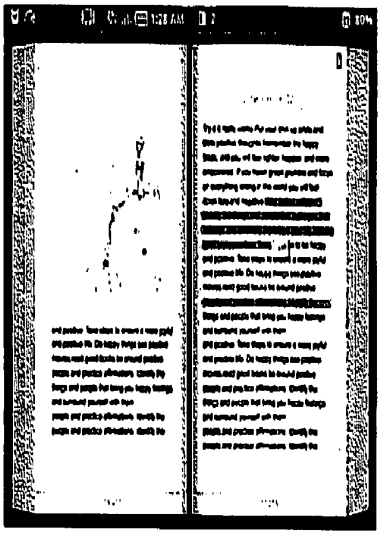
Left screen

Folding & Holding + Touch



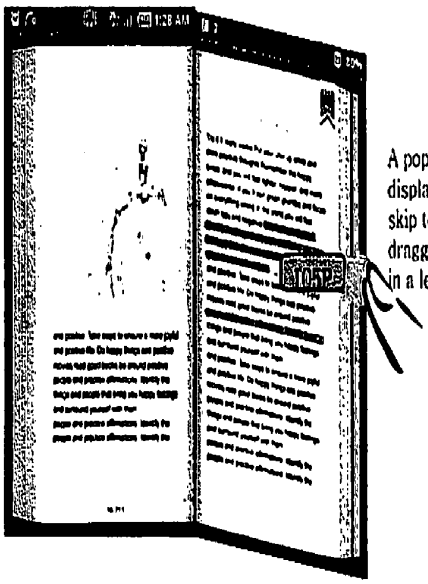
Go on a next chapter

3-b) Set a page in an E-book in detail



Right screen

Folding & Holding + Touch



A pop-up window displaying a page is displayed and it is possible to directly skip to a desired page through dragging
in a left or right direction.

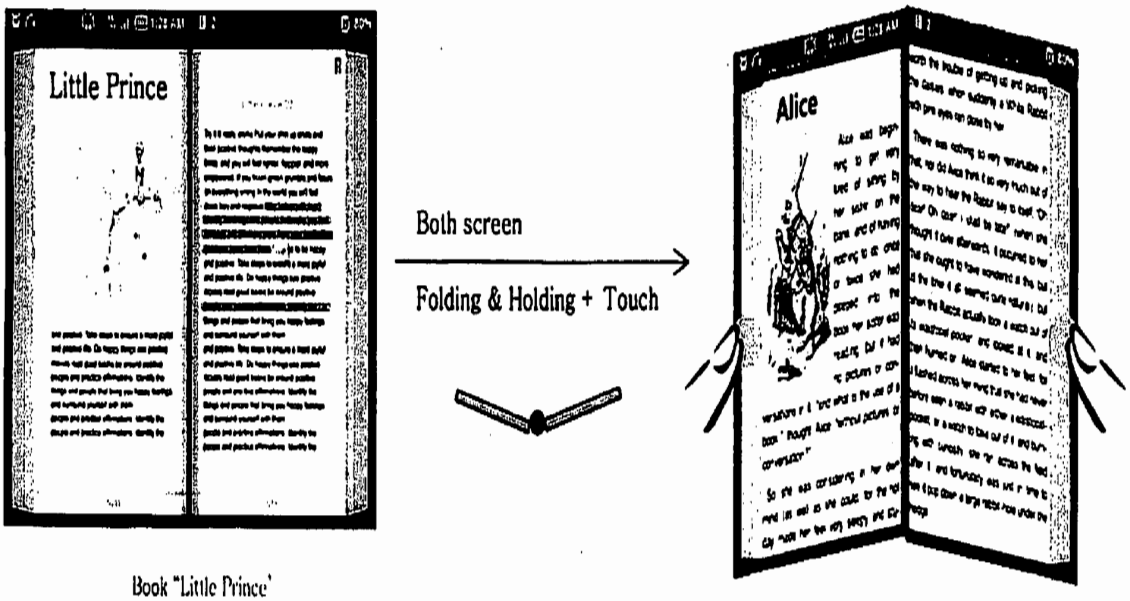
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Example of the invention (4)

3-c) Change to another book in an E-book



Book "Little Prince"

Go on to a next book, Alice", in My Book List

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

3. Explanation of the invention

3.3 Expected effect of the invention

- The invention provides a new scheme of interaction using a hinge, not an existing input by a hard key or only a touch.
- When a hinge input is mixed with existing input methods, a large number of new interactions are created.

3.5 Application field of the invention

- All touch screen devices which can be folded and unfolded through a hinge (mobile phone, tablet PC, notebook PC, etc.)

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

4. Claims

1. A method of discriminating and performing an interaction according to an angle between two screens in a dual screen/display device.
2. A method of discriminating and performing an interaction according to a position of a moving screen among two screens in a dual screen/display device.
3. A method of recognizing a change of an angle between two screens and a touch input, which are simultaneously received, as a single interaction in a dual screen/display device.

※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.

Copied from 13370939 on 05/11/2012

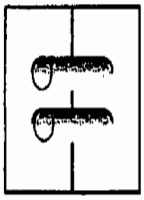
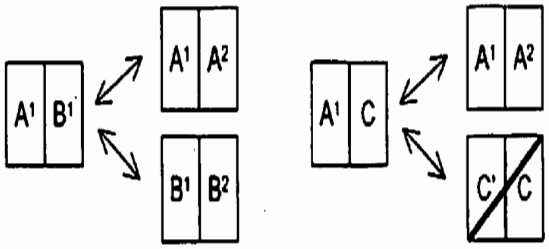
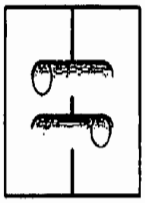
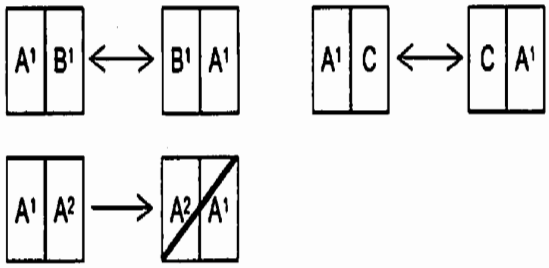
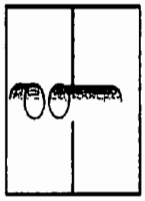
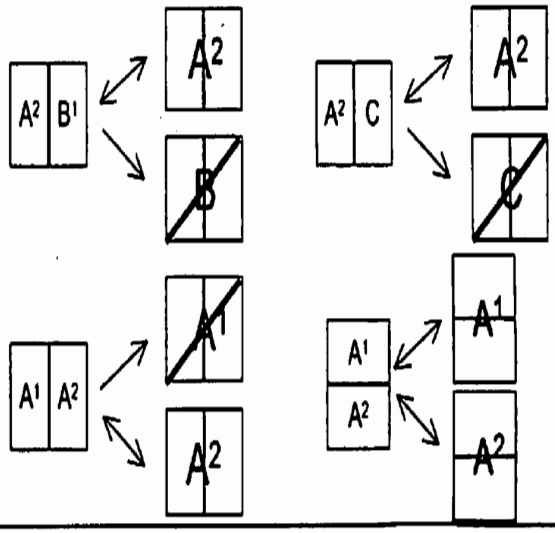
Basic interaction

SAMSUNG confidential

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Basic Two Screen Rules

Type		Description	Use cases
One Application		Two finger touch Input in one screen and Drag to the other screen. Horizontal Mode follows the same rule	
Swapping		Simultaneously touch two screens and drag each touch to an opposite screen Horizontal Mode follows the same rule	
Full Screen		Input two touches in one screen and then drag one touch to another screen Enlarge a screen and change a single screen to a full screen at the same time Return to a previous screen mode (Photo, Web Browser, Map, ...) when an opposite input is input in a full screen A horizontal mode, such as a list, can be enlarged to a full screen.	

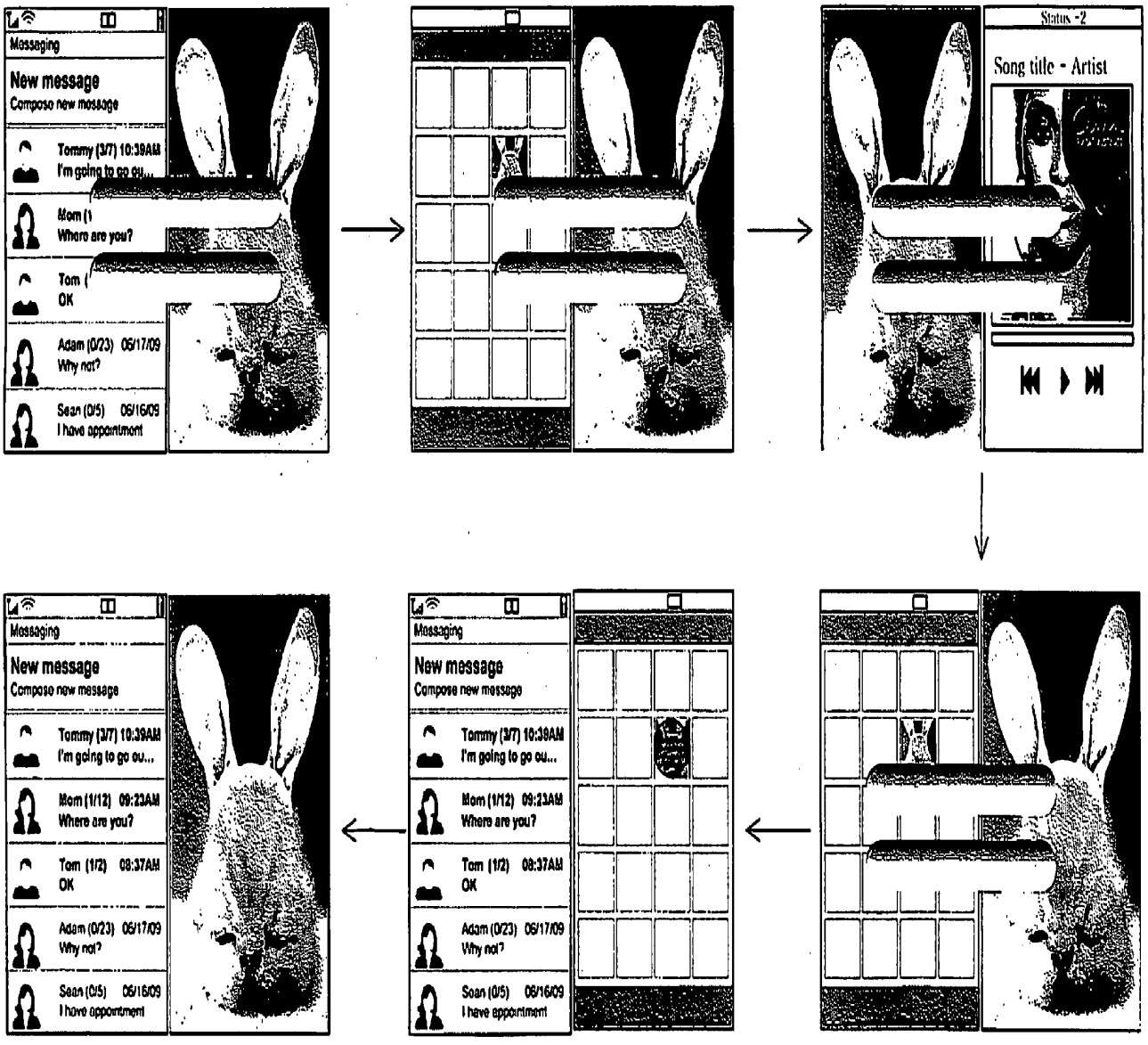
A : Application Support Dual Screen have Play screen
(A^1 : First Depth like Contents List, A^2 : Play Screen)
B : Application Support Dual Screen
(B^1 : First Depth like Contents Group, B^2 : First Depth like Contents List)
C : Application only Single Screen

SAMSUNG confidential

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

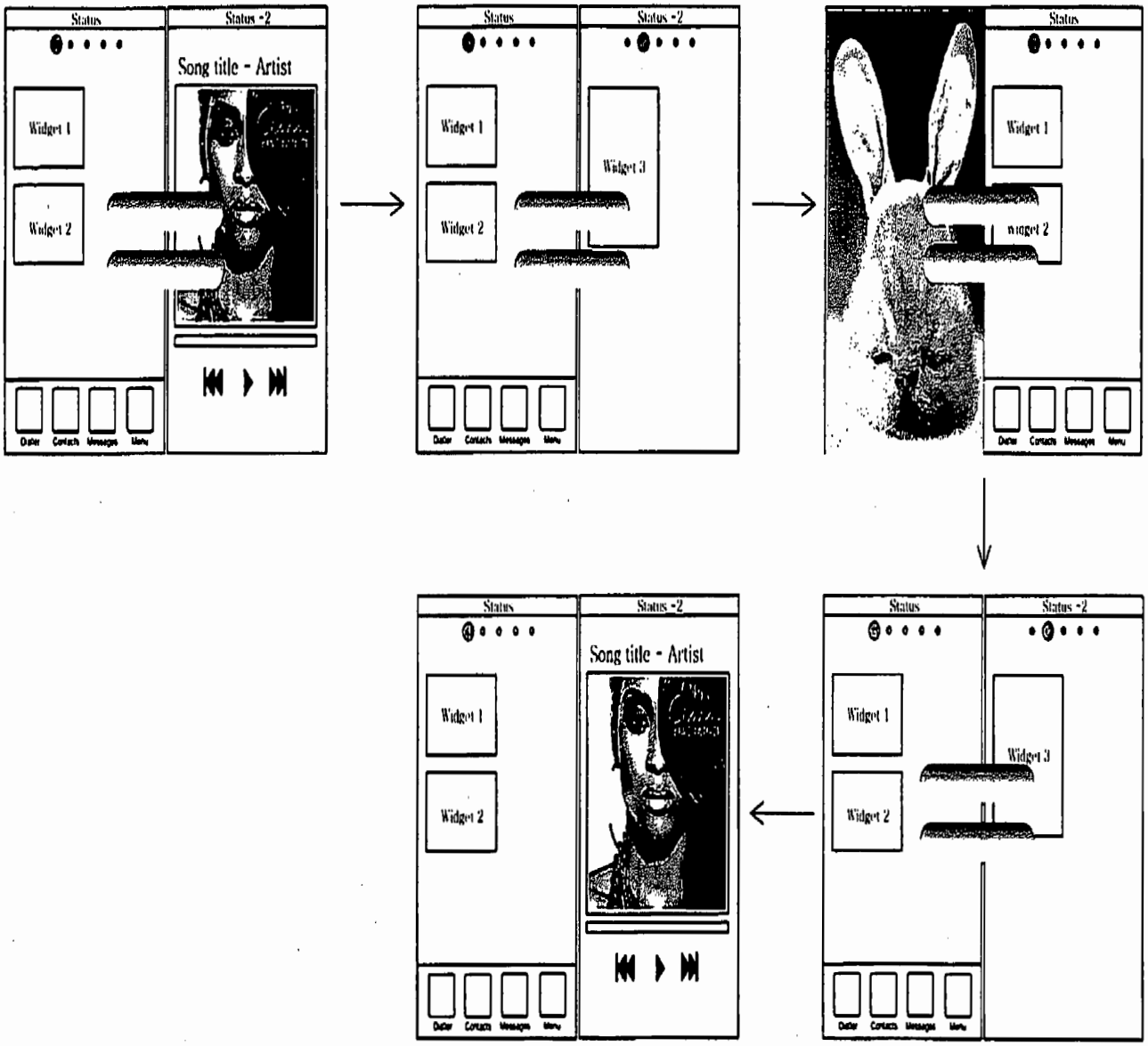
Screen Extension



Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

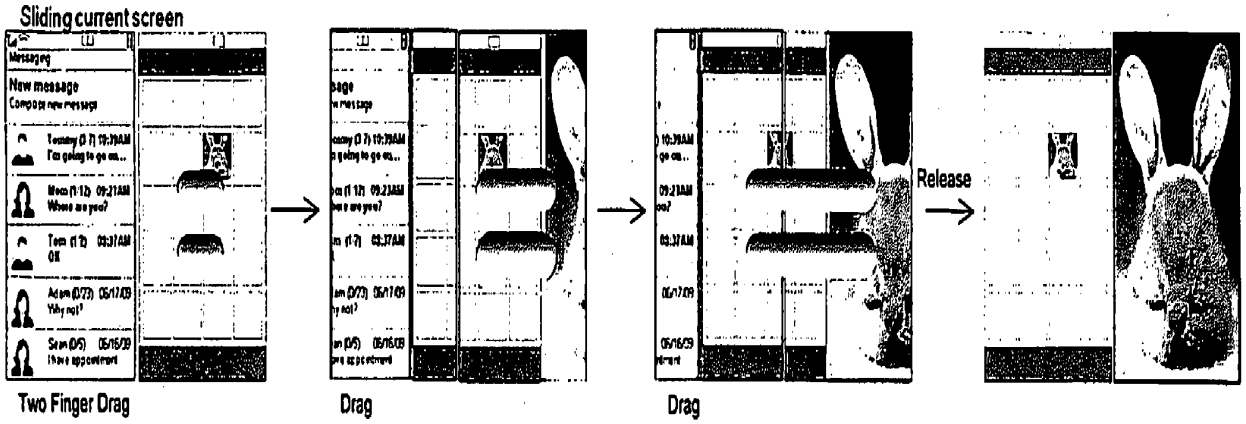
Screen Extension : Home

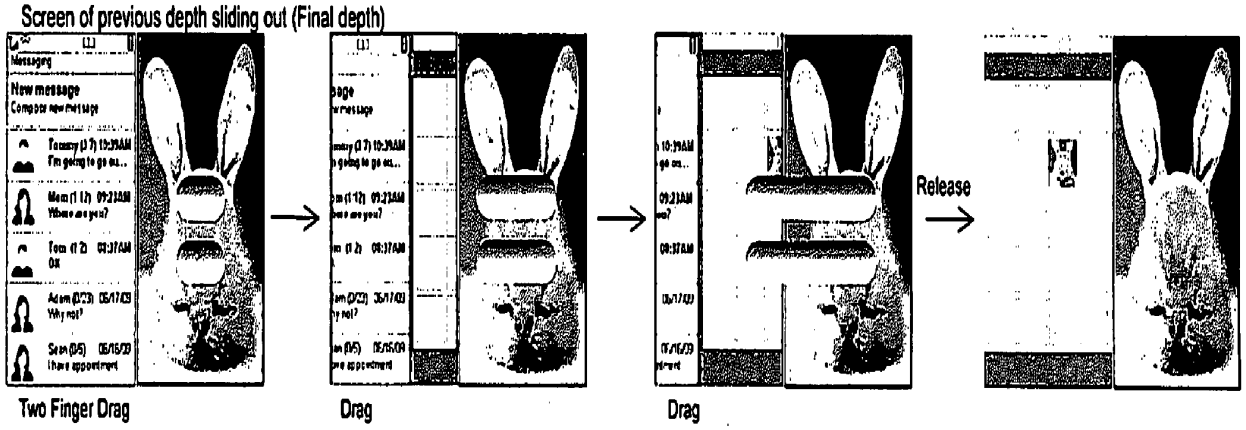


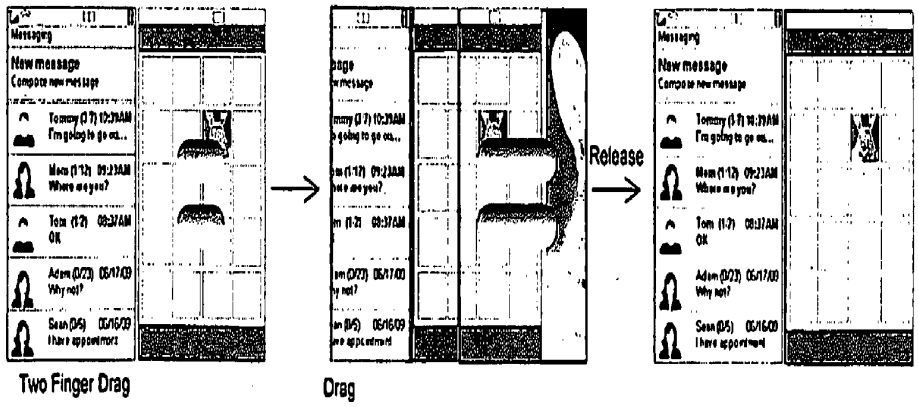
Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Screen Extension : Interaction Step





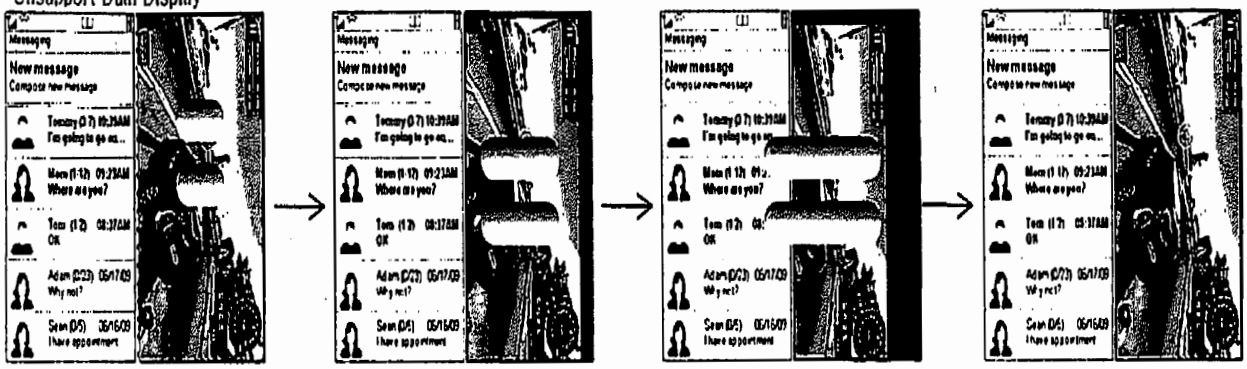


Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Screen Extension : Not Supported Case

Unsupport Dual Display



Visual Feedback : Screen slides slightly, then pops out

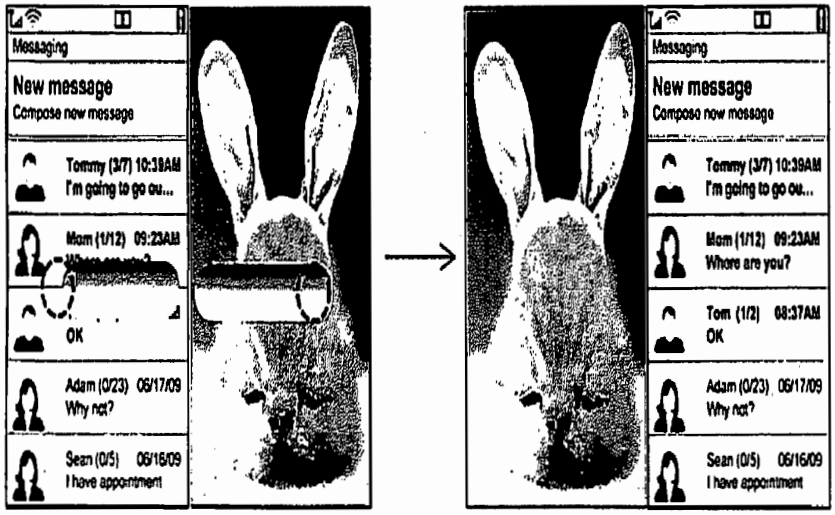
Return to original state as soon as fingers performing the drag pass to the other screen

SAMSUNG confidential

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Screen Swapping : Basic Interaction



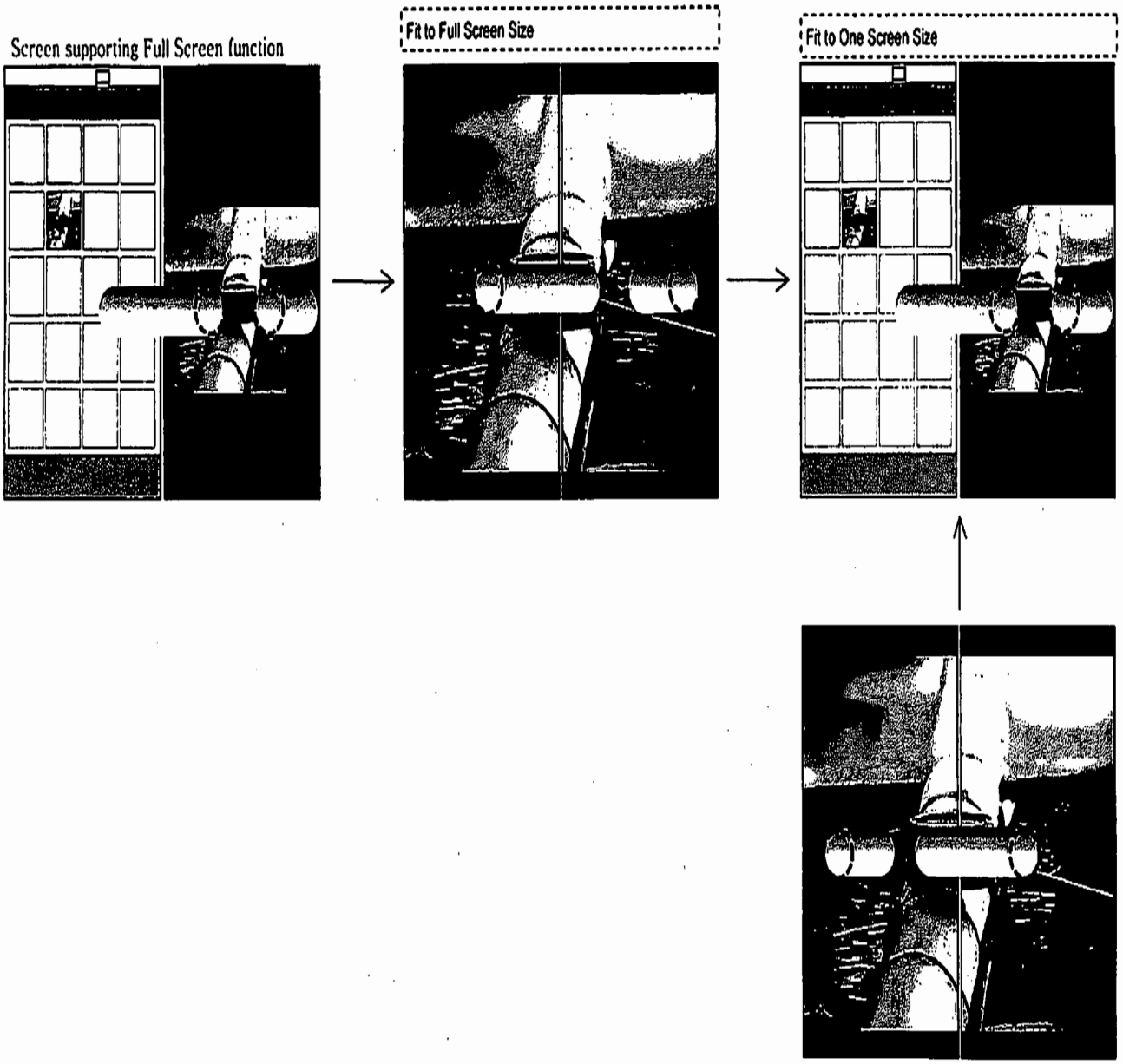
Only when both displayed applications support swapping???

Applied when different applications are displayed in two screens, respectively.
Operated when touches are simultaneously input in two screens.

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Full Screen : Basic Interaction



SAMSUNG confidential

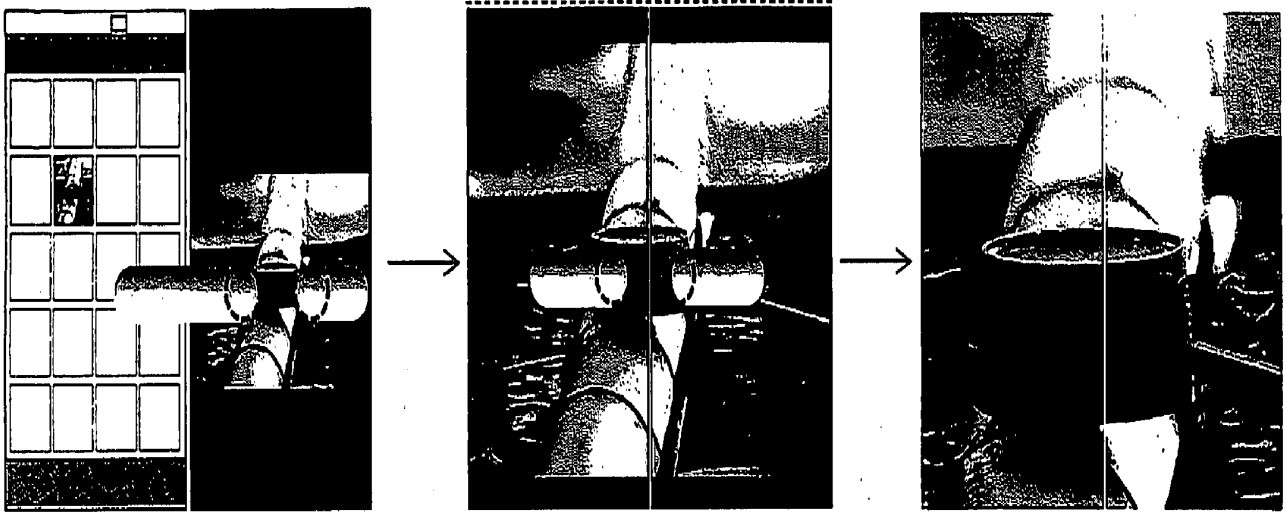
Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

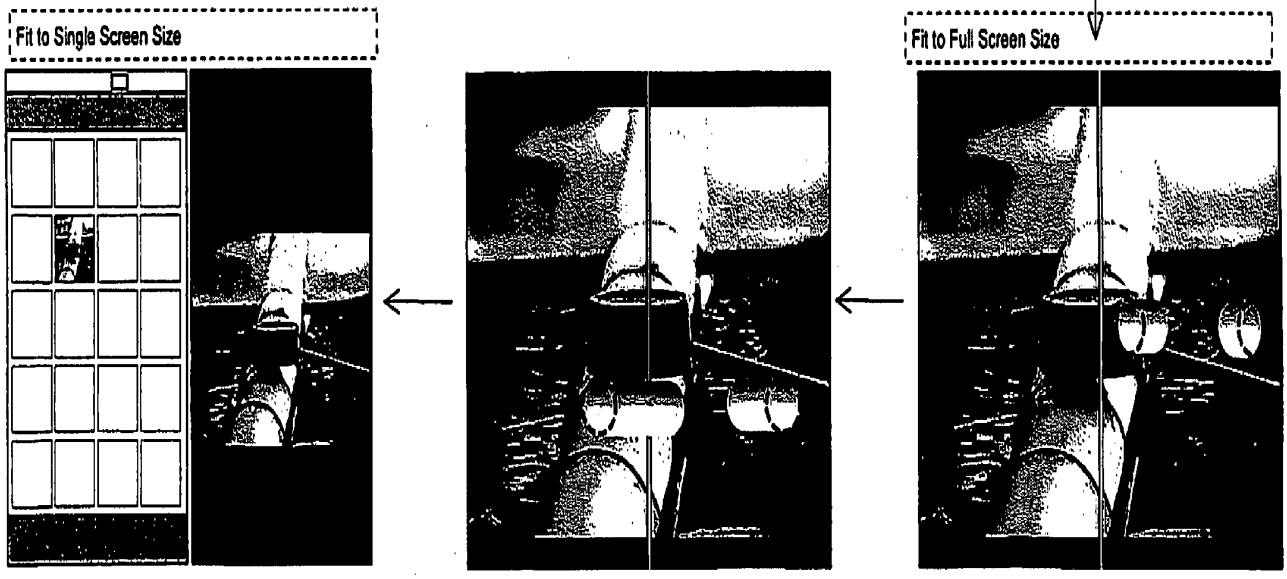
Full Screen : Full Screen & Zoom

Note: When a vertical full image in a single view vertical mode is changed to a full screen view, a single view image is extended at a center of the screen.





An entire image is displayed in a full screen.



A change from the Full Screen Mode to the Expansion Mode is progressed after setting to the full screen.

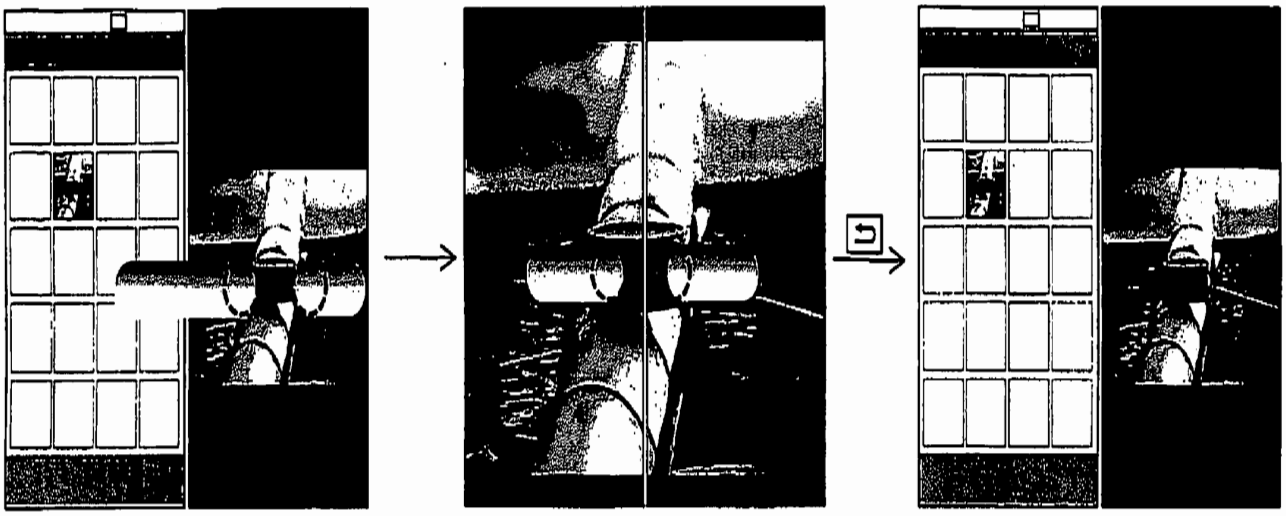
The image is not decreased further if the image is zoomed out in the Set-to-Full screen state.

SAMSUNG confidential

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Full Screen : Full Screen & Zooming



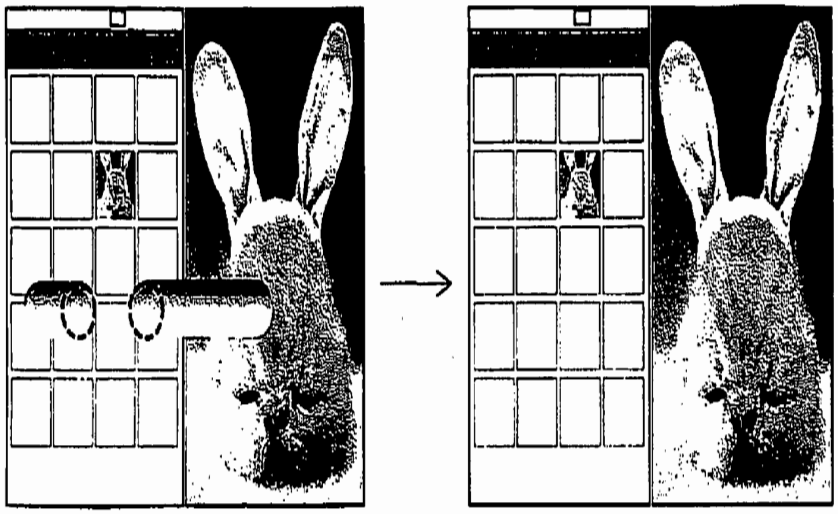
An entire image is displayed in a full screen.

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Full Screen : Application

Screen not supporting Full Screen Function

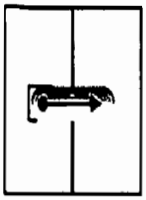
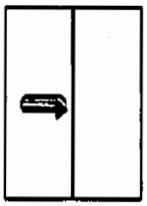


Swapping is not performed when neither position of touch inputs is changed.

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Multitasking Contents Move

Type		Description	Use cases
Drag & Drop Object		Drag an object to another screen in a state of selecting the object	
Object Select & Flick		Flick an object in a state of selecting the object	

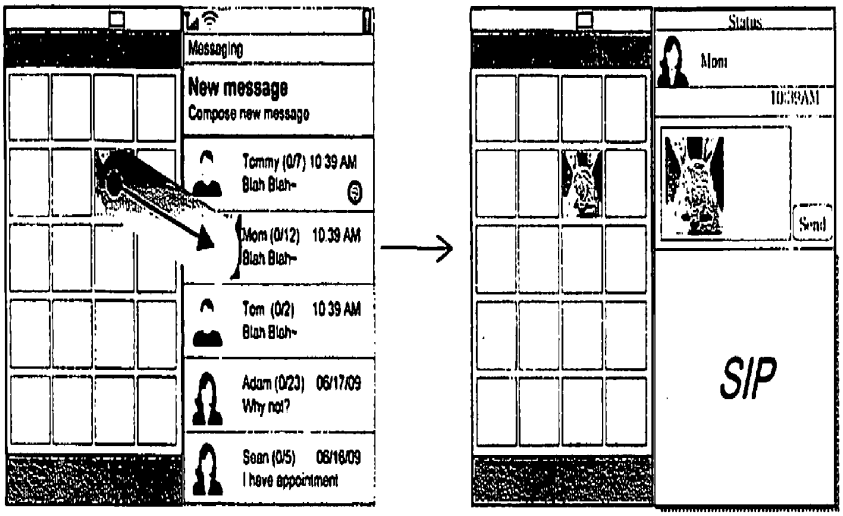
SAMSUNG confidential

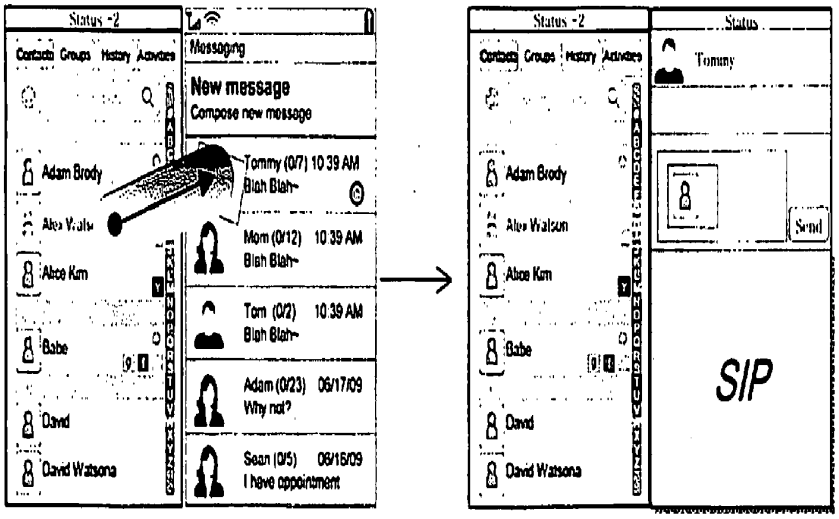
Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Contents Drag & Drop

A Drag & Drop is used when a subject to execute contents is selected and moved.
In this case, a Select & Flick is not operated.





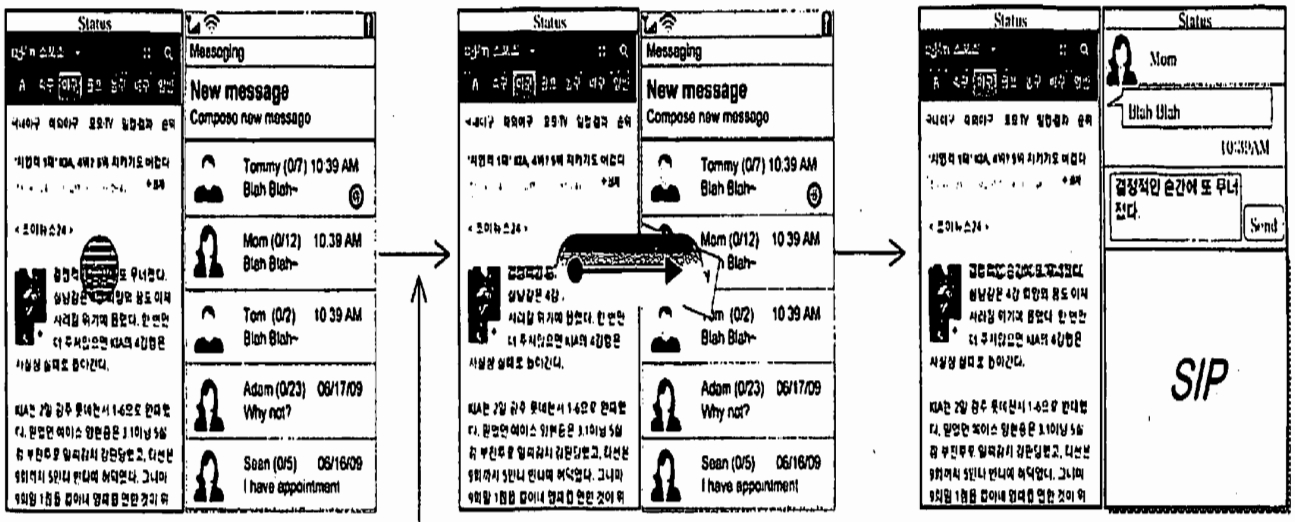
Gallery, Web, Callendar, Contacts, Message, Memo
Text, Thumbnail (Contact, Photo, Movie)

SAMSUNG confidential

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Contents Drag & Drop



Text selection process omitted

A pop-up window is displayed when a text is selected and then a Long Touch is input in the existing Android system.
Drag is necessary before the input of the Long Touch?.

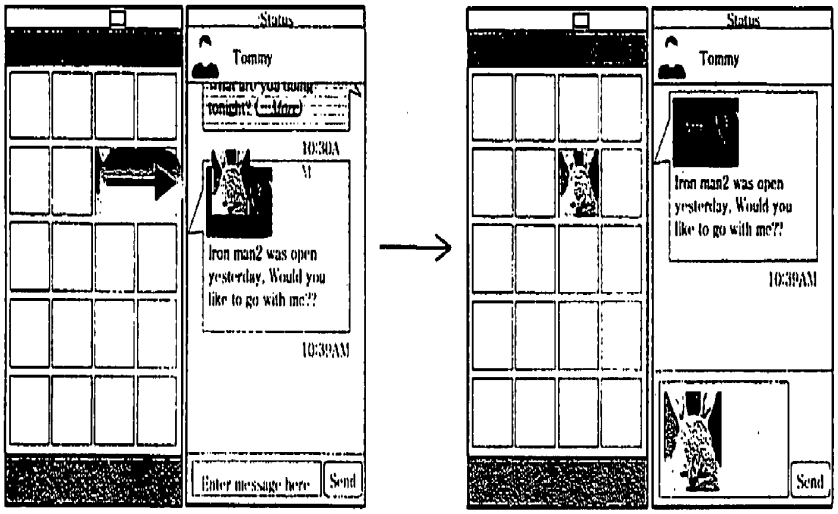
Gallery, Web, Callendar, Contacts, Message, Memo
Text, Thumbnail (Contact, Photo, Movie)

SAMSUNG confidential

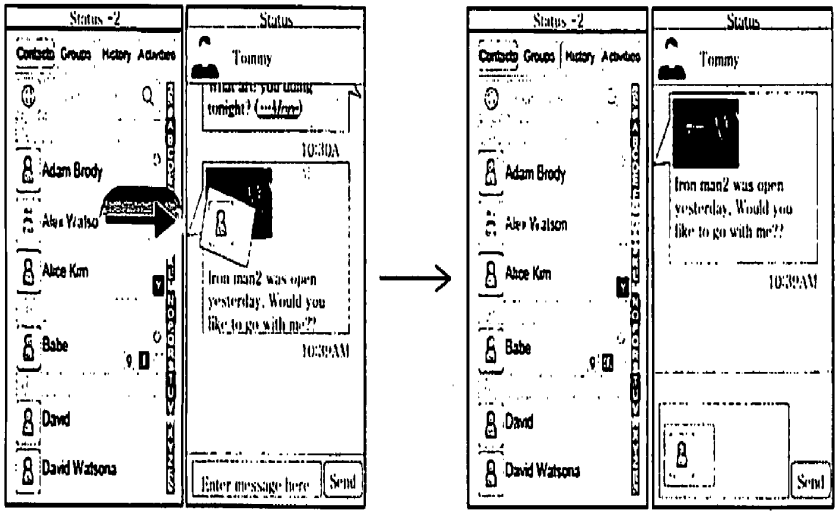
Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

Contents Select & Flick



When a subject to execute contents is determined in advance, a Select & Flick is used.
In this case, a Drag & Drop is also operated identical to the Flick.



Gallery, Web, Callendar, Contacts, Message, Memo
Text, Thumbnail (Contact, Photo, Movie)

Copyright© 2010 Samsung Mobile UX Design

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Dual Display Calendar UI Guideline
for Android

V.1.0

December 27, 2010

Contact Point :
Hyunjin Kim (truthkim@samsung.com) +82-10-8908-4559
Joonkyu Seo (joonkyu.seo@samsung.com) +82-10-2431-1289
Juyoun Lee (florial.lee@samsung.com) +82-10-4339-0026
Hyunjeong Song (songah.song@samsung.com) +82-2-2255-5563
Dongseok Ryu (dongseok.ryu@samsung.com) +82-2-2255-5424

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document History

No.	Sent	Version	File Name	Contents
01	December 27, 2010	v.1.0	[Duplex_Android] Calendar_v.1.0_20101227	Document Origination

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

head.jpg

Notation Guide

The graphic is for illustrative purposes only and may not represent the actual implementation.

Comments Style

Principle Blahblahblahblah	Spec Blahblahblahblah	Blahblahblahblah	Comment Blahblahblahblah
A definition of UI principle. Definition of comments that can be fundamental and exceptional conditions, including the definition about the vocabulary.	Spec Description	Description for situation change in scenario and condition & Default Value	Samsung UX Team Comment

Line Style

Primary Flow	Secondary Flow	Defining functions

Flow Iconography

Question?	
Decision Point	End Flow: Idle Screen

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document Flag		
v.xx Added BlahblahblahBlahblahblah	v.xx Updated BlahblahblahBlahblahblah	v.xx Added BlahblahblahBlahblahblah | v.xx Updated BlahblahblahBlahblahblah
Added page	Updated page	Keep Previous History

Document Flag		
TBD	v.xx Deleted : Blahblahblah	See Android Guideline
TBD functions	Deleted functions	The rule is same with the single android phone.

Document Flag	
Workflows	Workflows
AT&T MAXD UE flows	Samsung UE flows

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Contents

1. Key screen
1.1 - Start Screen
1.2 - Portrait
1.3 - Landscape
1.4 - Dual Zoom Screen

2. Scenario
2.1 calendar navigation
2.2 create new event
2.3 Menu>Delete
2.4 Dual zoom

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

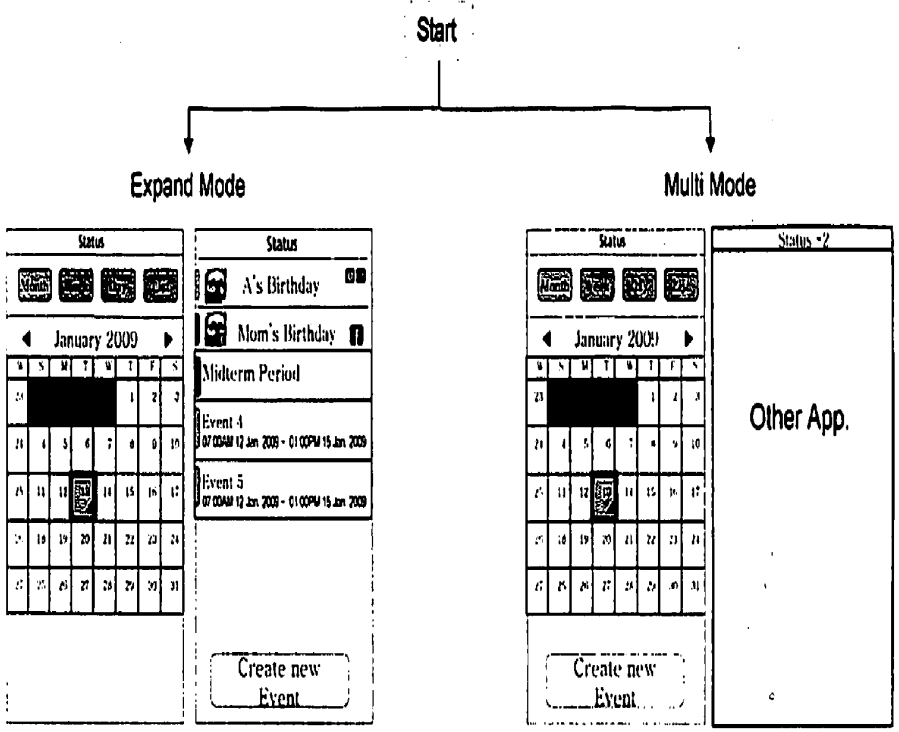
1. Key Screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.1 – Start Screen : Portrait



Navigation rules
Default is Month
For other rules, see the android guideline for single display.

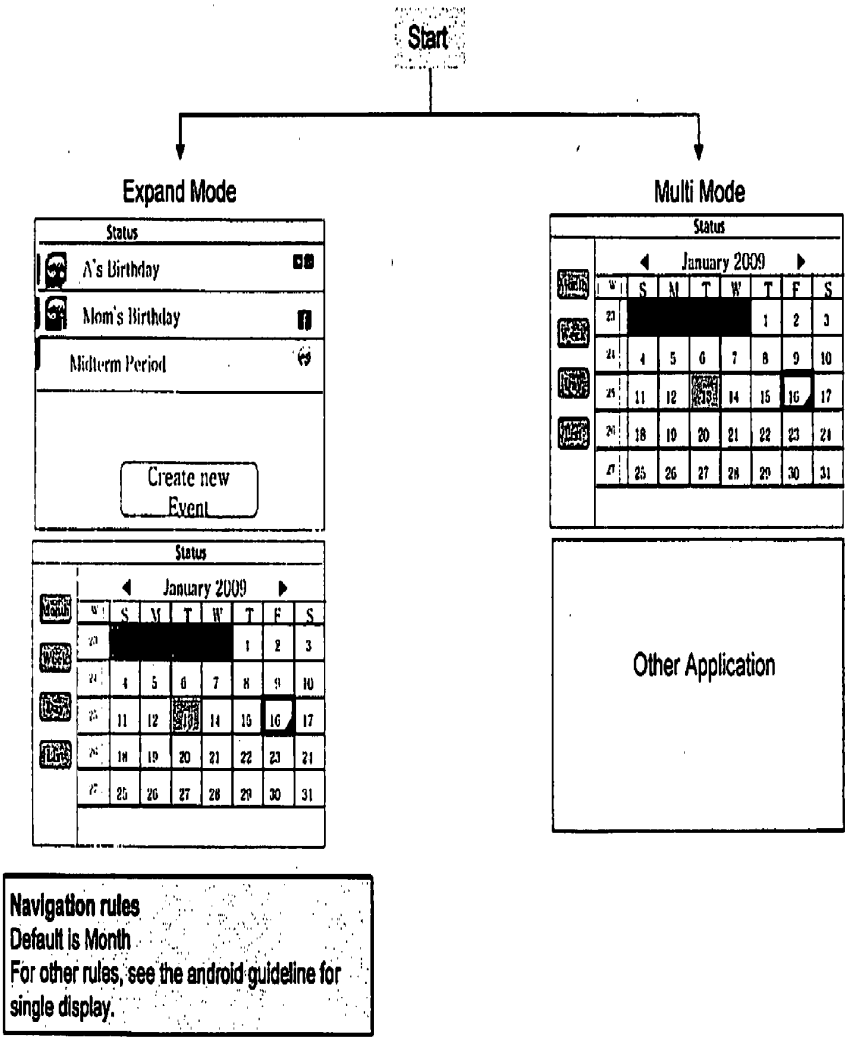
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Calendar

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.1 – Start Screen : Landscape



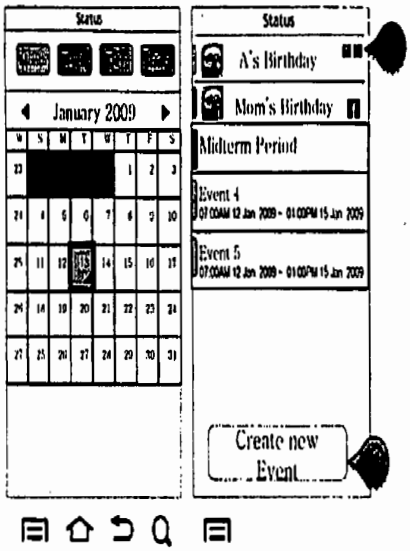
Navigation rules
Default is Month
For other rules, see the android guideline for single display.

© 2010 SAMSUNG Electronics. All right is reserved.

Copied from 13370939 on 05/11/2012

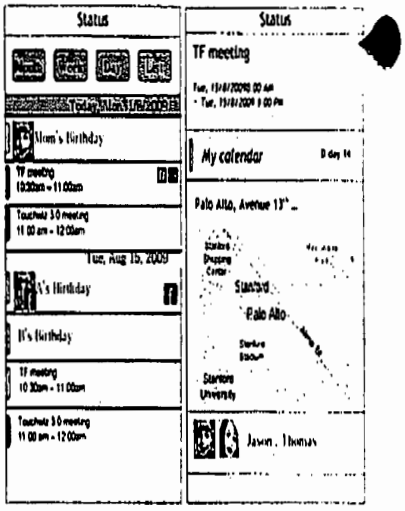
The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait



1	**Month & Event list of selected day** Week, Day is same layout rule.
2	**List & Detail** Detail of Selected event is displayed in sub screen.

1	**Create New Event** Create new event button is located sub screen

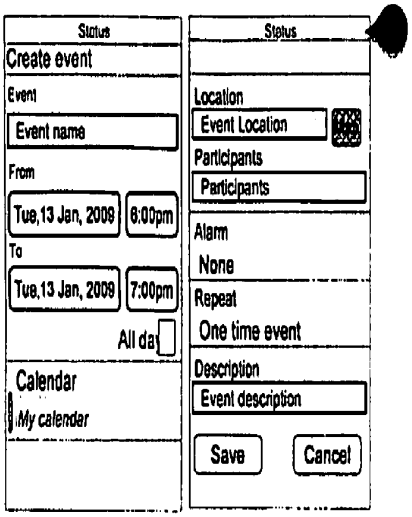


© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait



1 Create Event
Event elements are separated to 2 screen.
Each screen element can scroll separately.

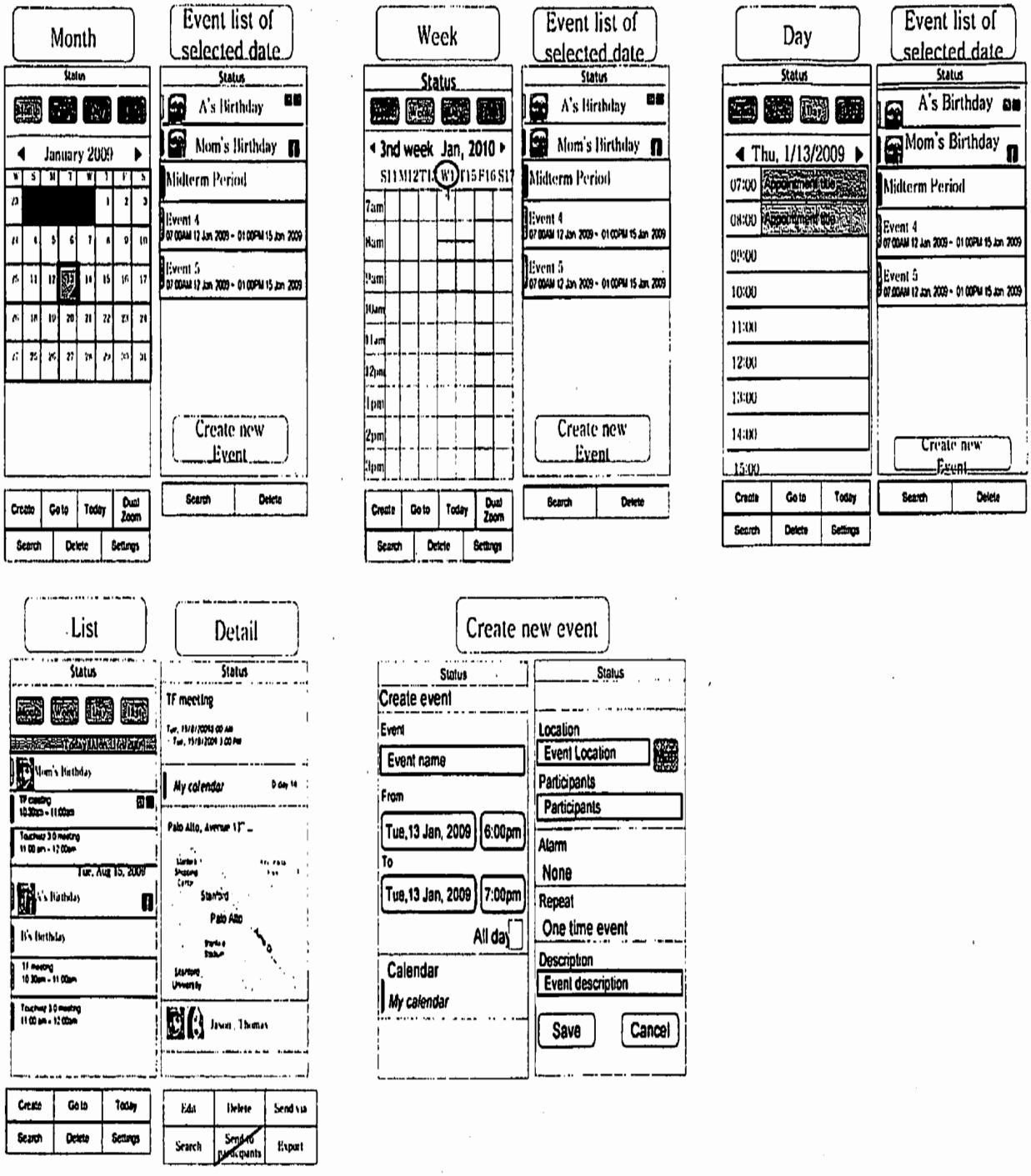
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Calendar

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait



© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

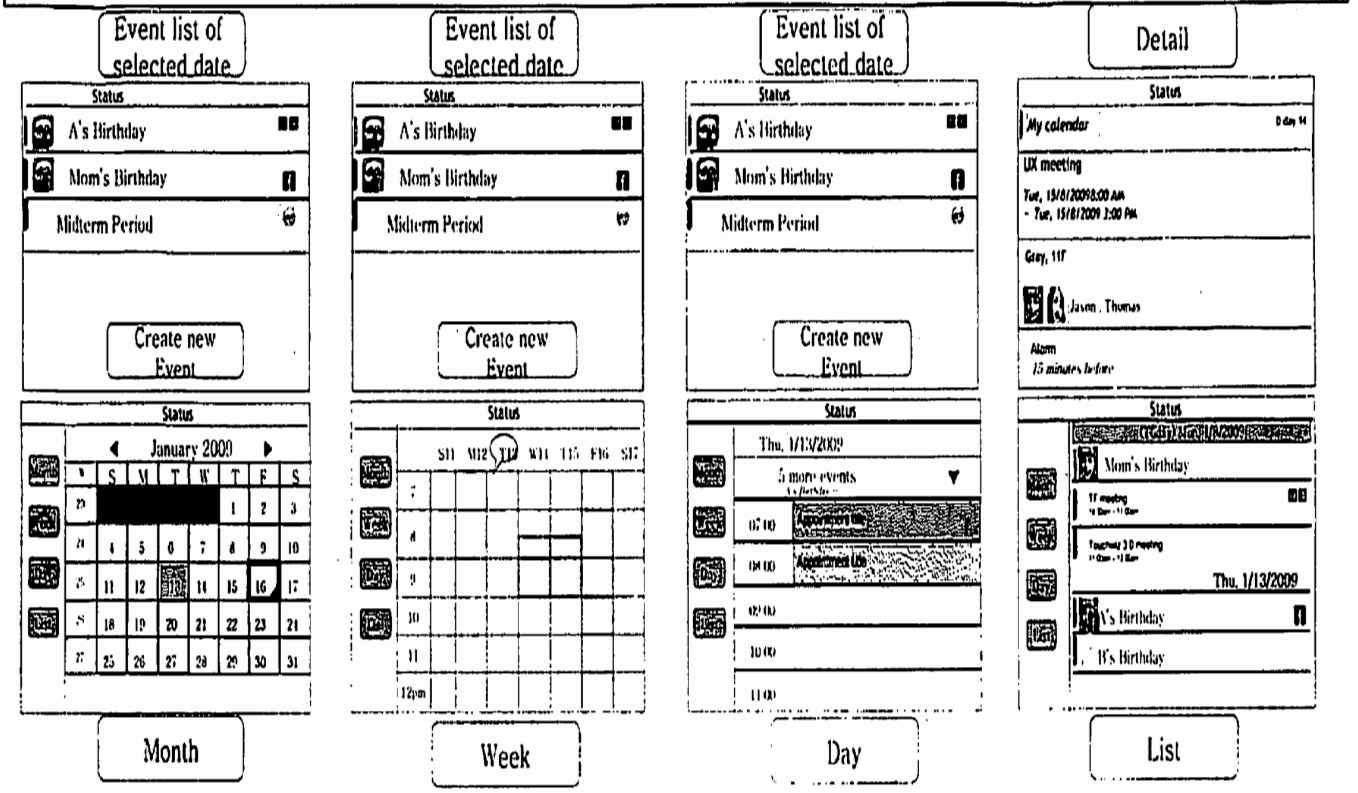
Copied from 13370939 on 05/11/2012

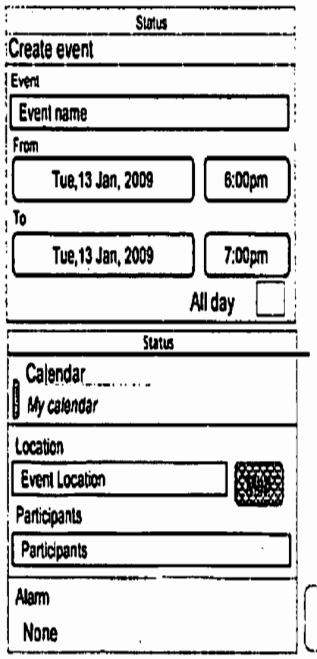
head.jpg

Calendar

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.3 – Landscape





© 2010 SAMSUNG Electronics. All rights reserved.

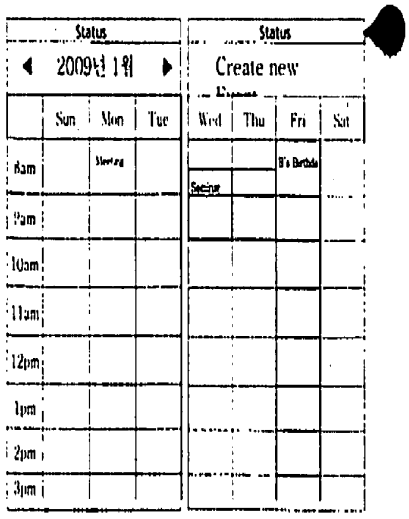
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.4 – Dual Zoom Screen



1	**Month.(Dual Zoom)** Month calendar is displayed over dual screen Selected day is not used this mode.
2	**Week (Dual Zoom)** Week calendar is displayed over dual screen Selected day is not used this mode.



1	**Event** Display event summary
2	**Create New Event Button** Go to event make screen
3	**Selected Day** If User select a day, Detail pop-up is displayed

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

2. Scenario

©2010 SAMSUNG Electronics. All rights reserved.

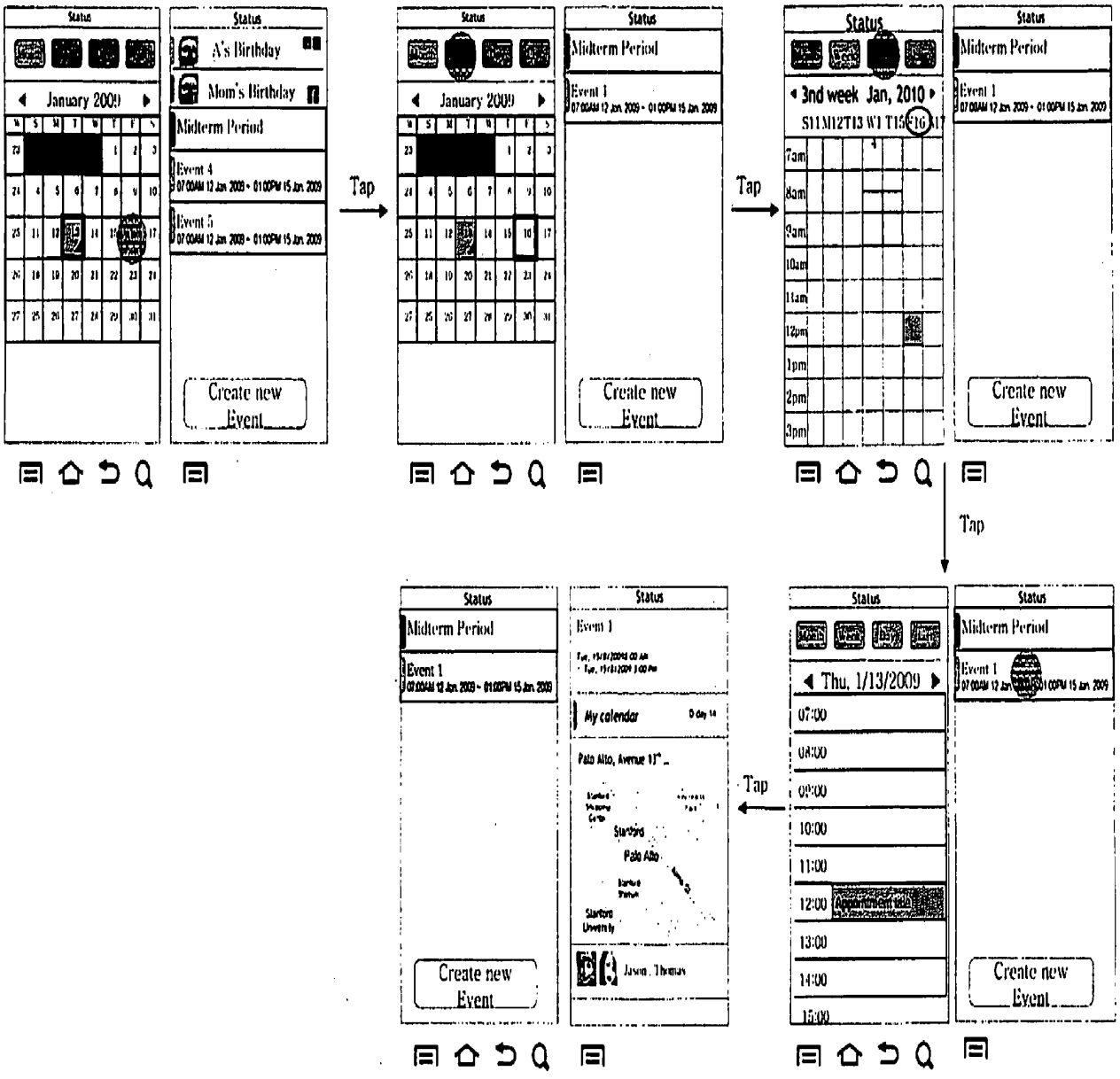
Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

2. Scenario

2.1 – Calendar Navigation

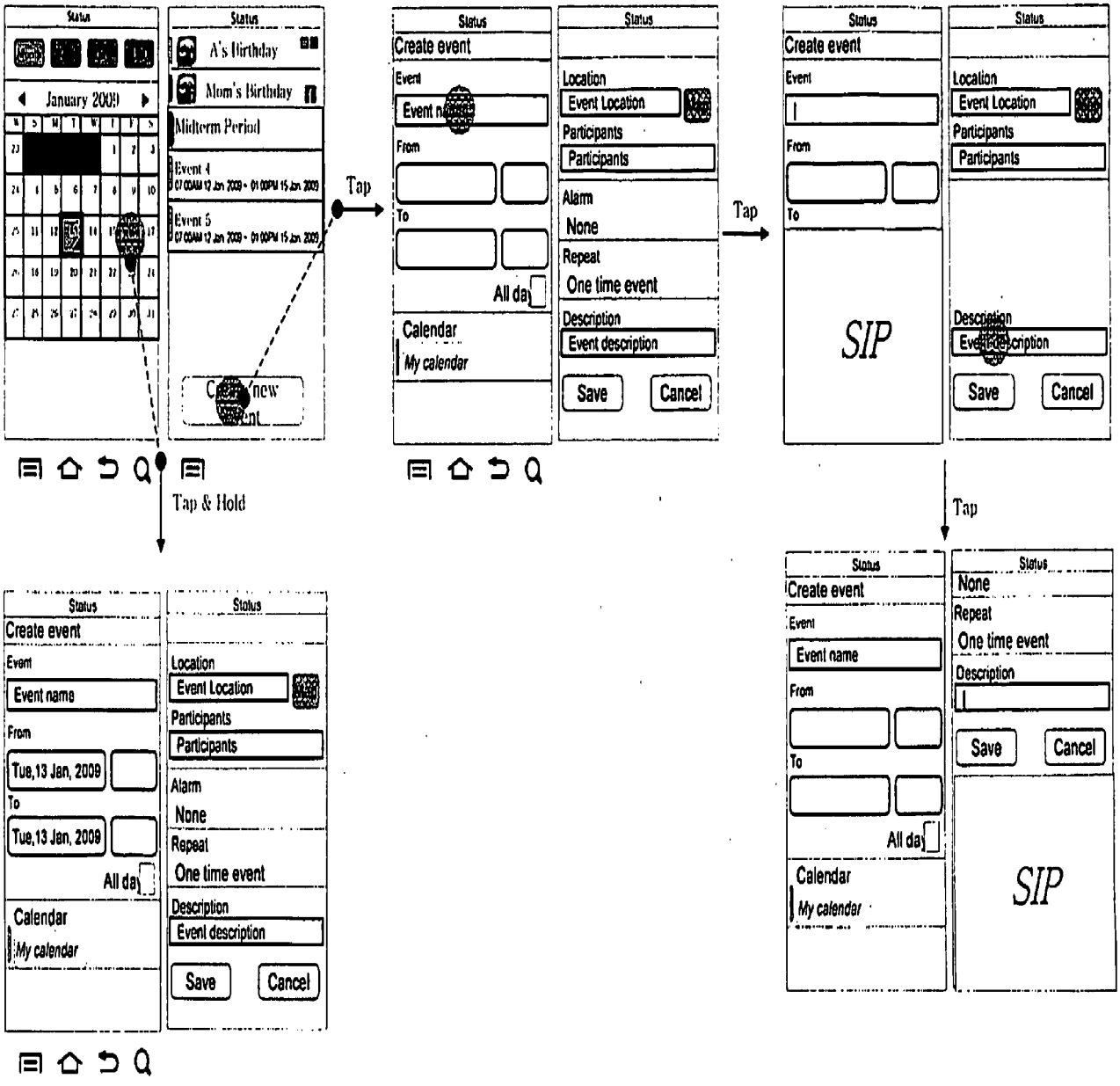


© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 – Create New Event



Event 입력 방법은 Single Display를 따른다.

© 2010 SAMSUNG Electronics. All rights reserved.

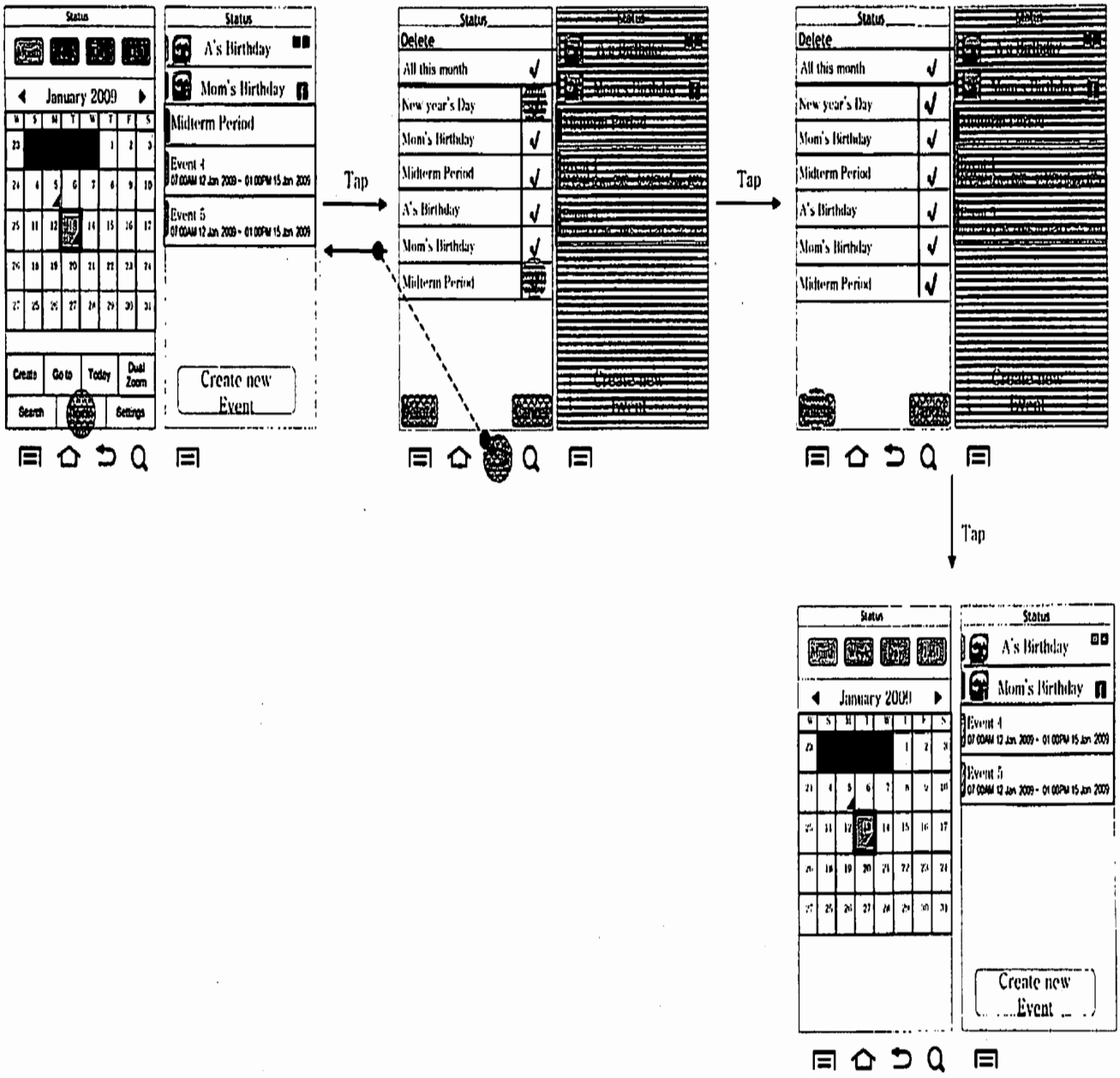
Copied from 13370939 on 05/11/2012

head.jpg

2. Scenario

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 – Menu>Delete : Month

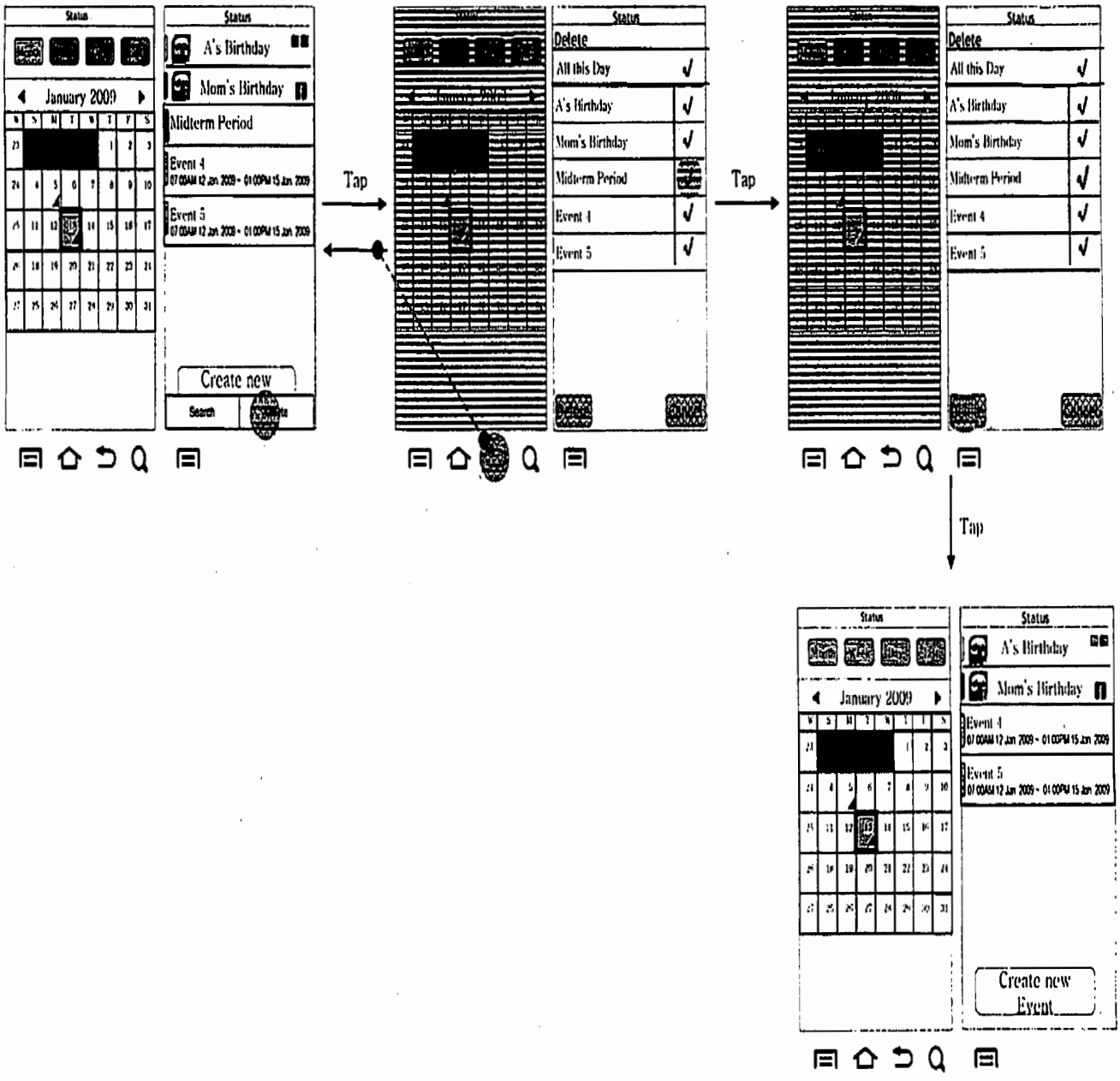


© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL 17

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 – Menu>Delete : Day Event

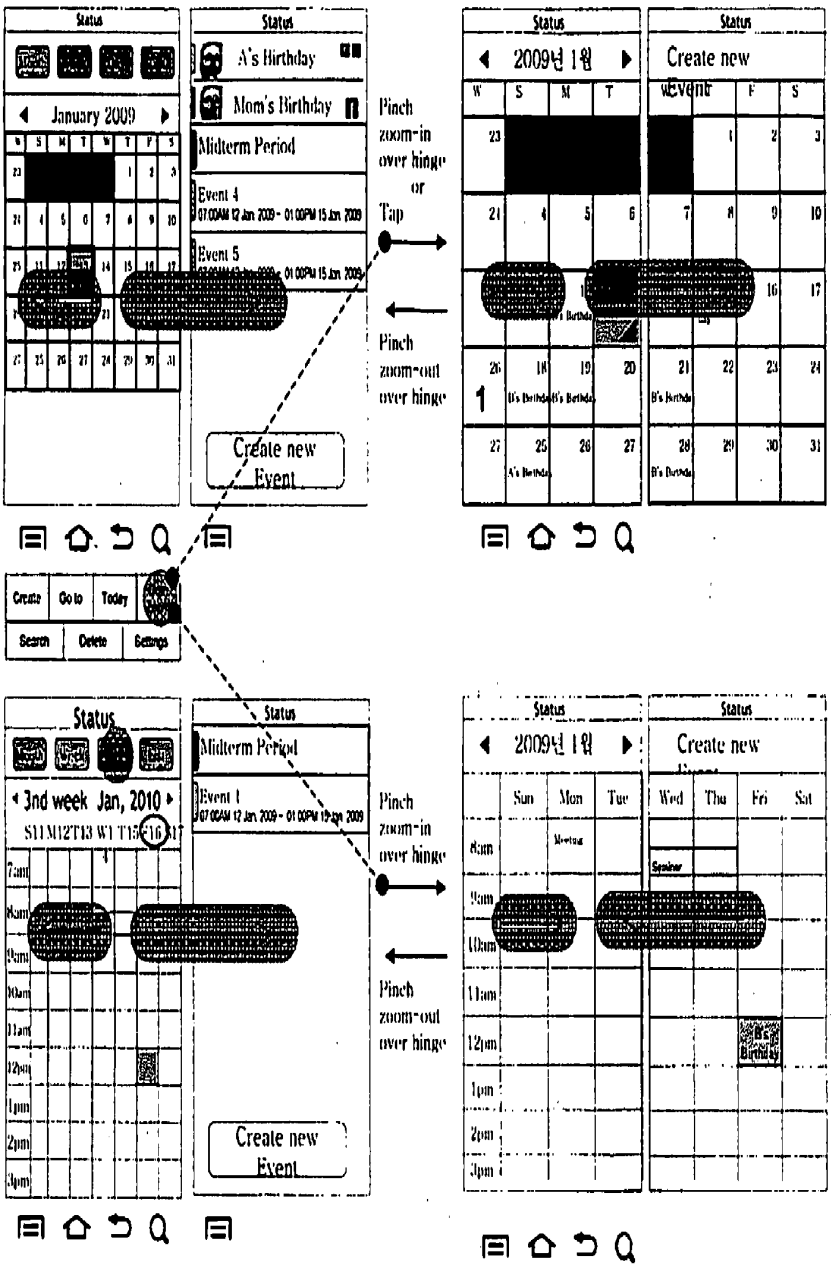


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 – Dual Zoom



©2010 SAMSUNG Electronics. All rights reserved.

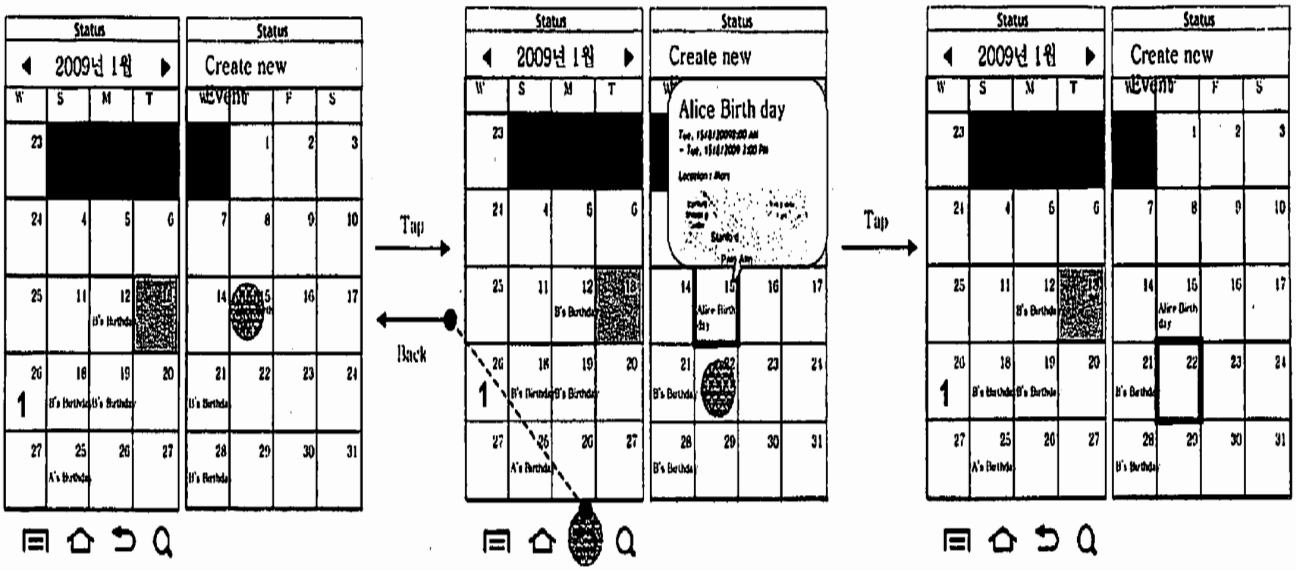
Copied from 13370939 on 05/11/2012

head.jpg

2. Scenario

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 – Dual Zoom : Select a day

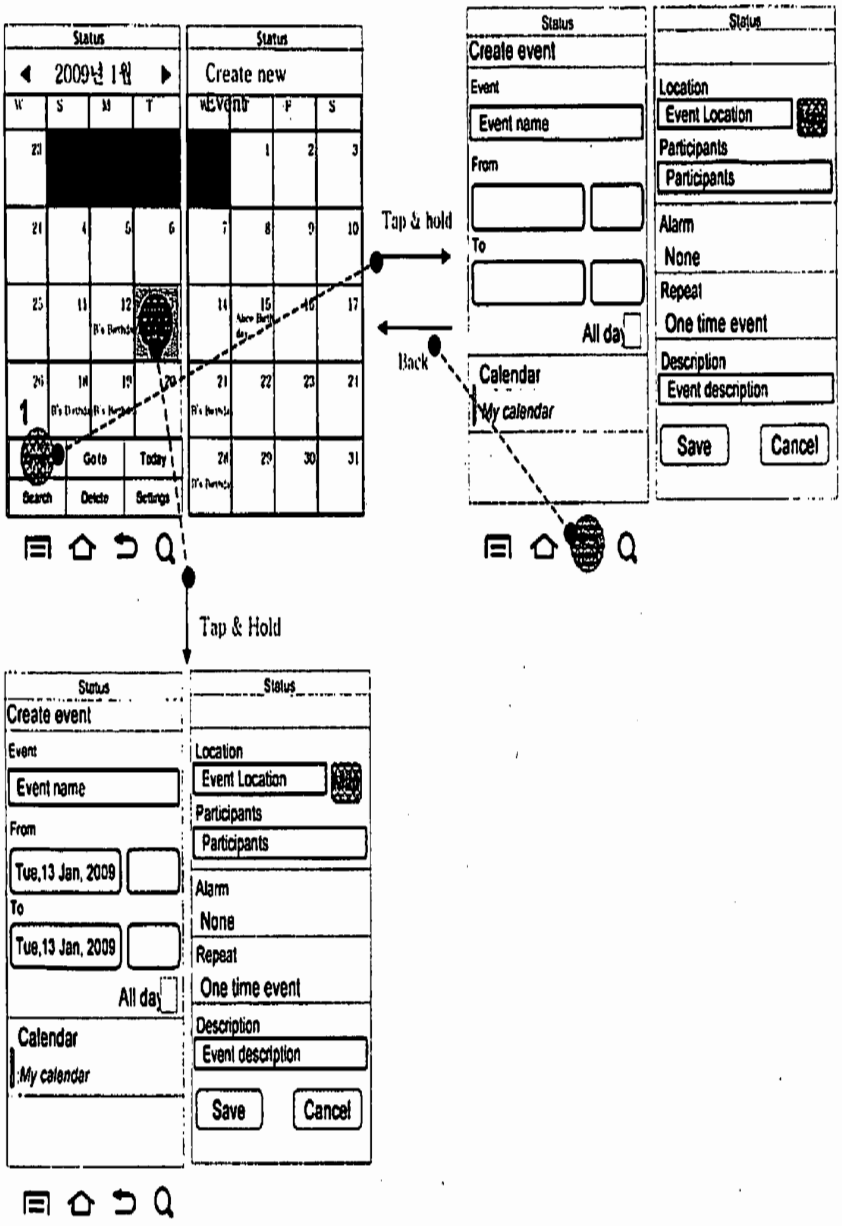


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 – Dual Zoom : Create a event



© 2010 SAMSUNG Electronics. All rights reserved.

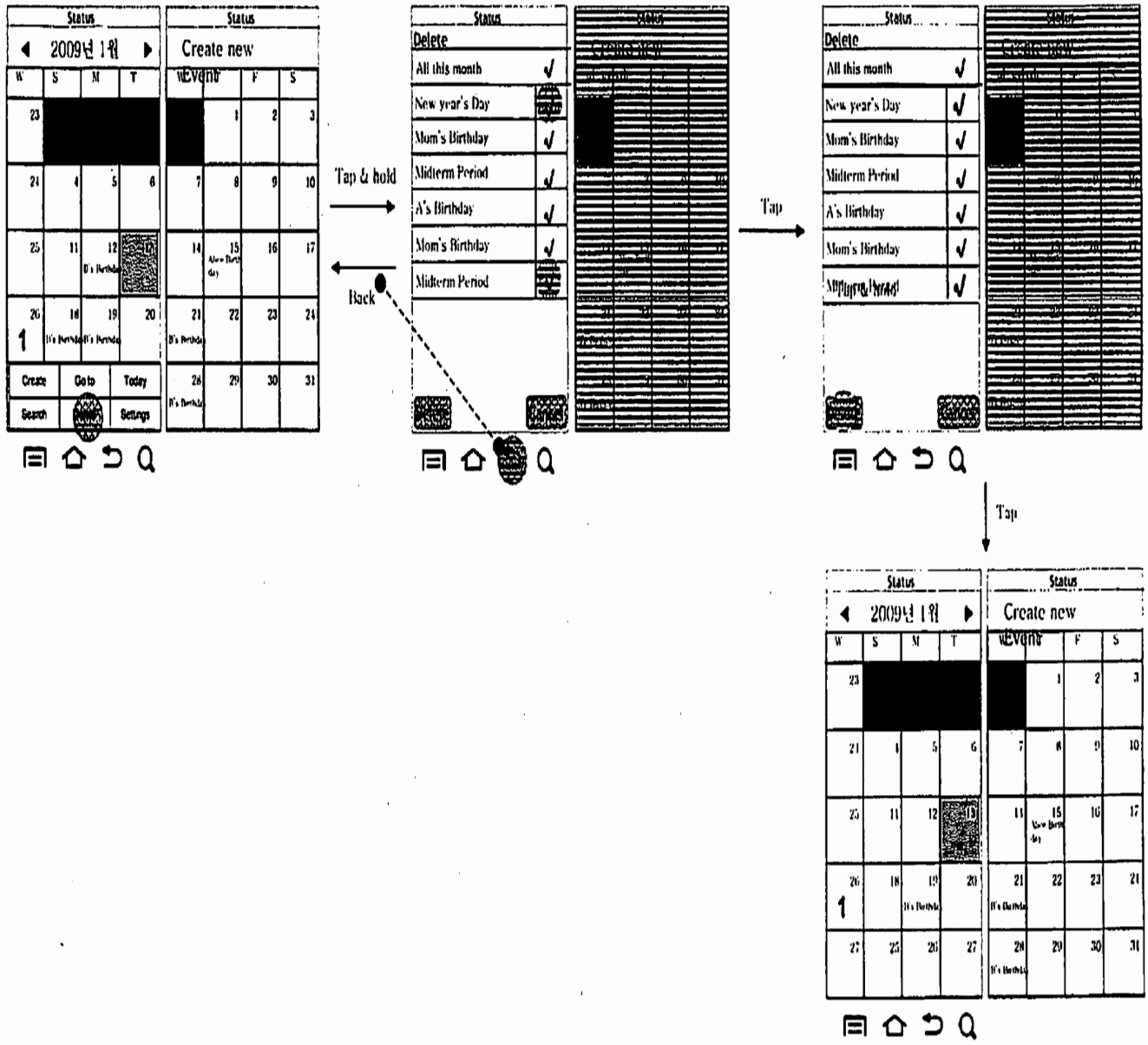
Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

2. Scenario

2.4 – Dual Zoom : Delete event



Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Dual Display Call UI Guideline
for Android

V.1.0

December 27, 2010

Contact Point :
Hyunjin Kim (truthkim@samsung.com) +82-10-8908-4559
Joonkyu Seo (joonkyu.seo@samsung.com) +82-10-2431-1289
Juyoun Lee (florial.lee@samsung.com) +82-10-4339-0026
Hyunjeong Song (songah.song@samsung.com) +82-2-2255-5563
Dongseok Ryu (dongseok.ryu@samsung.com) +82-2-2255-5424

SAMSUNG ELECTRONICS

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL 1

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document History

No.	Sent	Version	File Name	Contents
01	December 27, 2010	v.1.0	[Duplex_Android] Call_v.1.0_20101227	Document Origination

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

Notation Guide

The graphic is for illustrative purposes only and may not represent the actual implementation.

Comments Style

Principle Blahblahblahblah	Spec Blahblahblahblah	Blahblahblahblah	Comment Blahblahblahblah
A definition of UI principle. Definition of comments that can be fundamental and exceptional conditions, including the definition about the vocabulary.	Spec Description	Description for situation change in scenario and condition & Default Value	Samsung UX Team Comment

Line Style

Primary Flow	Secondary Flow	Defining functions

Flow Iconography

Question?	Idle
Decision Point	End Flow: Idle Screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document Flag		
v.xx Added BlahblahblahBlahblahblah	v.xx Updated BlahblahblahBlahblahblah	v.xx Added BlahblahblahBlahblahblah / v.xx Updated BlahblahblahBlahblahblah
Added page	Updated page	Keep Previous History

Document Flag		
TBD	v.xx Deleted : Blahblahblah	See Android Guideline
TBD functions	Deleted functions	The rule is same with the single android phone.

Document Flag	
Workflows	Workflows
AT&T MAXD UE flows	Samsung UE flows

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

1. Key screen
1.1 - Call Start Screen
1.2 - Portrait
1.3 - Landscape

2. Scenario
2.1 - Outgoing Call
2.2 - Incoming Call
2.3 - Reject with message
2.4 - 2nd incoming Call
2.5 - Incoming call - Overturn

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

1. Key Screen

© 2010 SAMSUNG Electronics. All rights reserved.

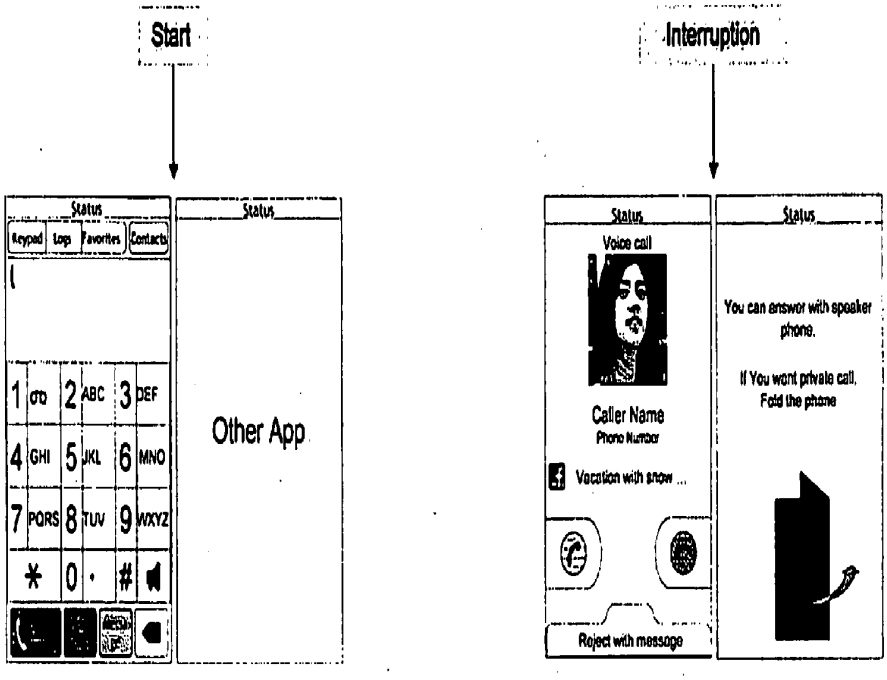
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.1 – Call Start Screen : Portrait



Navigation rules
Call do not support expand view except folding information.
For other rules, see the android guideline for single display.

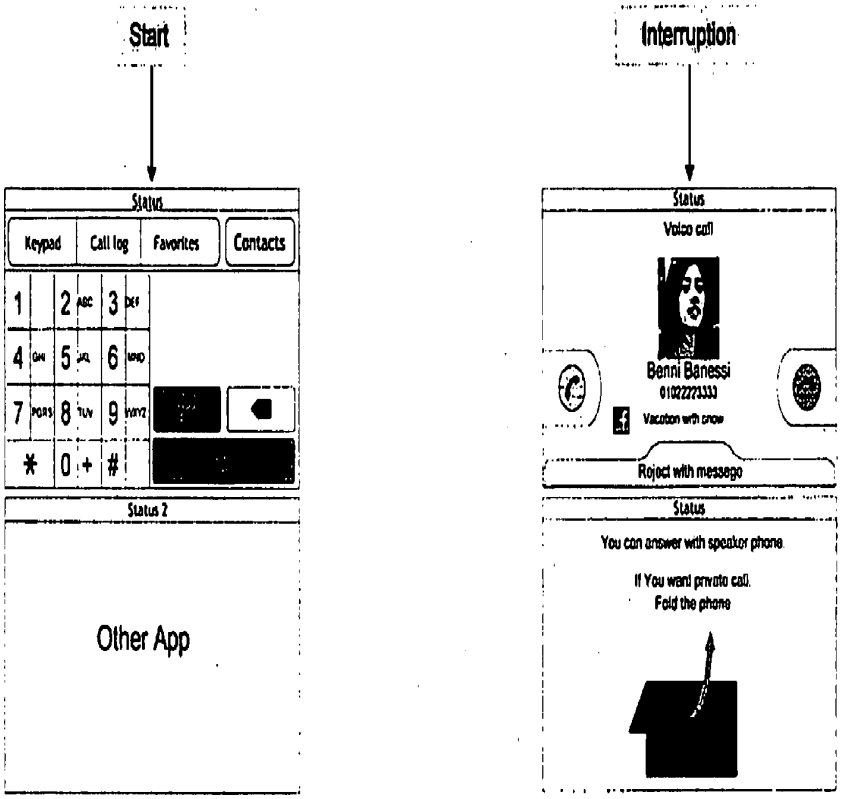
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.1 – Call Start Screen : Landscape



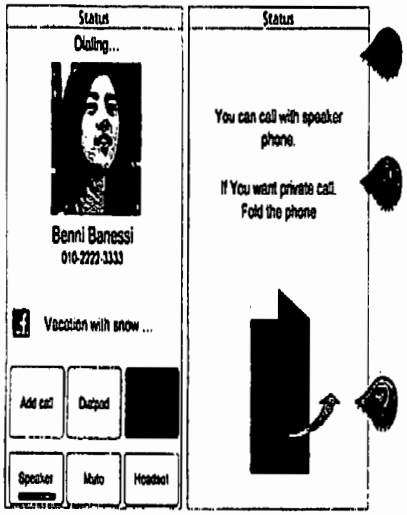
Navigation rules
Call do not support expand view except folding information.
For other rules, see the android guideline for single display.

© 2010 SAMSUNG Electronics. All rights reserved.

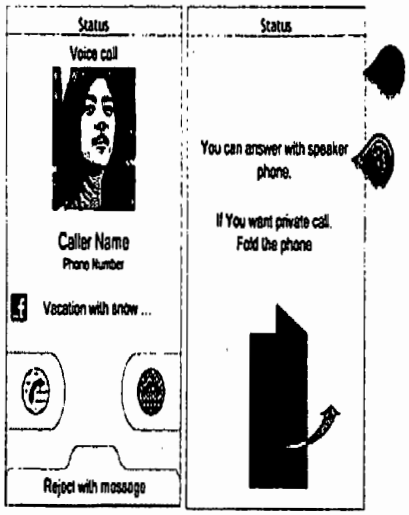
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait



1	**Outgoing call** Display folding guide in sub screen
2	**Incoming call** Display folding guide in sub screen



1	**Folding guide message** Folding message for outgoing call
2	**Folding guide animation** Iteration folding animation
3	**Folding guide message** Folding message for incoming call

For other rules, see the android guideline for single display.

© 2010 SAMSUNG Electronics. All rights reserved.

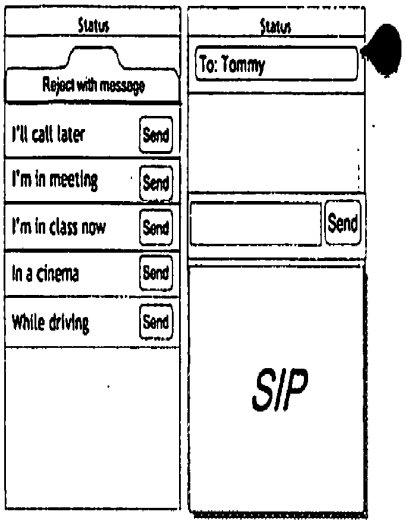
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait



1 Reject message list & Message Input
User can select or type a reject message.

For other rules, see the android guideline for single display.

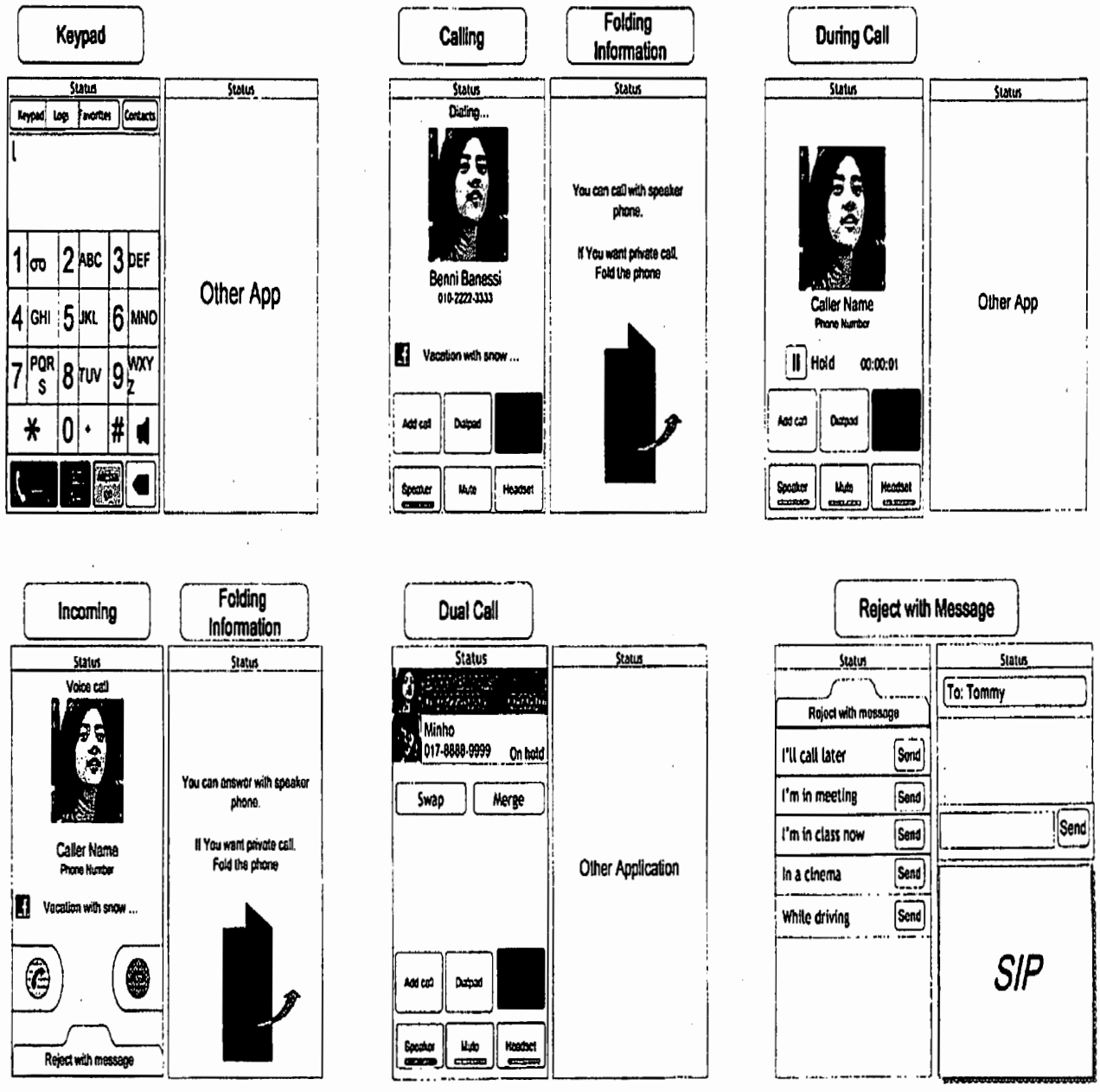
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Portrait : Key-screen



© 2010 SAMSUNG Electronics All rights reserved.

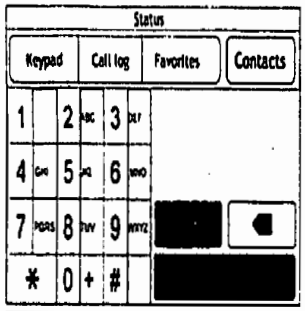
Copied from 13370939 on 05/11/2012

head.jpg

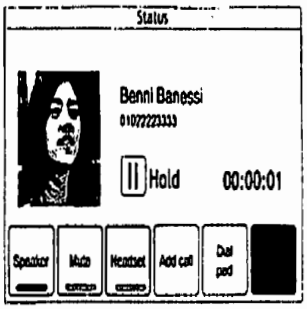
1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

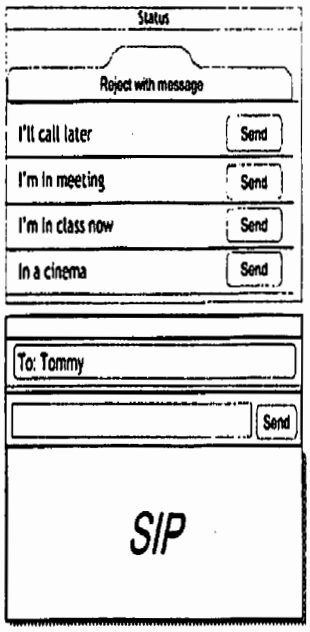
1.3 – Landscape : Key-screen





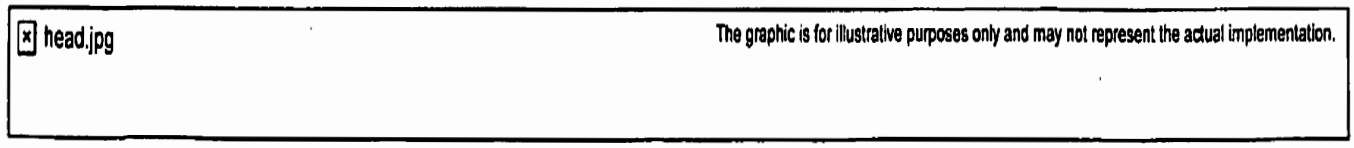






© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012



2. Scenario

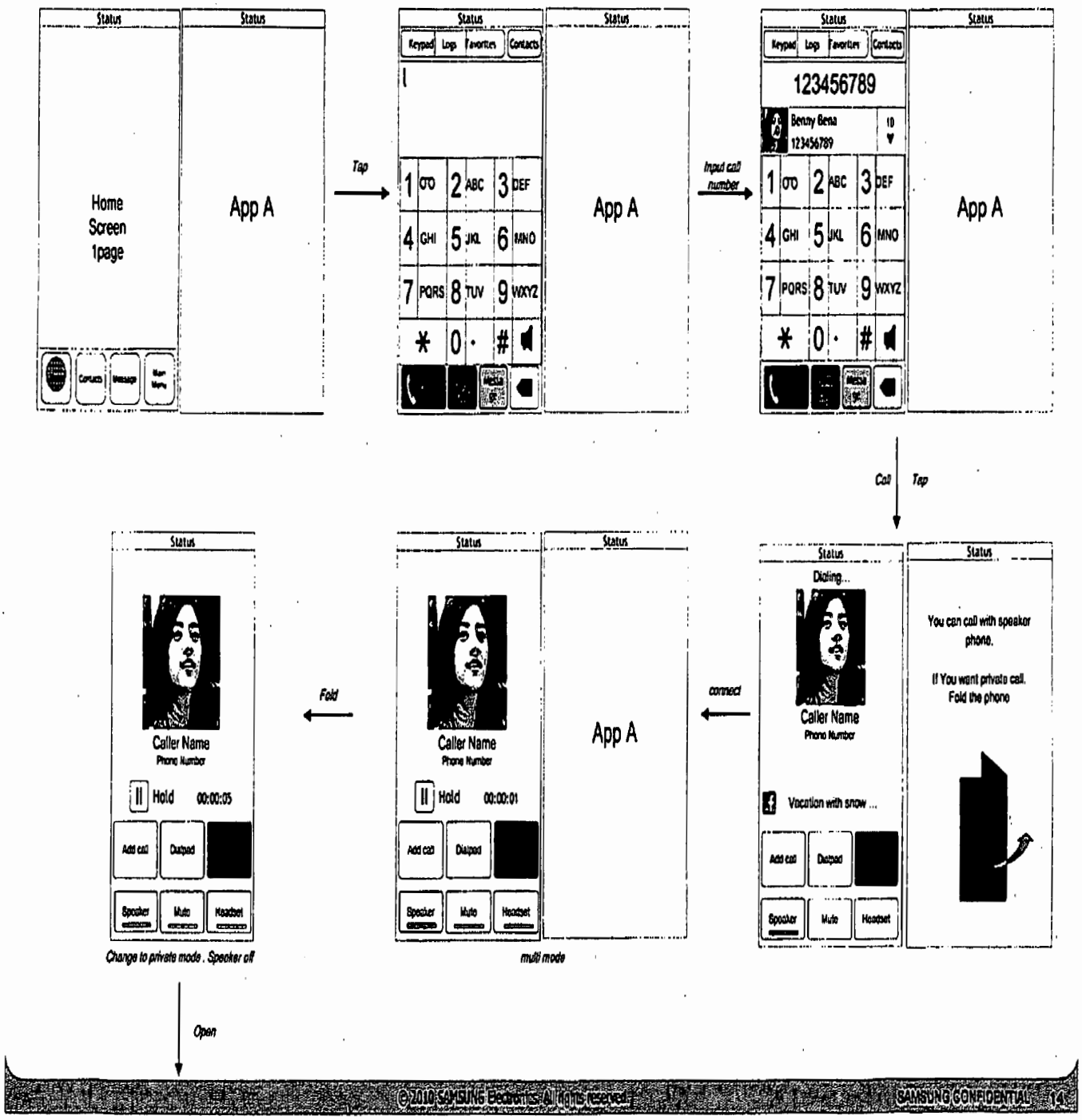
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 – Outgoing Call : Multi Mode



©2010 SAMSUNG Electronics. All rights reserved.

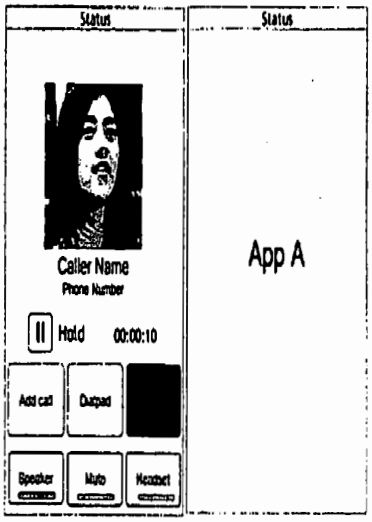
Copied from 13370939 on 05/11/2012

head.jpg

Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 – Outgoing Call : Multi Mode



Change to public mode. Speaker On

Copied from 13370939 on 05/11/2012

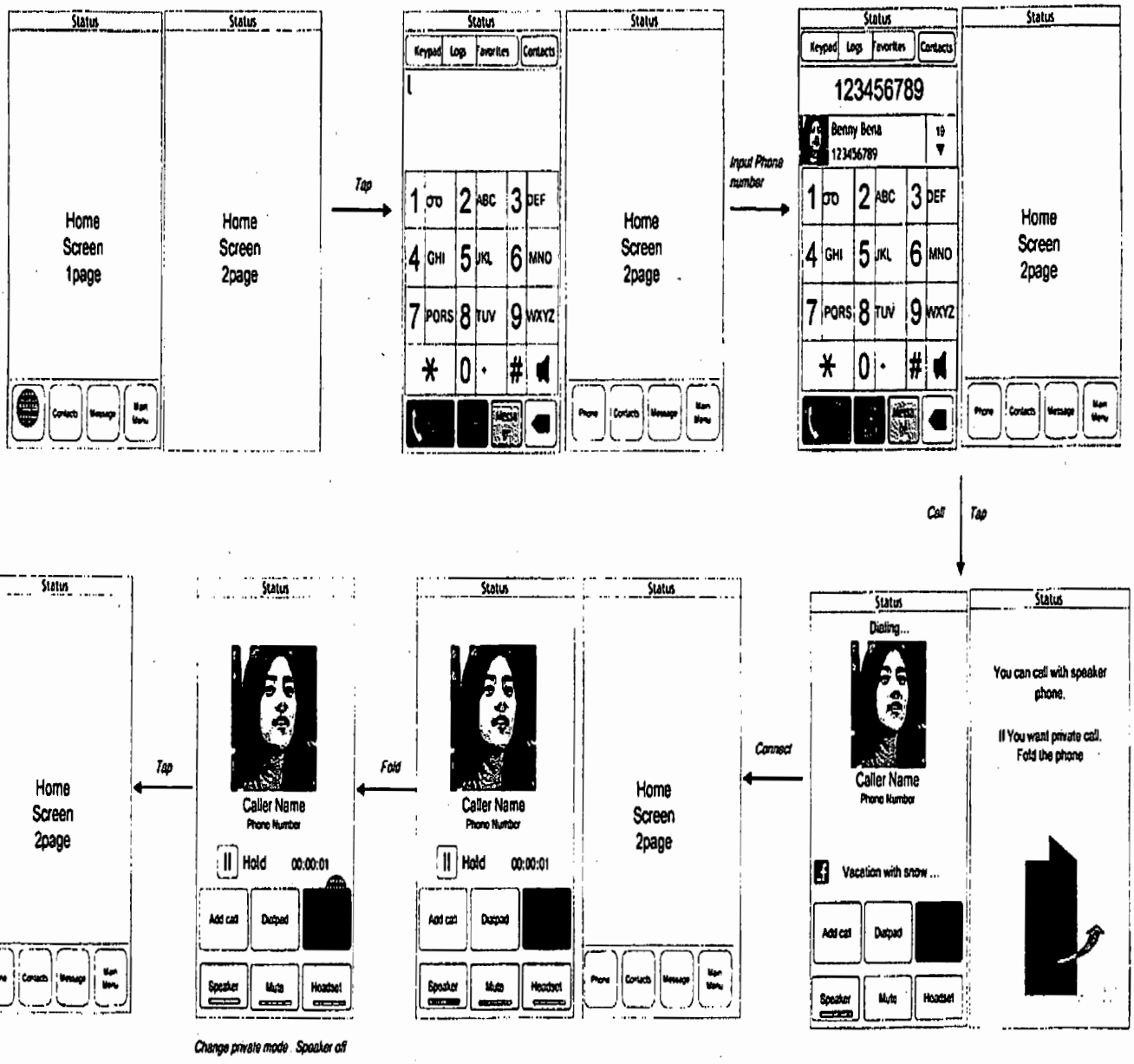
head.jpg

Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 – Outgoing Call : Expand Mode

Expand Mode



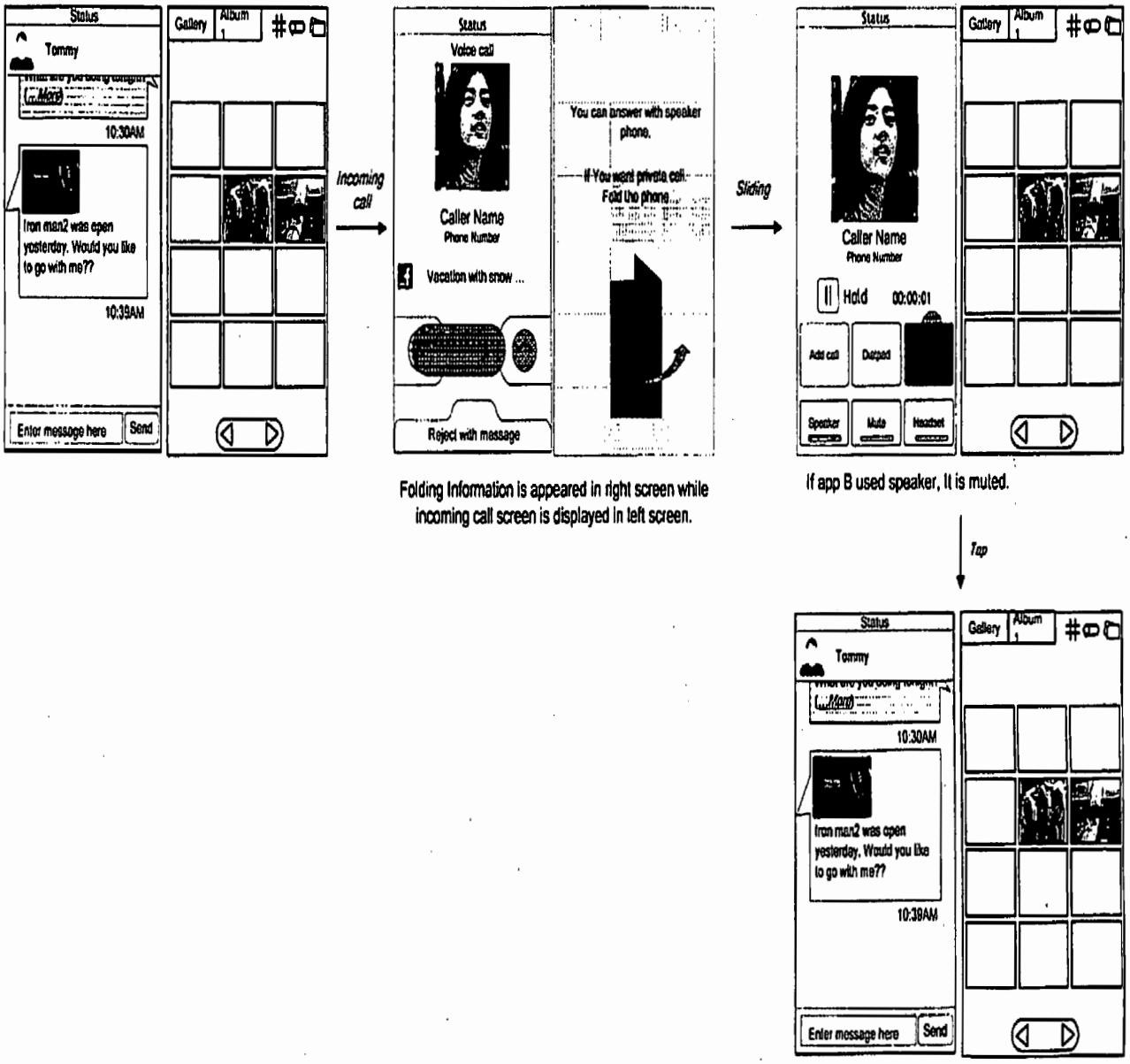
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 – Incoming Call : Multi Mode



©2010 SAMSUNG Electronics. All rights reserved.

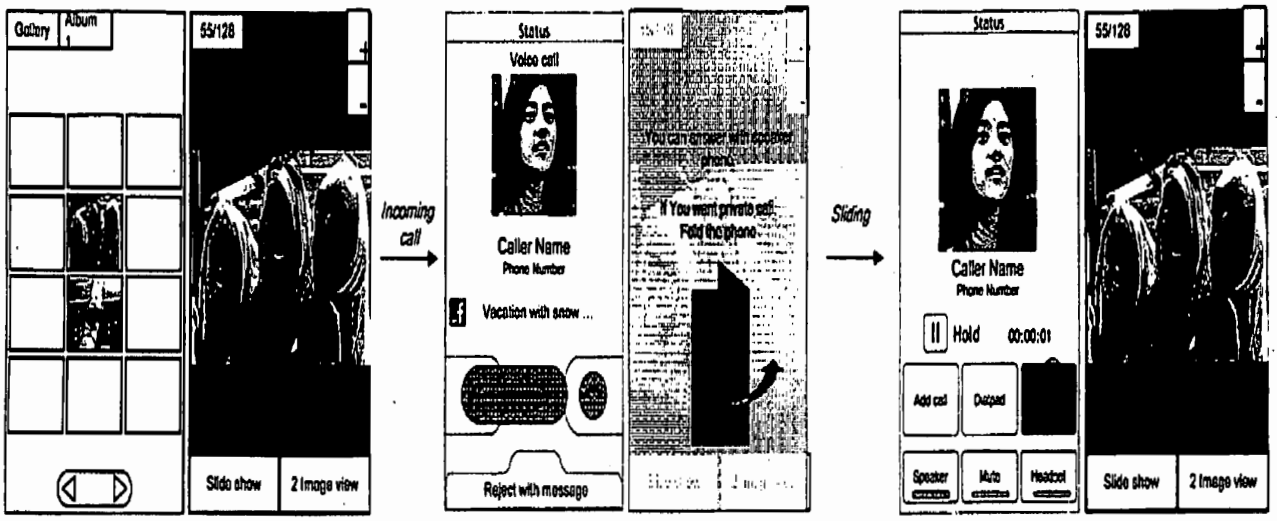
Copied from 13370939 on 05/11/2012

head.jpg

Key Screen

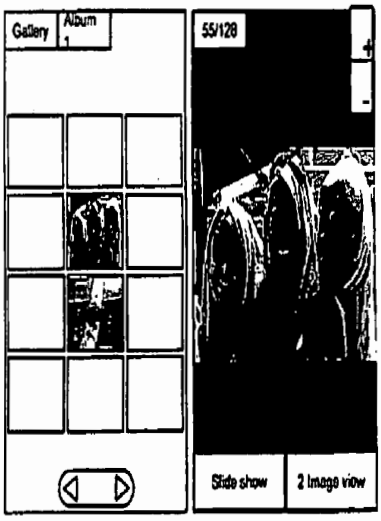
The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 – Incoming Call : Expand Mode



Folding Information is appeared in right screen while Incoming call screen is displayed in left screen.

Tap



Go back to previous screen

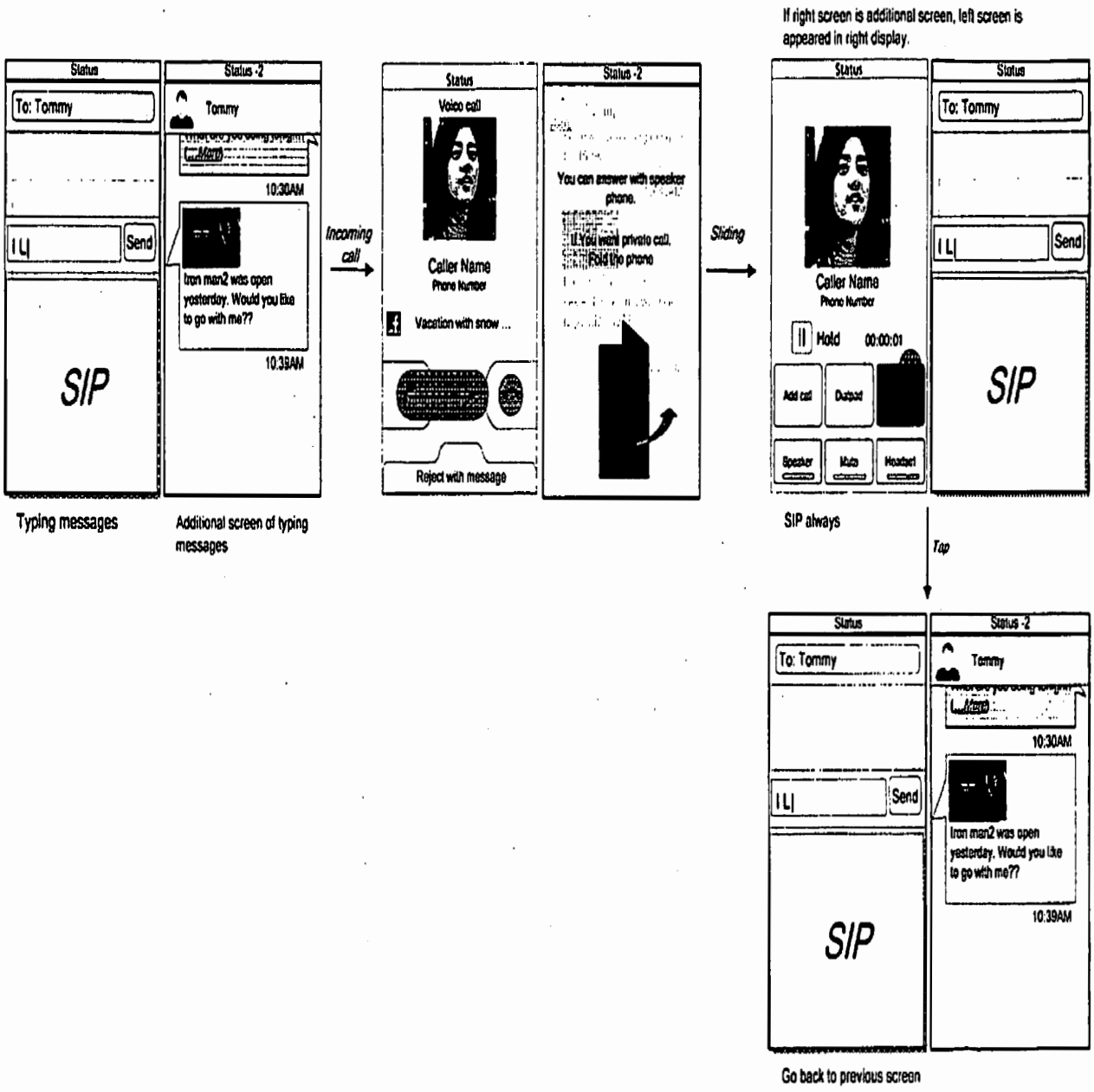
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 – Incoming Call : Expand Mode (when typing)

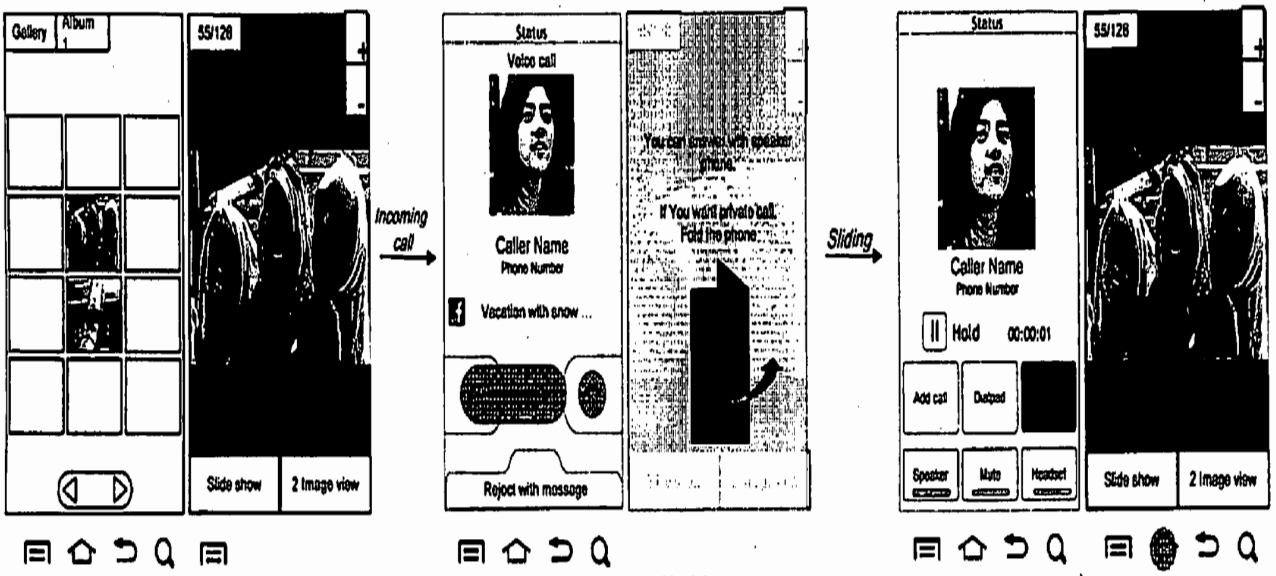


Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 – Incoming Call : Expand Mode (Play another app)



© 2010 SAMSUNG Electronics. All rights reserved.

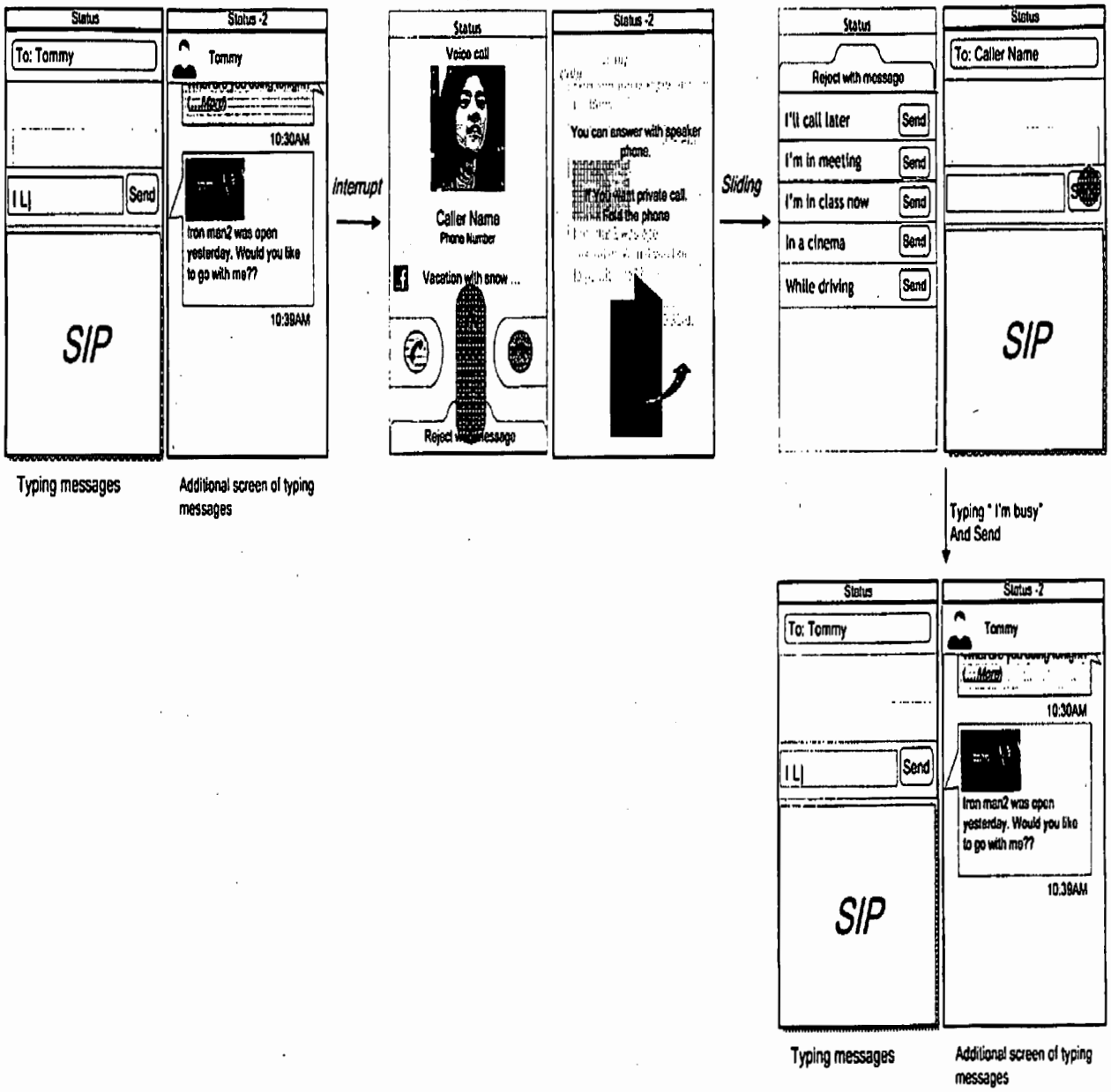
Copied from 13370939 on 05/11/2012

head.jpg

Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 – Reject with message



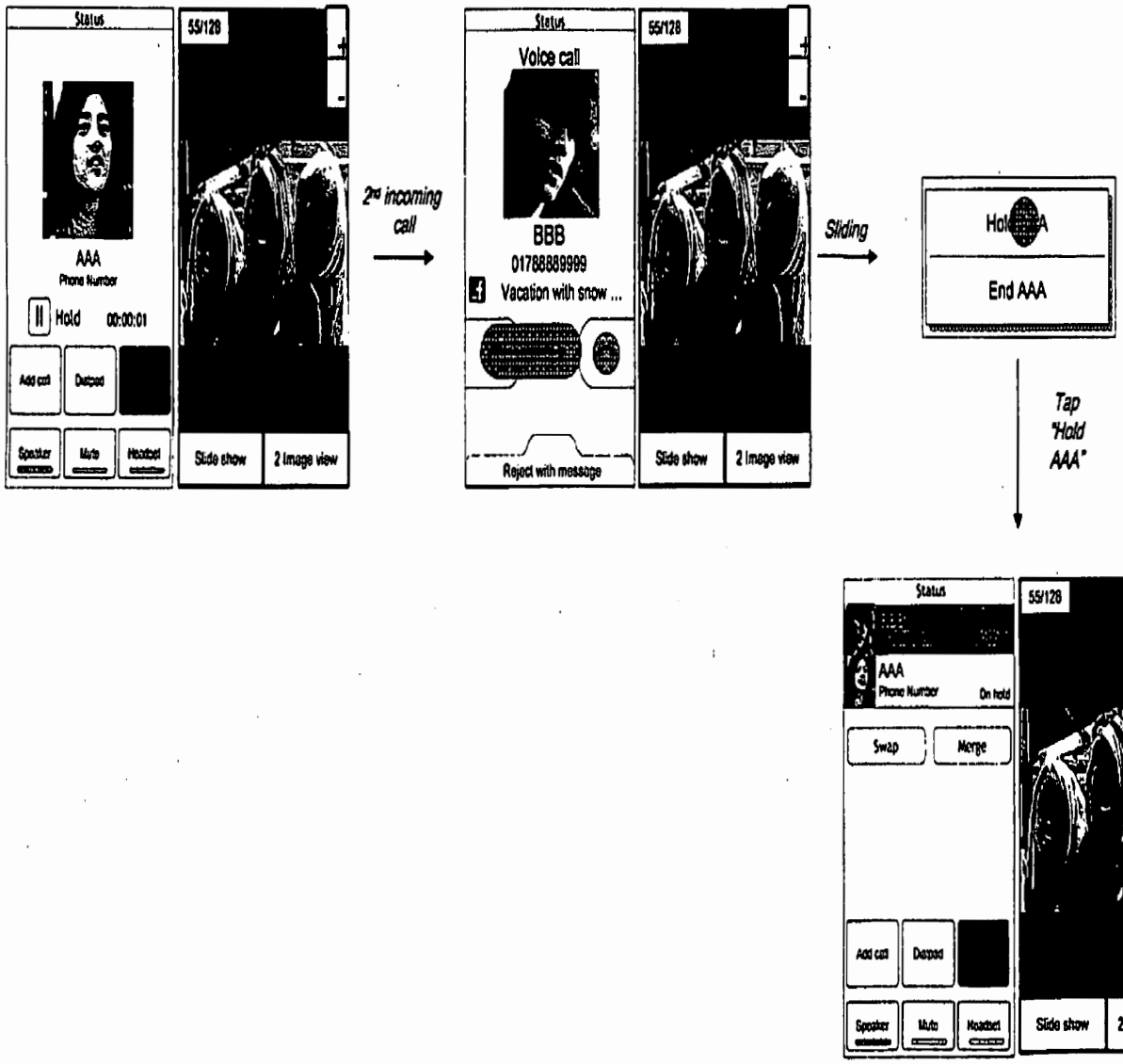
© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 – 2nd incoming Call



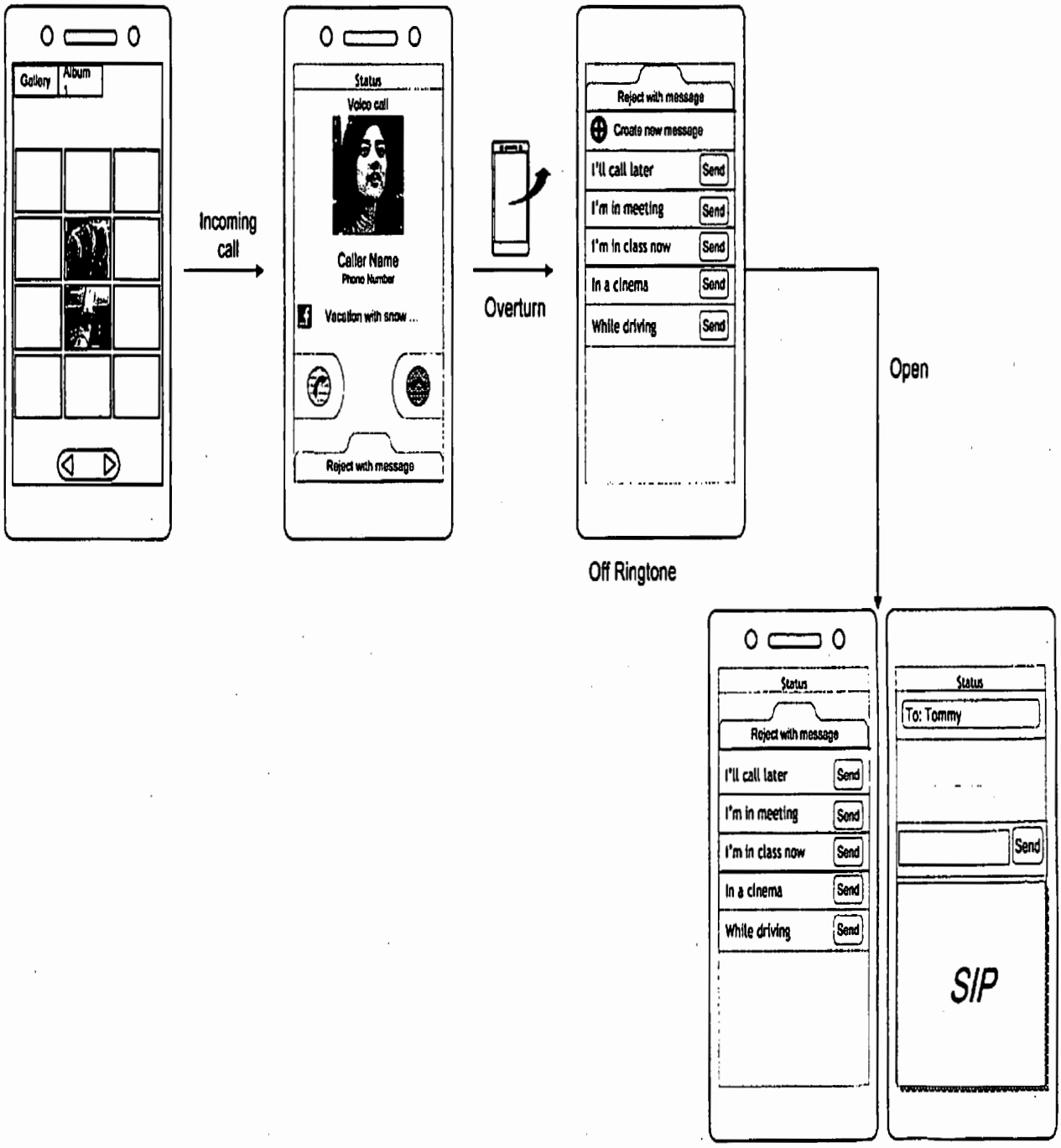
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg
Key Screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.5 – Incoming call - Overturn



© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Dual Display Camera UI Guideline
for Android

V.1.0

December 27, 2010

Contact Point :
Hyunjin Kim (truthkim@samsung.com) +82-10-8908-4559
Joonkyu Seo (joonkyu.seo@samsung.com) +82-10-2431-1289
Juyoun Lee (florial.lee@samsung.com) +82-10-4339-0026
Hyunjeong Song (songah.song@samsung.com) +82-2-2255-5563
Dongseok Ryu (dongseok.ryu@samsung.com) +82-2-2255-5424

© 2010 SAMSUNG Electronics All rights reserved
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

head.jpg

Document History

The graphic is for illustrative purposes only and may not represent the actual implementation.

No.	Sent	Version	File Name	Contents
01	December 27, 2010	v.1.0	[Duplex_Android] Camera_v.1.0_20101227	Document Origination

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Notation Guide

The graphic is for illustrative purposes only and may not represent the actual implementation.

Comments Style

Principle Blahblahblahblah	Spec Blahblahblahblah	Blahblahblahblah	Comment Blahblahblahblah
A definition of UI principle. Definition of comments that can be fundamental and exceptional conditions, including the definition about the vocabulary.	Spec Description	Description for situation change in scenario and condition & Default Value	Samsung UX Team Comment

Line Style

Primary Flow	Secondary Flow	Defining functions

Flow Iconography

Question?	
Decision Point	End Flow: Idle Screen

©2010 SAMSUNG Electronics. All rights reserved.

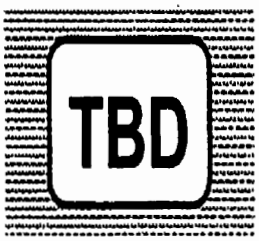
Copied from 13370939 on 05/11/2012

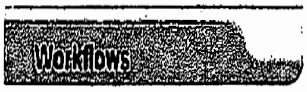
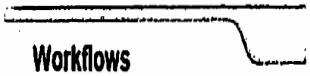
head.jpg

Document Flag

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document Flag		
v.xx Added BlahblahblahBlahblahblah	v.xx Updated BlahblahblahBlahblahblah	v.xx Added BlahblahblahBlahblahblah v.xx Updated BlahblahblahBlahblahblah
Added page	Updated page	Keep Previous History

Document Flag		
		
TBD functions	Deleted functions	The rule is same with the single android phone.

Document Flag	
	
AT&T MAXD UE flows	Samsung UE flows

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Key screen
1.1 - Camera Mode
1.2 - Camera Start Screen
1.3 - Portrait
1.4 - Landscape

2. Scenario
2.1 - Folding interaction
2.2 - Camera mode change
2.3 - Baby Mode Animation
2.4 - Timer shooting

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

1. Key Screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

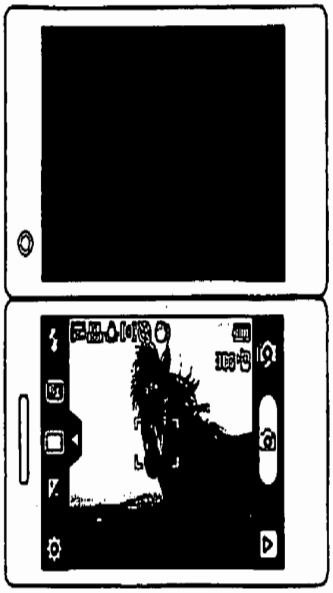
1.1 – Camera Mode (TBD)

Camera location is not decided.

Dual Display HHP can support various camera shooting method.

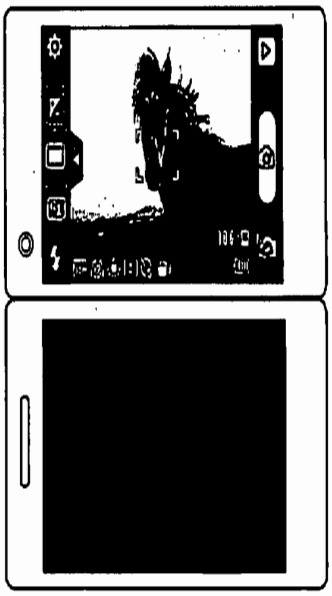
Basic Camera Mode

- Shooting for Scene or models
- Live view and camera menu is displayed in main-screen.
- off sub-screen (user call camera mode menu using two finger double tap)



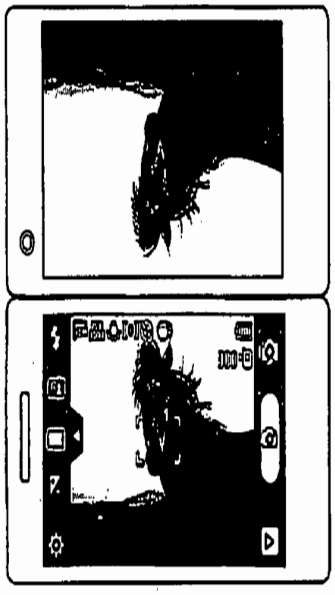
Self Camera Mode

- Shooting for shooter himself.
- Live view and camera menu is displayed in sub-screen (camera is attached screen)
- off main-screen (user call camera mode menu using two finger double tap)



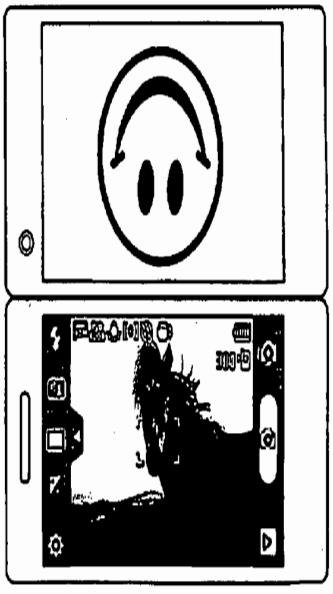
Dual Camera Mode

- Shooting for models
- main-screen display live view and camera menu.
- sub-screen display only live view.



Baby Camera Mode

- Shooting for baby
- main-screen display live view and camera menu.
- sub-screen display animation for attention.

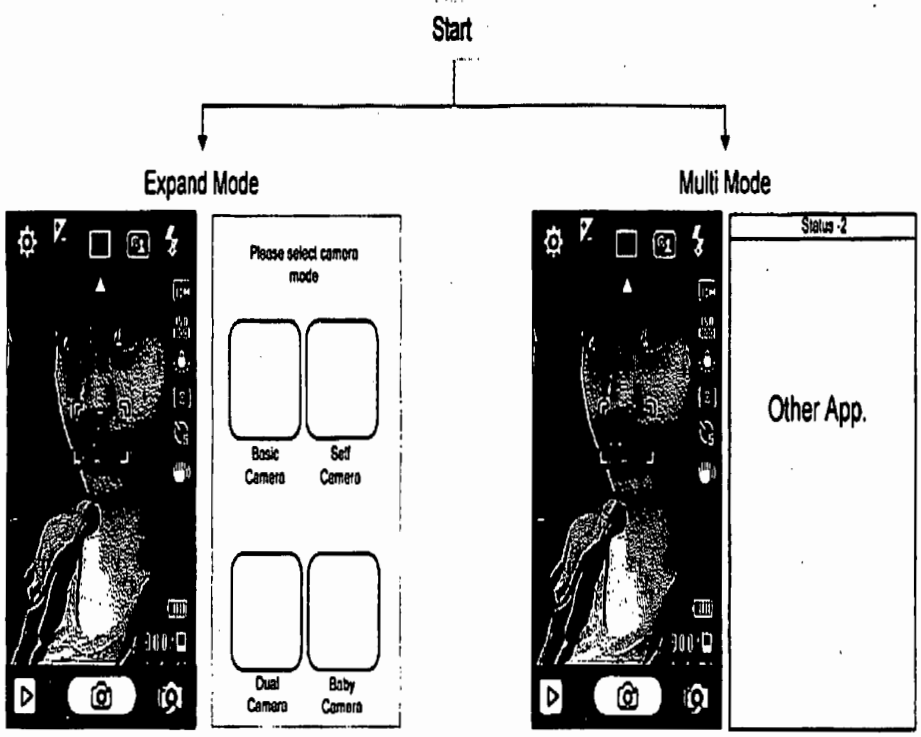


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2– Camera Start Screen

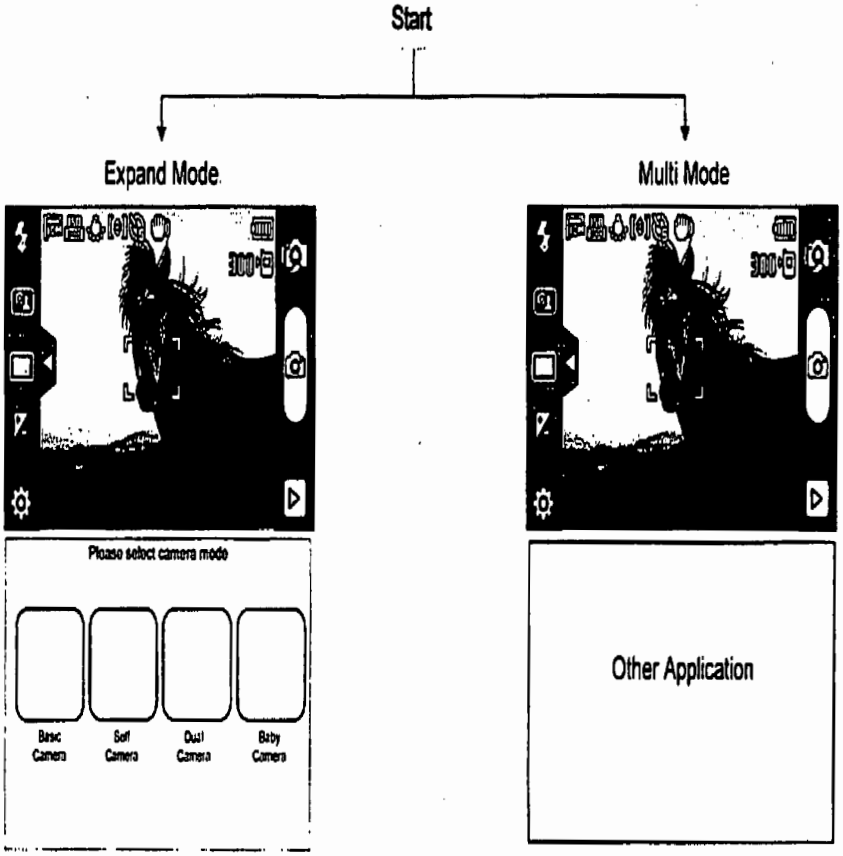


©2010 SAMSUNG Electronics All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.2 – Camera Start Screen



©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

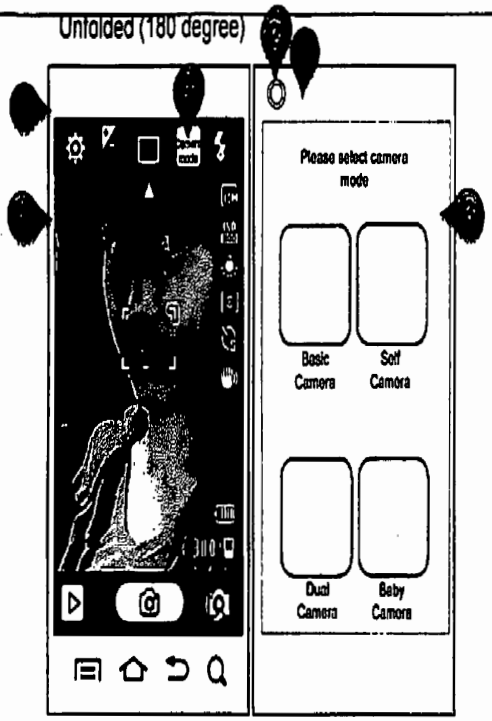
head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Key-screen

1.3 - Portrait

Unfolded (180 degree)



1	**Main Screen: Unfolded** Not have the camera module
2	**Sub Screen : : Unfolded** Have the camera module

1	**Live Screen** follow the single cameras rules.
2	**Camera** TBD
3	**Camera Mode Button** 4 modes : Basic, Self, Dual, Baby
4	**Current Camera mode : Default – Basic camera** User can change the camera mode. Selected Mode icon is displayed Basic Camera — Basic Camera Self Camera — Self Camera Dual Camera — Dual Camera Baby Camera — Baby Camera

© 2010 SAMSUNG Electronics. All rights reserved.

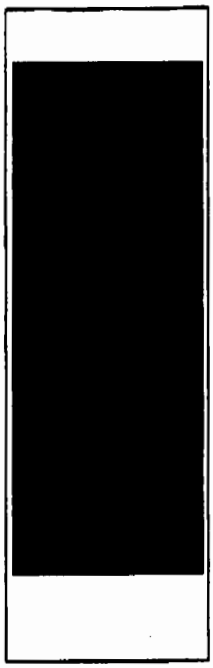
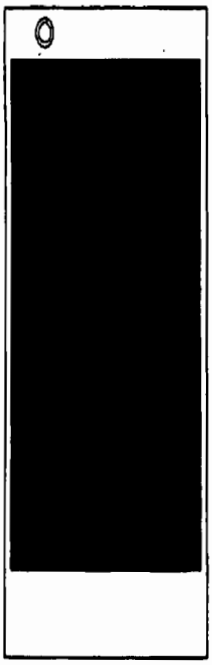
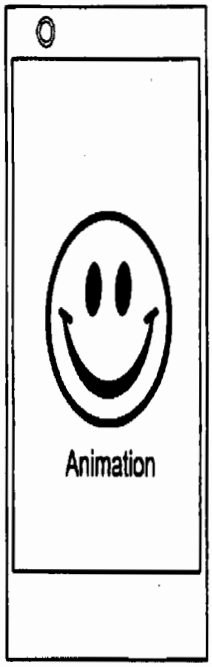
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.3 - Portrait

	Basic Camera	Self Camera	Dual Camera	Baby Camera
Main Screen				
Sub Screen				

©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

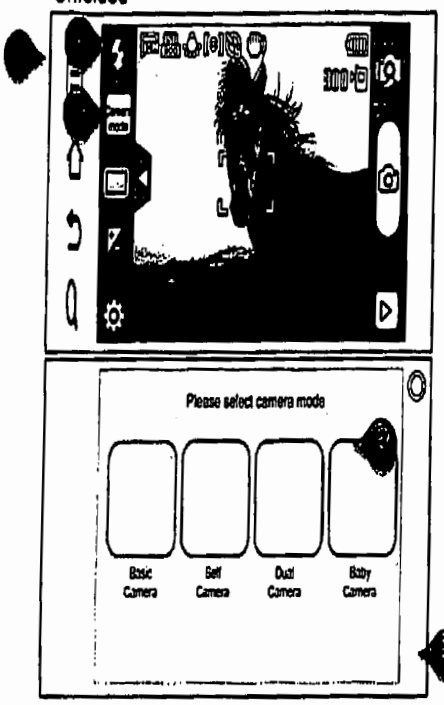
head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Key-screen

1.4 - Landscape

Unfolded



1	**Main Screen: Unfolded** Not have the camera module
2	**Sub Screen : : Unfolded (180 degree)** Have the camera module

1	**Live Screen** follow the single cameras rules.
2	**Camera** TBD
3	**Camera Mode Button** 4 modes : Basic, Self, Dual, Baby
4	**Current Camera mode : Default – Basic camera** User can change the camera mode. Selected Mode Icon is displayed Basic Camera: Basic Camera Self Camera: Self Camera Dual Camera: Dual Camera Baby Camera: Baby Camera

© 2010 SAMSUNG Electronics. All rights reserved.

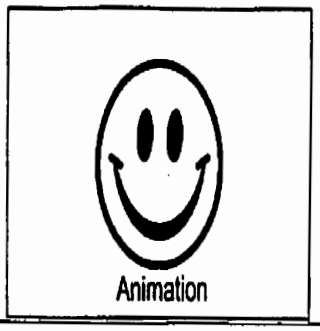
Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

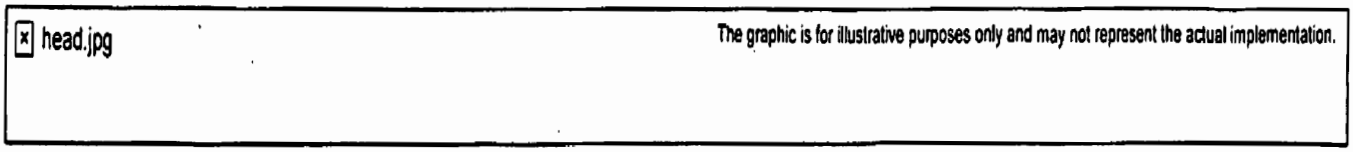
1. Key-screen

1.4 - Landscape

	Main Screen	Sub Screen
Basic Camera		
Self Camera		
Dual Camera		
Baby Camera		 Animation

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012



2. Scenario

©2010 SAMSUNG Electronics All rights reserved.

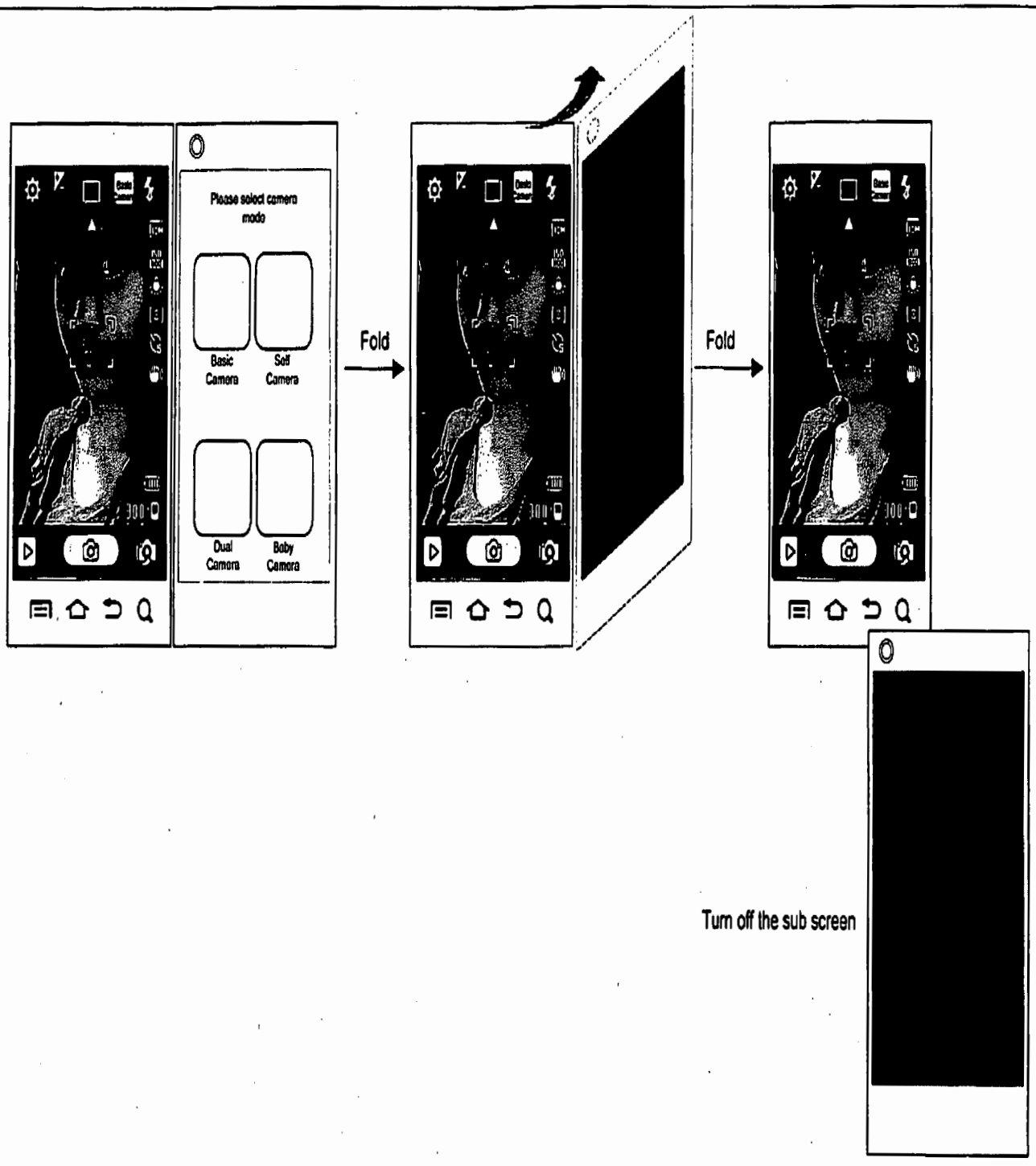
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 Folding Interaction : Basic Camera



© 2010 SAMSUNG Electronics all rights reserved.

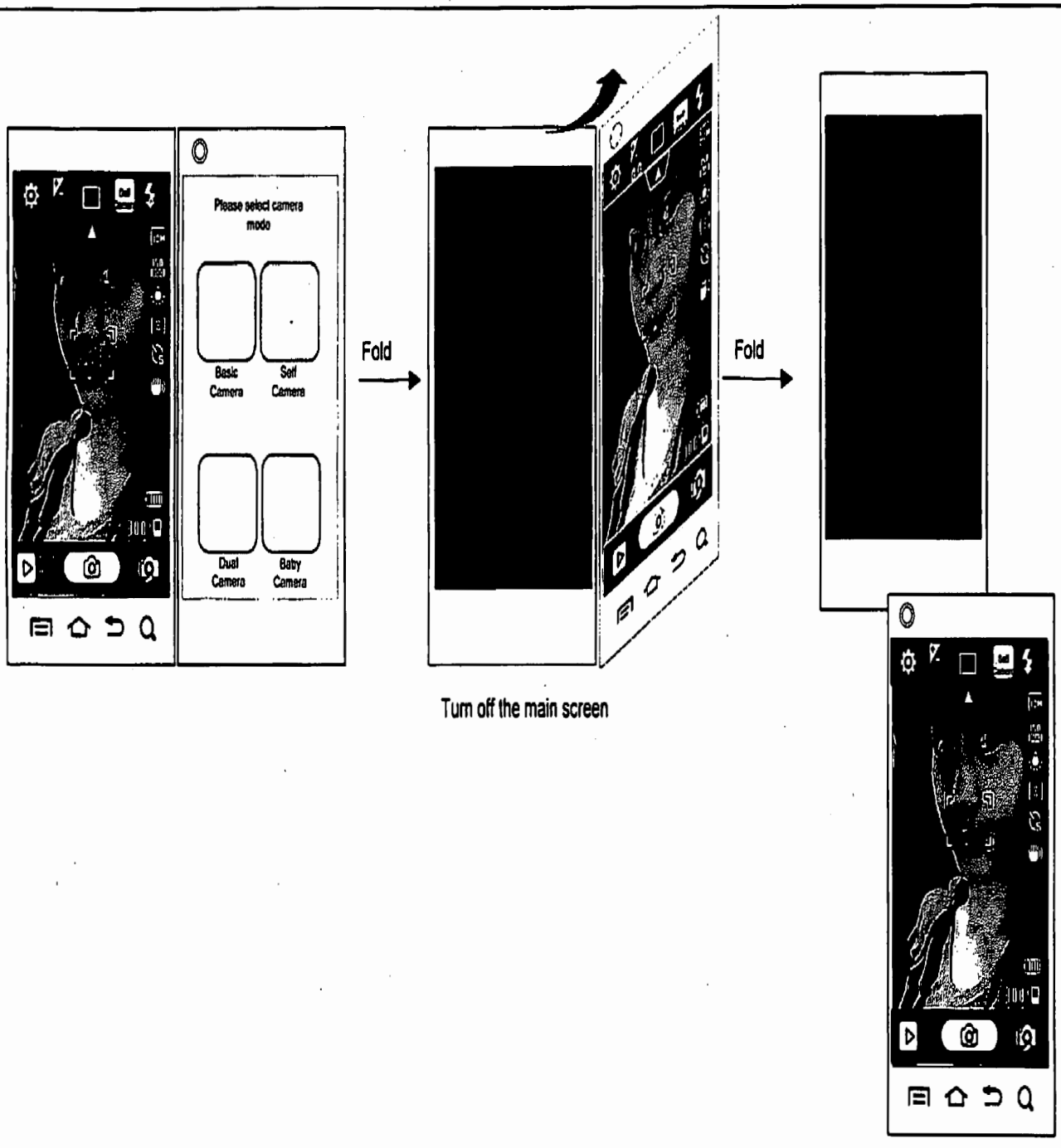
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 Folding Interaction : Self Camera



© 2010 SAMSUNG Electronics All rights reserved.

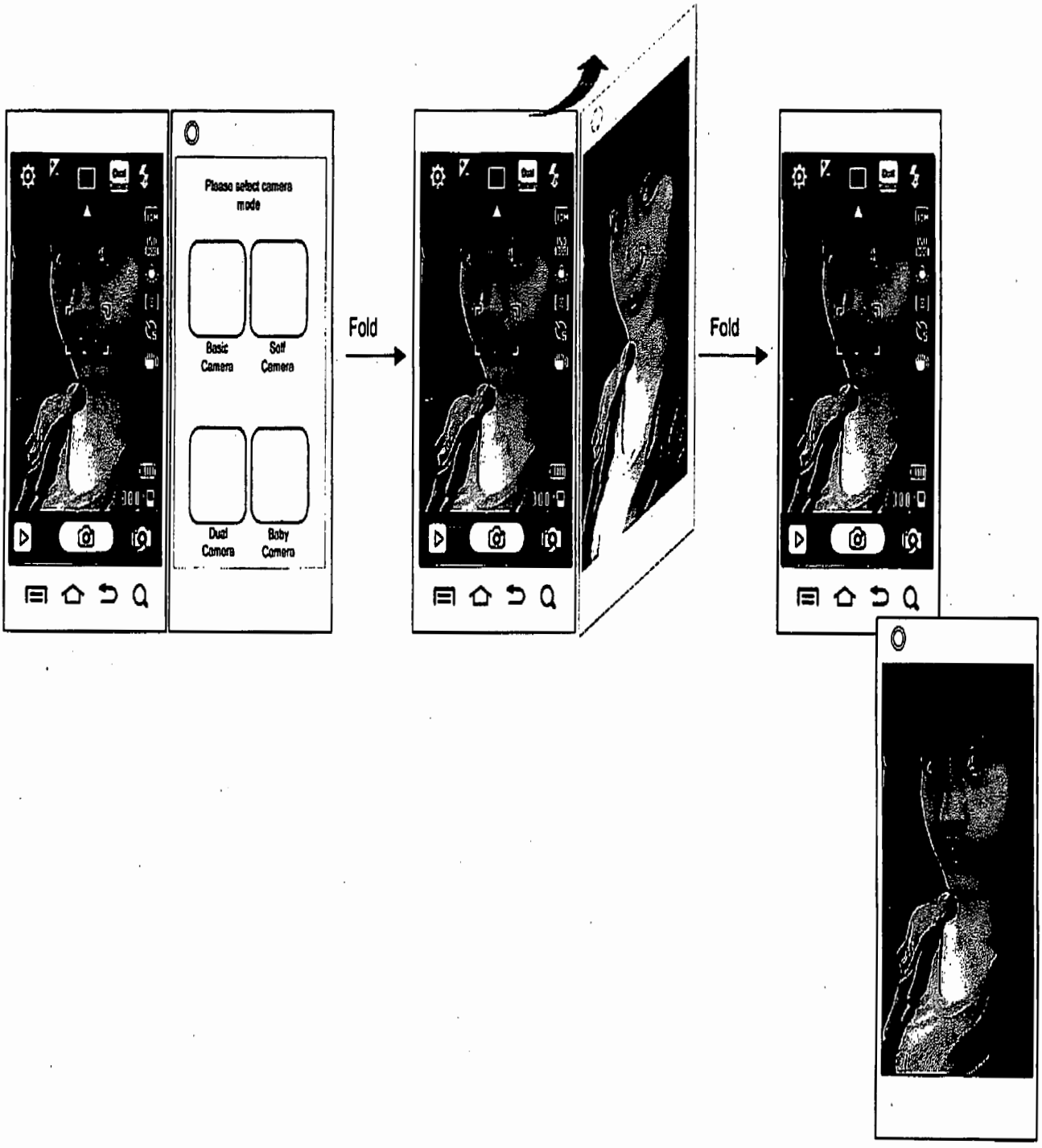
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 Folding Interaction : Dual Camera



© 2010 SAMSUNG Electronics. All rights reserved.

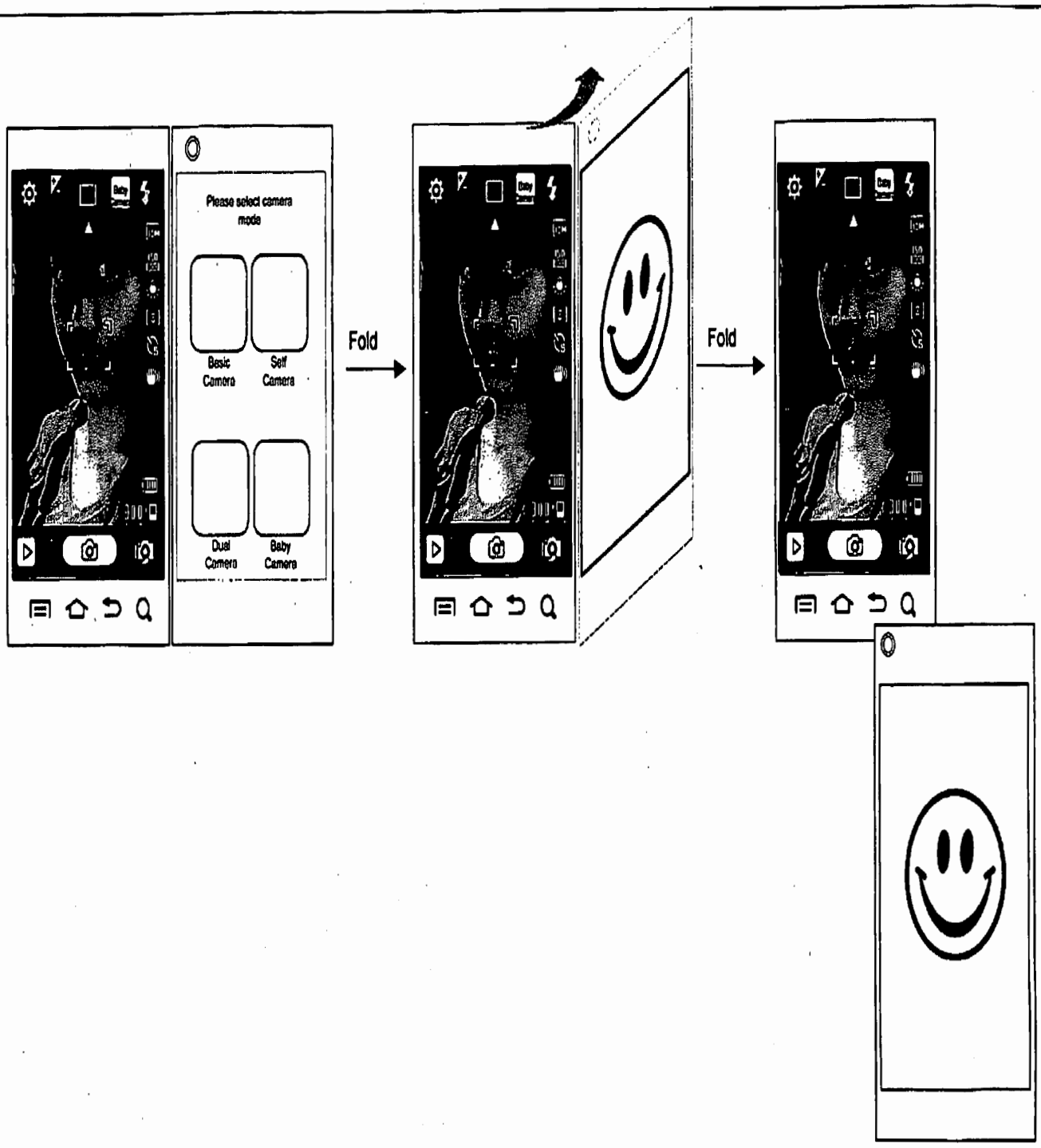
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 Folding Interaction : Baby Camera



© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

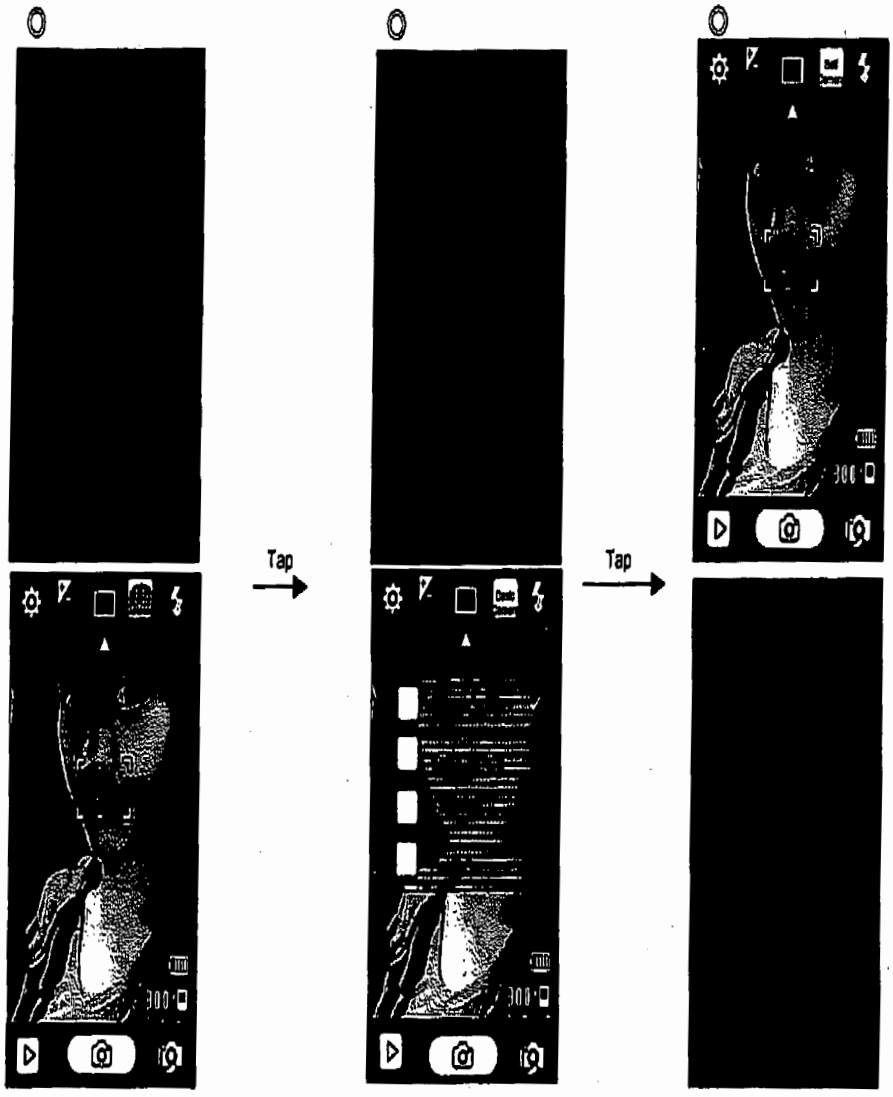
head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Key-screen

2.2 Camera mode change : Hot key

<Sub screen>



<Main screen>

© 2010 SAMSUNG Electronics All rights reserved.

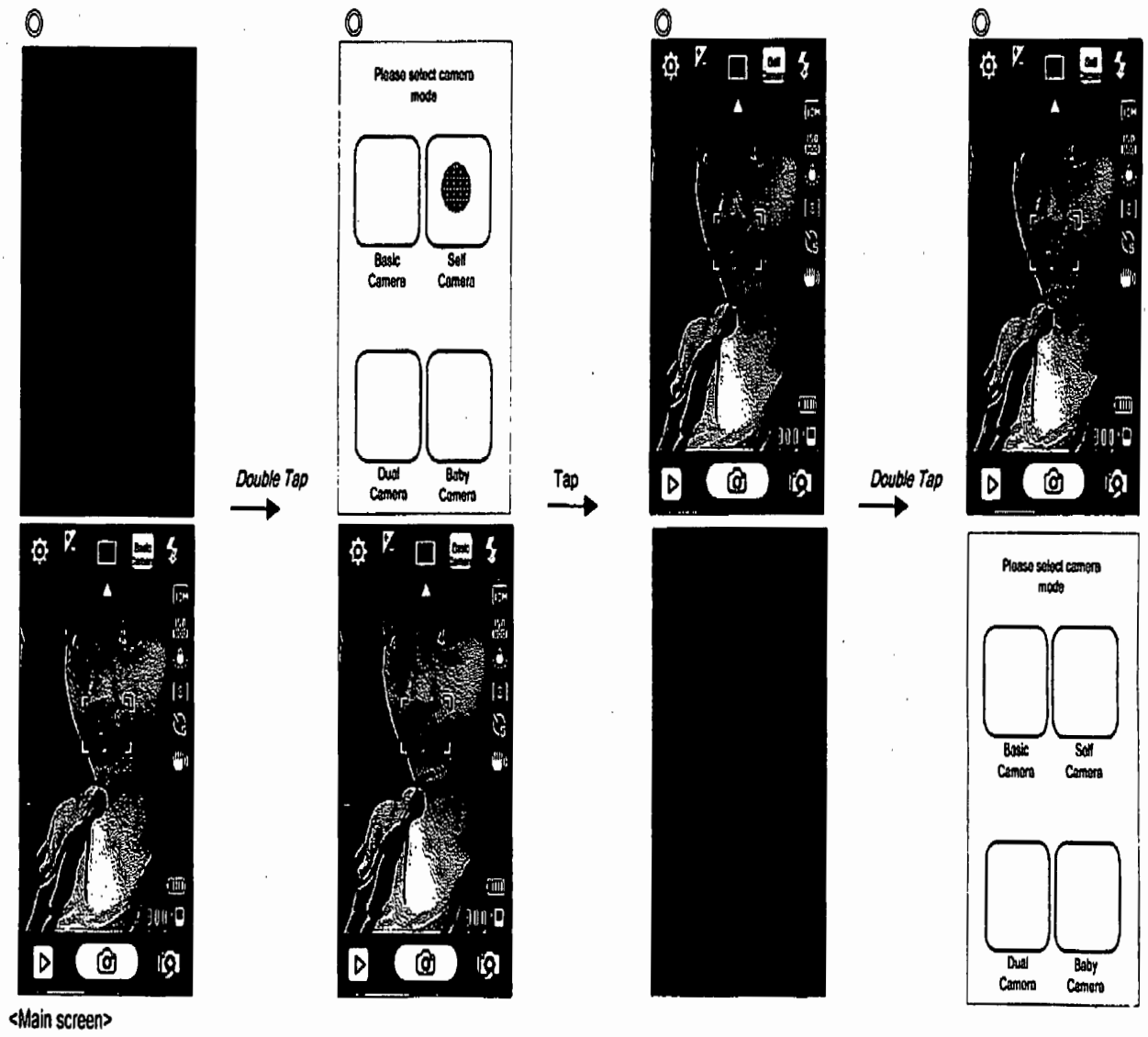
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 Camera mode change : Touch (TBD)

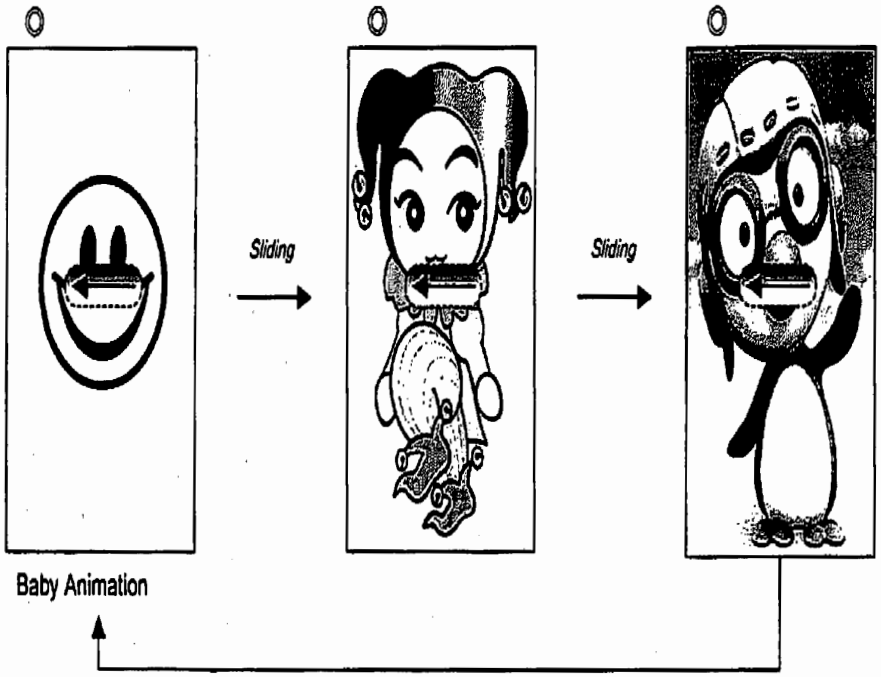


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Baby Mode Animation



© 2010 SAMSUNG Electronics. All rights reserved.

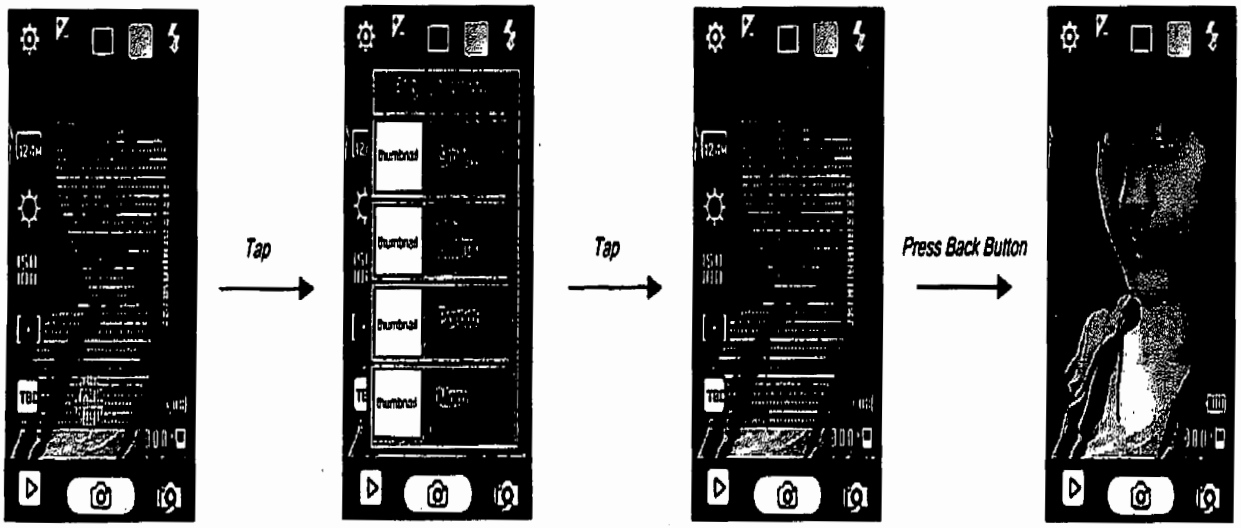
Copied from 13370939 on 05/11/2012

head.jpg

1. Key-screen

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Baby Mode Animation : function



© 2010 SAMSUNG Electronics. All rights reserved.

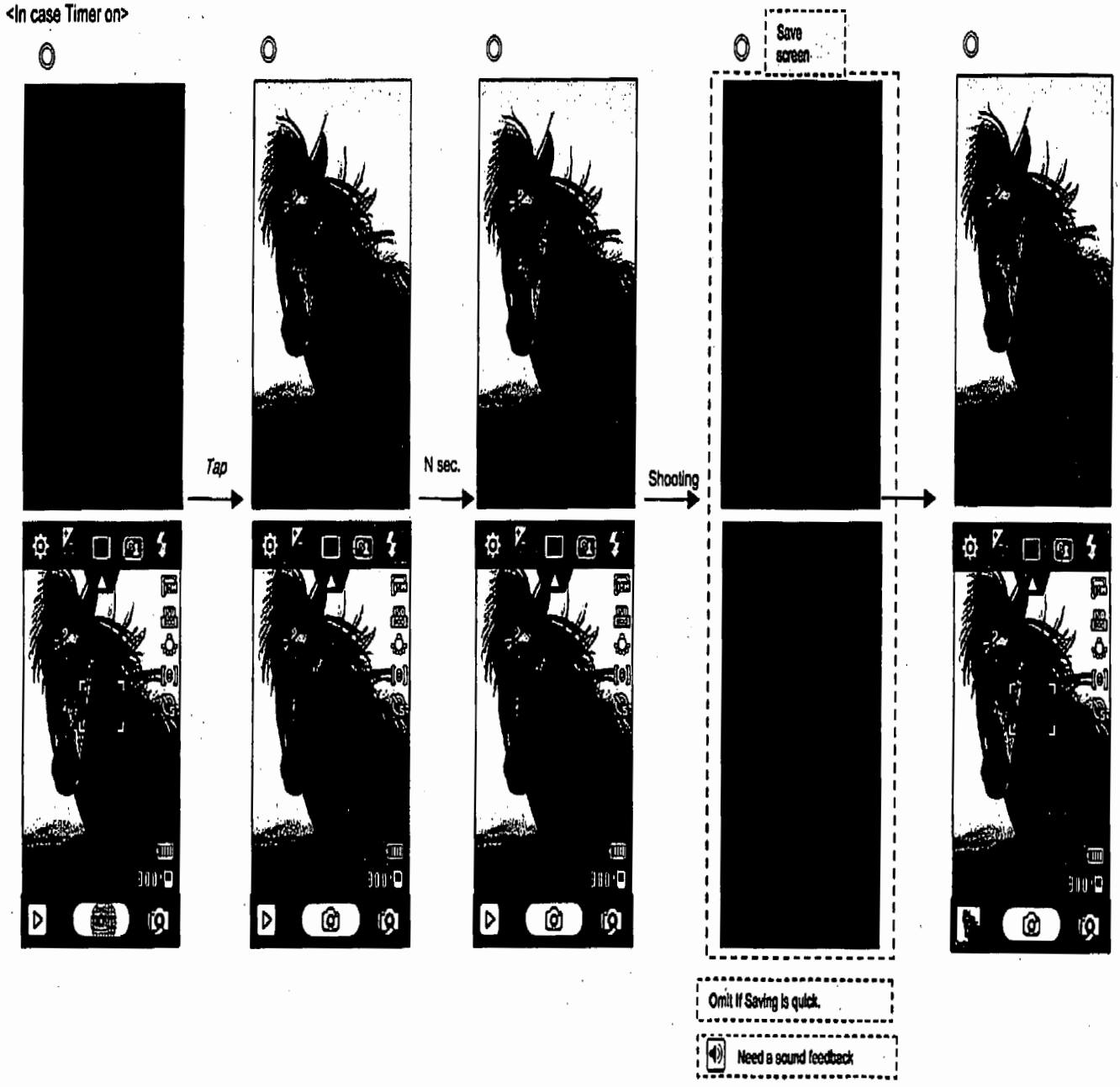
Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 Timer shooting

When Timer shooing, count & live view are displayed in sub-screen at all camera mode.



© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

E-book Smart Index

© 2010 SAMSUNG Electronics. All rights reserved.

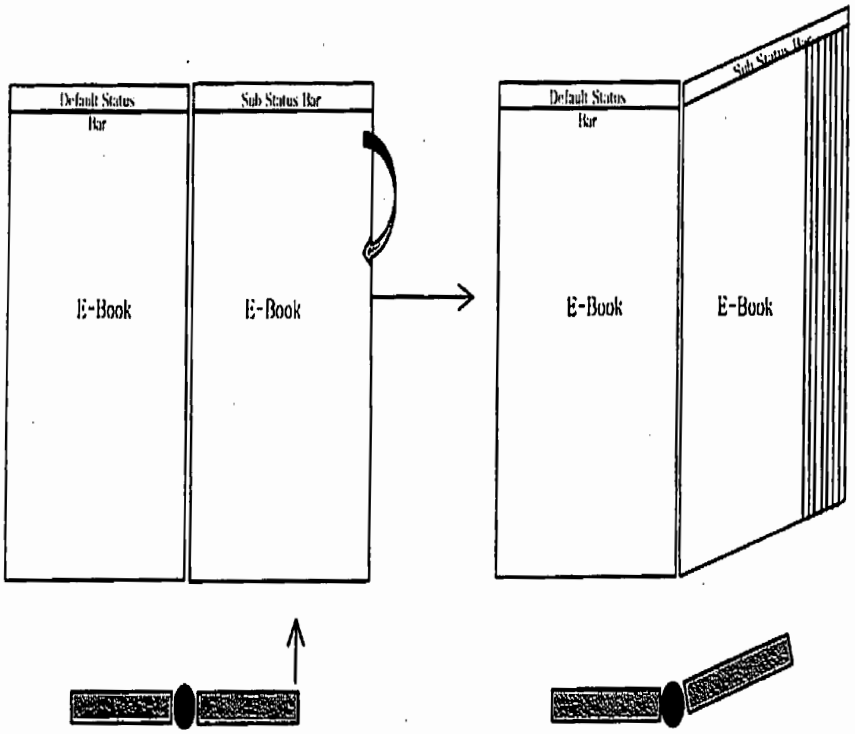
Copied from 13370939 on 05/11/2012

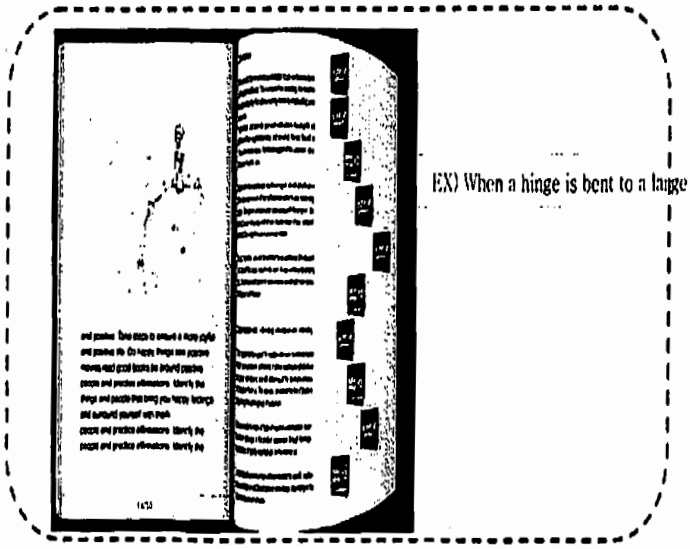
3. Smart Feature

3.1 – Smart Index

- Smart Index

- Function provided in an E-book and an E-magazine
- Provide an UI/GUI displaying a side surface of an actual book when a user tilts a screen





EX) When a hinge is bent to a large extent, there is an effect of increasing an index region and leafing pages.

© 2010 SAMSUNG Electronics All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

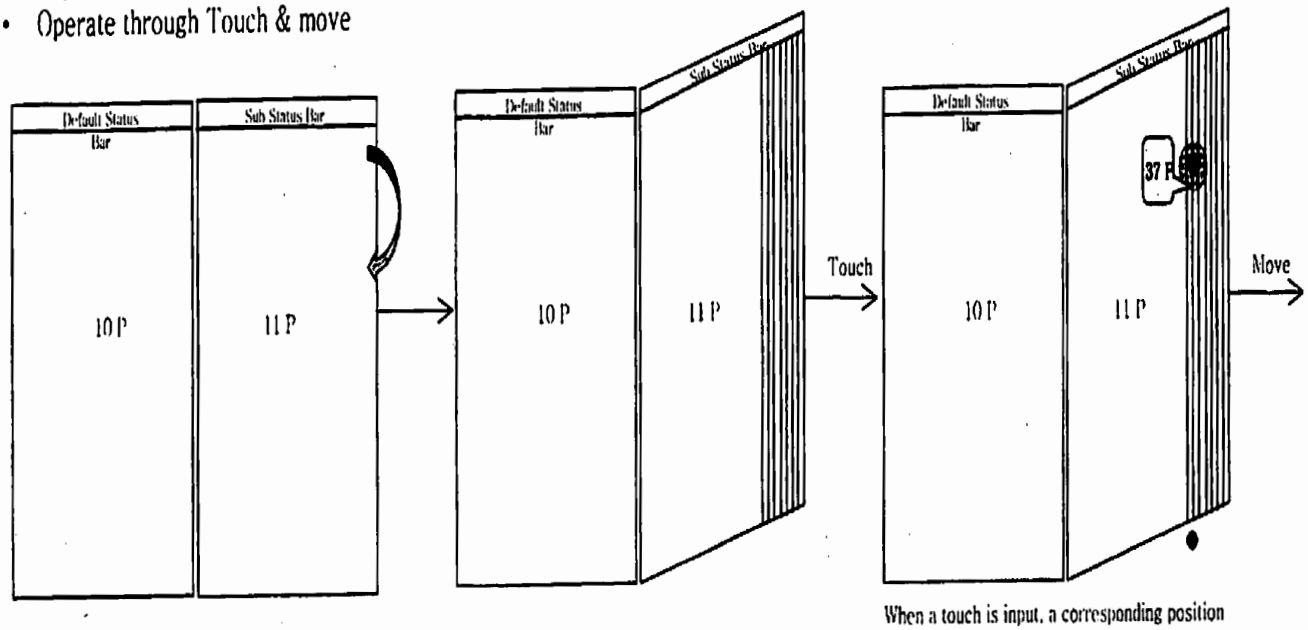
The graphic is for illustrative purposes only and may not represent the actual implementation.

3. Smart Feature

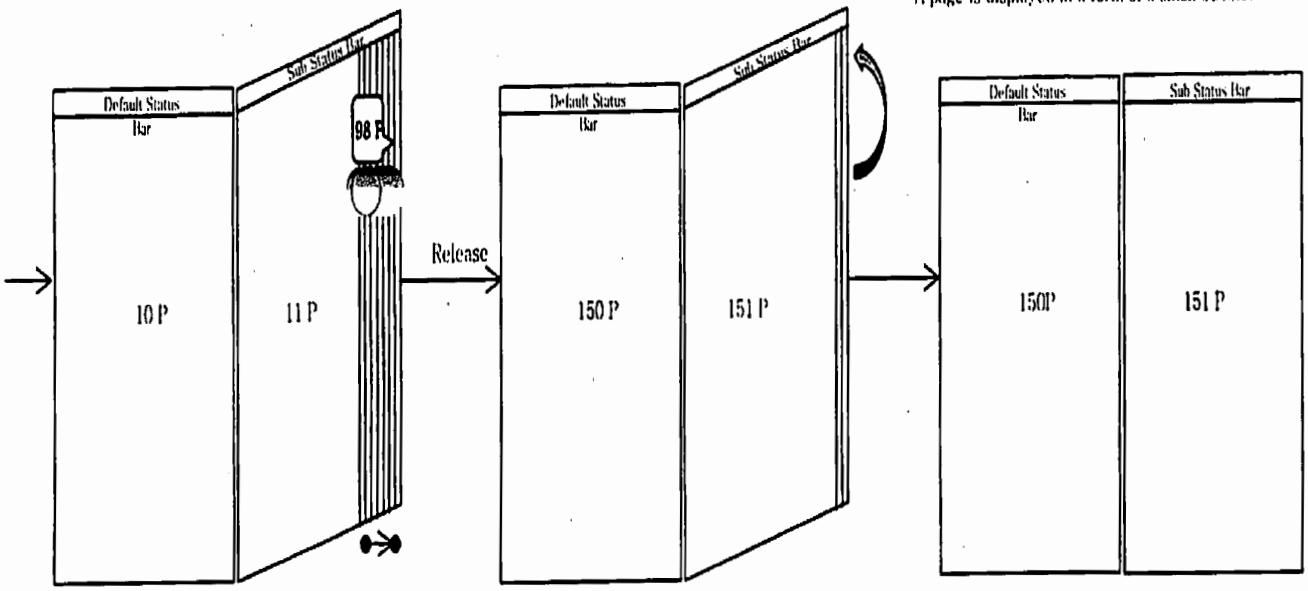
3.1 – Smart Index

- Smart Index : Page skipping function

- Rapidly skip to a desired page
- Operate through Touch & move



When a touch is input, a corresponding position is displayed with a red line.
A page is displayed in a form of a small bubble.



When the touch is moved, the red line is moved, so that the red line is moved to a user desired position.

When the touch is released, the current page is changed to a corresponding page.

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

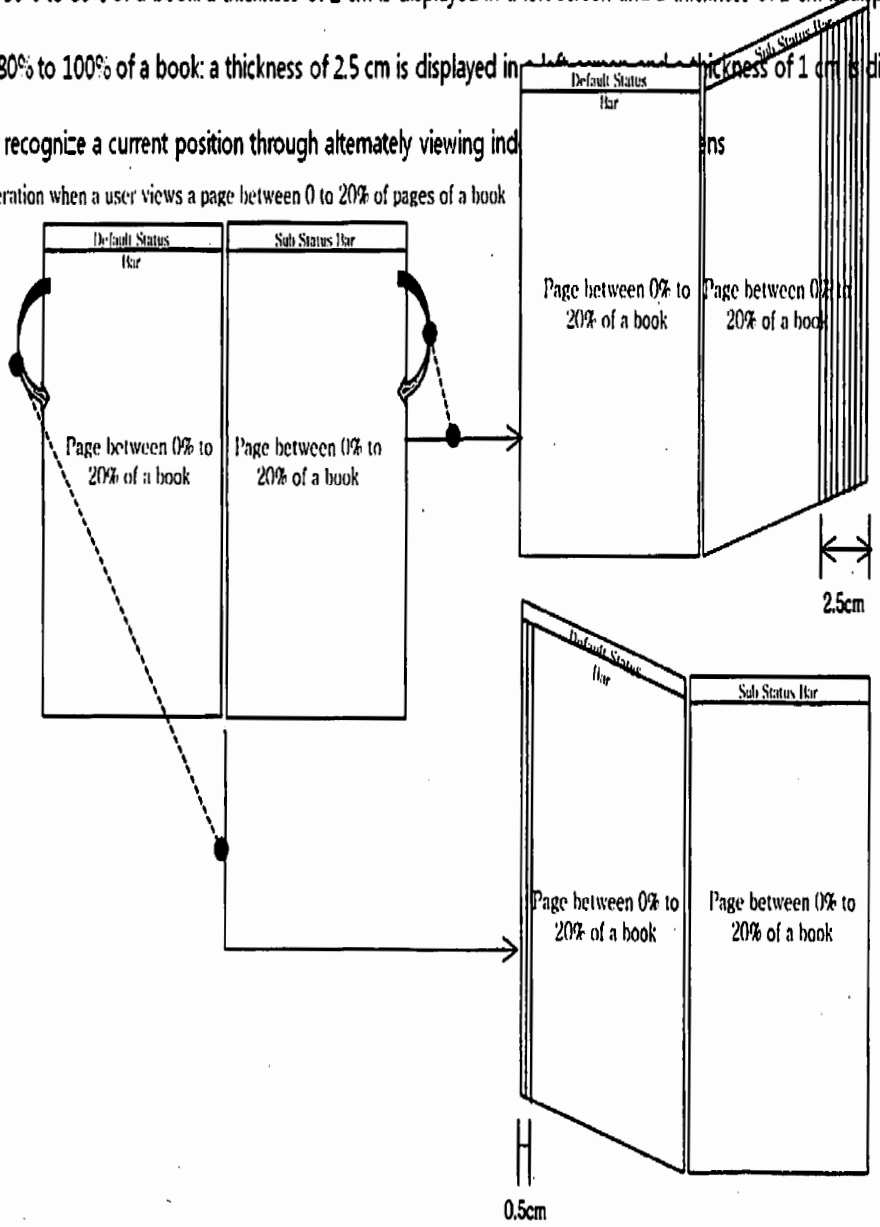
3. Smart Feature

3.1 – Smart Index

- Smart Index : Visualization (1)

- Visualize remaining amount of pages by thickness
- 20% of pages of a book corresponds to 0.5 cm, to display five steps, 0 cm, 0.5 cm, 1 cm, 1.5 cm, 2 cm, and 2.5 cm.
  - Page between 20% to 40% of a book: a thickness of 1 cm is displayed in a left screen and a thickness of 2 cm is displayed in a right screen.
  - Page between 40% to 60% of a book: a thickness of 1.5 cm is displayed in a left screen and a thickness of 1.5 cm is displayed in a right screen.
  - Page between 60% to 80% of a book: a thickness of 2 cm is displayed in a left screen and a thickness of 1 cm is displayed in a right screen.
  - Page between 80% to 100% of a book: a thickness of 2.5 cm is displayed in a left screen and a thickness of 1 cm is displayed in a right screen.
- A user can easily recognize a current position through alternately viewing ind ens

Operation when a user views a page between 0 to 20% of pages of a book



©2010 SAMSUNG Electronics All rights reserved.
SAMSUNG CONFIDENTIAL

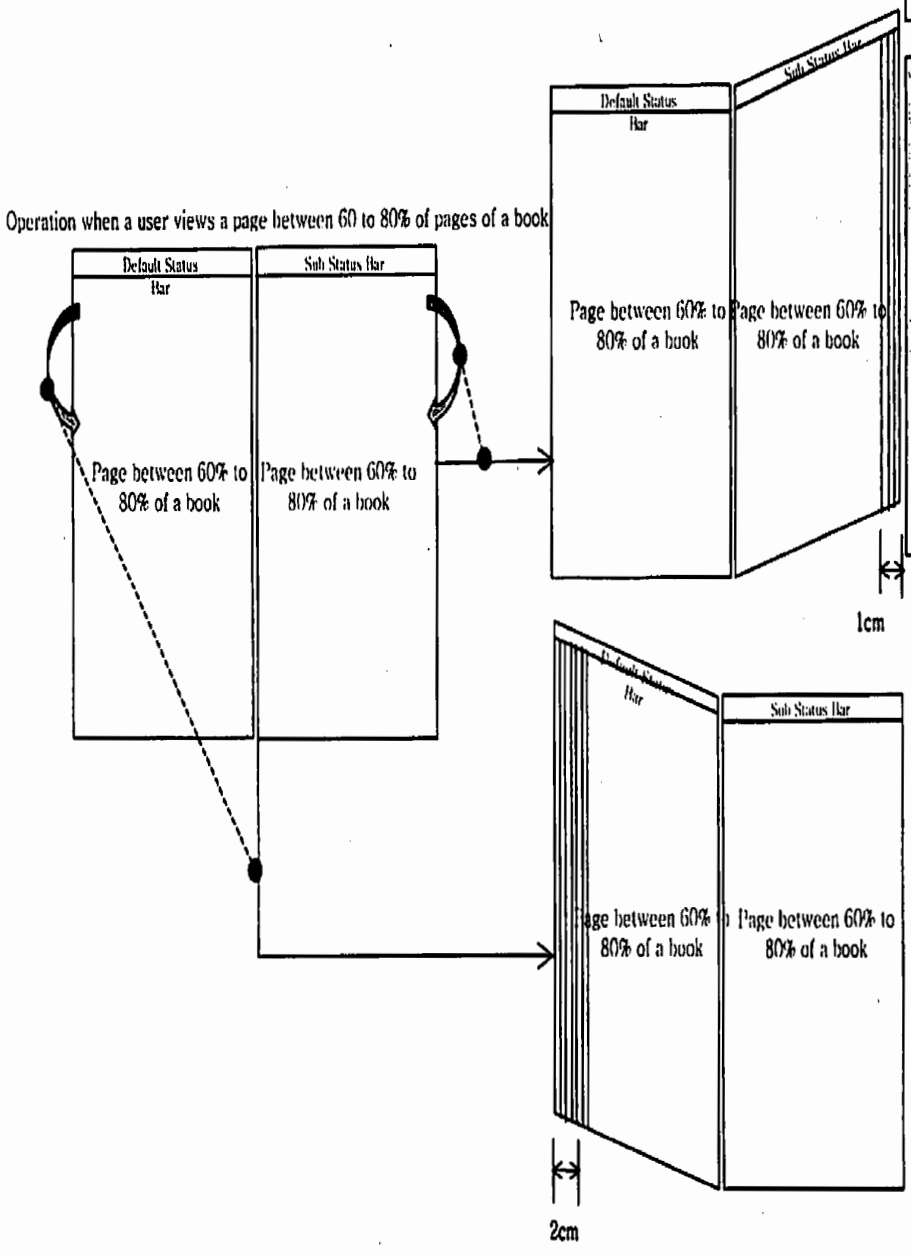
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

- Smart Index : Visualization (2)

An accurate thickness is not decided.

Determine whether to support simultaneous bending of both screens



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

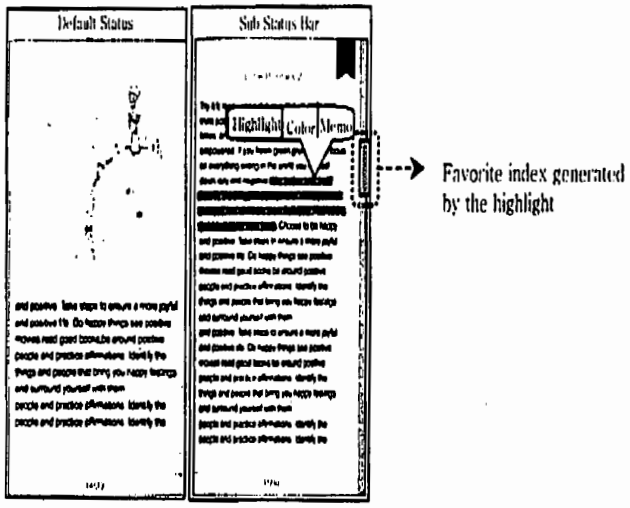
3. Smart Feature

3.1 – Smart Index

- Favorite Index

- When a text is dragged, a pop-up menu bar is displayed at a corresponding position. The pop-up menu bar includes three menu items.
  - Highlight : Function of highlighting a region
  - Color : Function of changing a highlight color.
  - Memo : Function of attaching a memo paper, like a sticky note, on a book.

- Favorite Index is automatically attached in an outside of a page including the highlight and the memo.
  - The highlight has a color identical to a corresponding color and the memo always has a yellow color.
  - When the memo and the highlight are displayed at the same time, a yellow memo is displayed on a line color tag (see a next page).
  - A total of 10 favorite indexes can be attached.



A scheme of displaying a menu through a drag may not be applied to the memo only??

Determine what happens when highlight is cancelled

What of copy, paste, etc.?

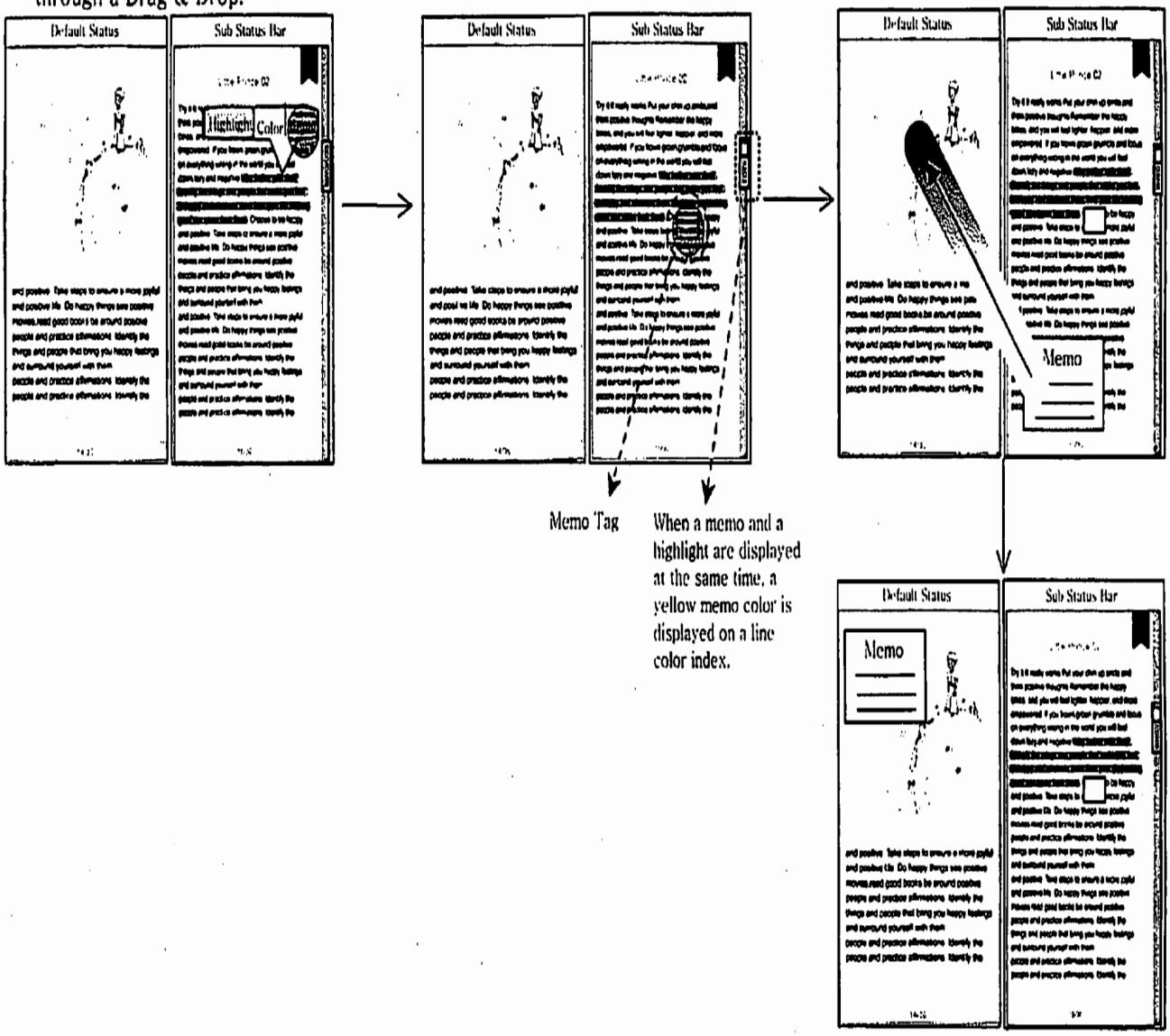
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

Determine whether to operate when an index is tabbed.

- Bubble Menu Bar : Memo

- When a memo function is selected in the pop-up menu bar, a memo tag is attached in a form of an icon at an end of a highlight portion.
- In clicking a tag, a memo paper is attached on a book. A user can adjust an attachment position of the memo paper through a Drag & Drop.



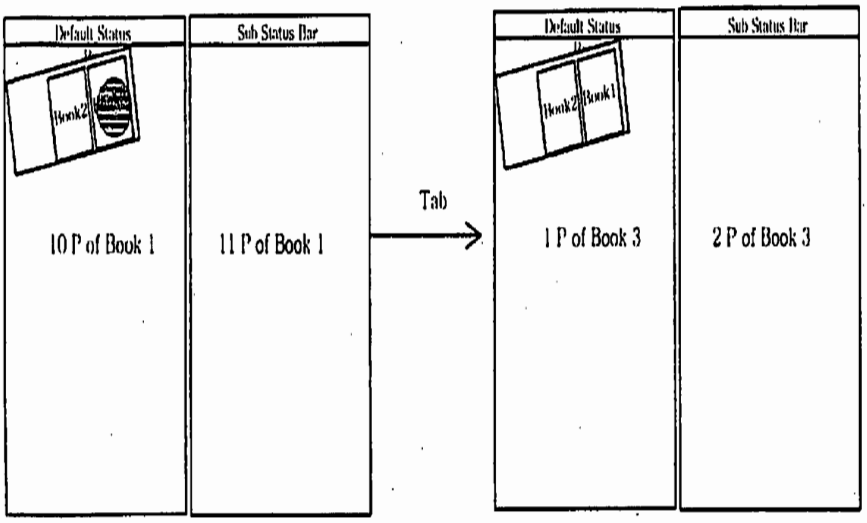
Copied from 13370939 on 05/11/2012

3.1 – Smart Index

Add what to press to make this appear and disappear

- Shortcut Book-List

- A list of books to be read and a list of books in a bookmark can be displayed.
- A shortcut book-list can be hidden when unnecessary.



Change to a selected book.
1p is basically opened, or the page of the book the user was reading is opened.

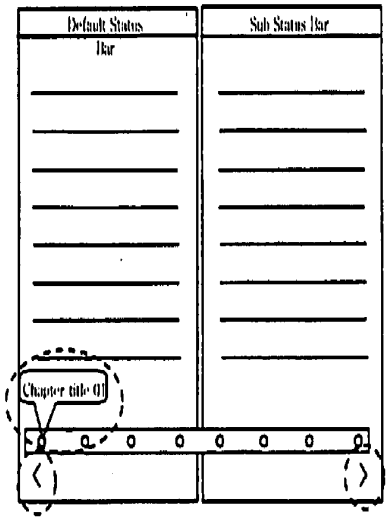
©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Add a definition of an operation of a pop-up window

- Chapter (Proposal 1)

- Back and Next buttons at a lower end.
- A bar displaying a chapter is displayed at a lower end and a chapter title is displayed in a form of a pop-up window.

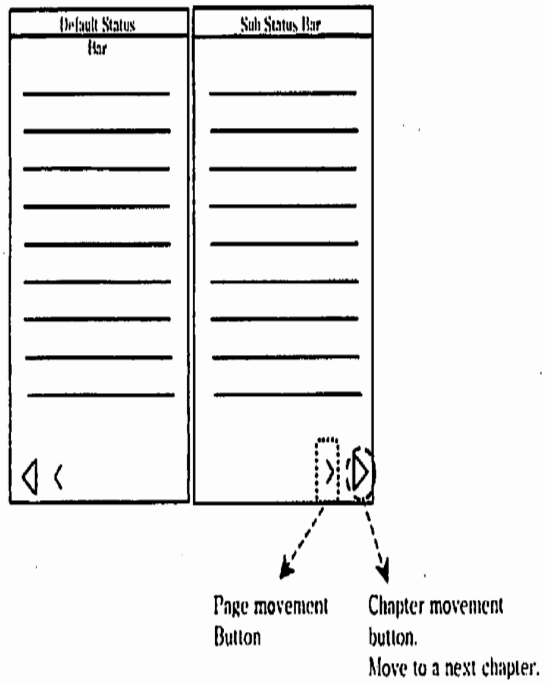


©2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

- Chapter (Proposal 2)

- Back and Next buttons at a lower end.
- A button for moving by a unit of chapter is added next to Back and Next buttons.



Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may r

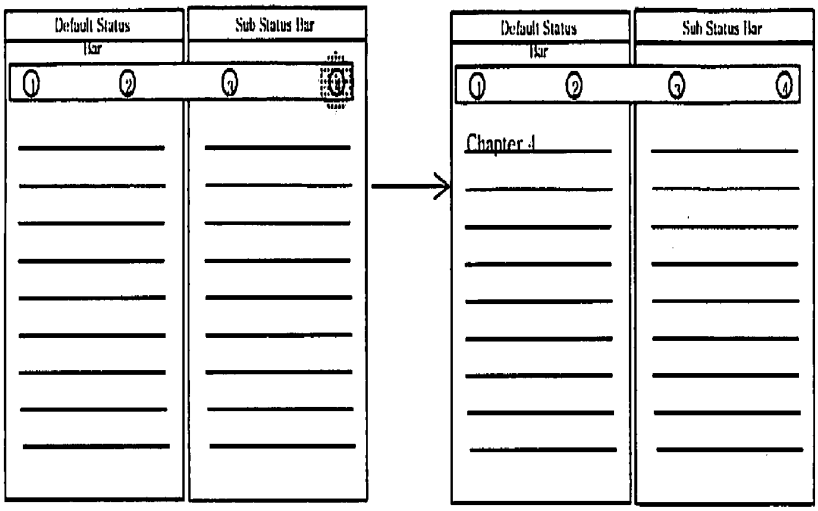
3. Smart Feature

3.1 – Smart Index

Is the bar always displayed?

Decide whether to display a position of a current chapter

- Chapter (Proposal 3)
- A chapter bar is displayed at an upper end, and if a corresponding chapter is clicked, it moves directl the corresponding chapter.



Assuming that a current chapter is Chapter 2 among a total of four chapters.

Move directly to Chapter 4

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Dual Display Basic Interaction UI Guideline
for Android

V.1.6

December 10, 2010

Contact Point :
Hyunjin Kim (truthkim@samsung.com) +82-10-8908-4559
Juyoun Lee (florial.lee@samsung.com) +82-10-4339-0026
Joonkyu Seo (joonkyu.seo@samsung.com) +82-10-2431-1289
Hyunjeong Song (songah.song@samsung.com) +82-2-2255-5563
Dongseok Ryu (dongseok.ryu@samsung.com) +82-2-2255-5424

© 2010 SAMSUNG Electronics All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document History

No.	Sent	Version	File Name	Contents
01	November 5, 2010	v.0.9	[Duplex_Android] Basic Interaction_v.0.9_20101105	Document Origination
02	November 8, 2010	v.1.0	[Duplex_Android] Basic Interaction_v.1.0_20101108	
03	November 26, 2010	v.1.5	[Duplex_Android] Basic Interaction_v.1.5_20101126	Updated by SERI comments (Multi-tasking, Gesture Mode change, Basic Interaction between 2 Screens, Text Input)
04	December 10, 2010	v.1.6	[Duplex_Android] Basic Interaction_v.1.6_20101210	Screen Layout Updated (Split-mode(A/B), Expand-mode(A+), Dual-zoom(A++))

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

Notation Guide

The graphic is for illustrative purposes only and may not represent the actual implementation.

Comments Style

Principle Blahblahblahblah	Spec Blahblahblahblah	Blahblahblahblah	Comment Blahblahblahblah
A definition of UI principle. Definition of comments that can be fundamental and exceptional conditions, Including the definition about the vocabulary.	Spec Description	Description for situation change in scenario and condition & Default Value	Samsung UX Team Comment

Line Style

Primary Flow	Secondary Flow	Defining functions

Flow Iconography

Question?	
Decision Point	End Flow: Idle Screen

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Document Flag		
v.xx Added BlahblahblahBlahblahblah	v.xx Updated BlahblahblahBlahblahblah	v.xx Added BlahblahblahBlahblahblah v.xx Updated BlahblahblahBlahblahblah
Added page	Updated page	Keep Previous History

Document Flag		
TBD	v.xx Deleted : Blahblahblah	See Android Guideline
TBD functions	Deleted functions	The rule is same with the single android phone.

Document Flag	
Workflows	Workflows
AT&T MAXD UE flows	Samsung UE flows

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Definition of Mode
1.1 - 3 Mode Definition (0°, 60°, 180°)
1.2 - Portrait & Landscape Mode Change Rule
1.3 - Basic Rule of Mode Change (Portrait)
1.3.1 - 0°→ 60° → 180° Basic Flow
1.3.2 - 180°→60° → 0° Basic Flow
1.4 - Basic Rule of Mode Change (Landscape)
1.4.1 - 0°→ 60° → 180° Basic Flow
1.4.2 - 180°→60° → 0° Basic Flow

2. Home Screen Interaction
2.1 - Overview
2.2 - Page Navigation
2.3 - Application Execution
2.4 - Portrait view to Landscape view
2.5 - Edit
2.6 - Add Application Shortcut

3. Application Screen Interaction
3.1 - Portrait view to Landscape view
3.2 - Edit
3.3 - Add Application Shortcut

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

4. Multi-Tasking
4.1 - Overview
4.2 - Task Manager
4.3 - Basic Flow

5. Gesture Mode Change
5.1 - Definition of Gesture
5.2 - Basic Flow | Split-mode to Expand-mode
5.3 - Basic Flow | Dual Zoom

6. Basic Key Interaction
6.1 - Hard Key Layout & Function
6.2 - Home Key Interaction
6.3 - Back Key Interaction
6.4 - Menu Key Interaction
6.5 - Search Key Interaction
6.6 - Volume Key Interaction

7. Screen Layout
7.1 - Basic Screen Layout
7.2 - Screen Navigation (List View, Grid View etc)
7.3 - Pop-up & Contextual Pop-up

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

8. Quick Panel
8.1 - Status Bar
8.2 - Layout
8.3 - Definition of Main Quick Panel
8.4 - Mode Change
8.5 - Definition of 2nd Quick Panel
8.6 - Basic Flow

9. Unlock
9.1 - Definition of Unlock (Hold Key Interaction)
9.2 - 0° / 60° / 180° Unlock Basic Flow

10. Basic Interaction between 2 screens
10.1 - Definition of Interaction
10.2 - Basic Flow

11. Text Input
11.1 - Virtual Keypad Layout
11.2 - Basic Flow

12. Interruption
12.1 - New Notification
12.2 - Incoming Call
12.3 - Event Notification

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Definition of Mode

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

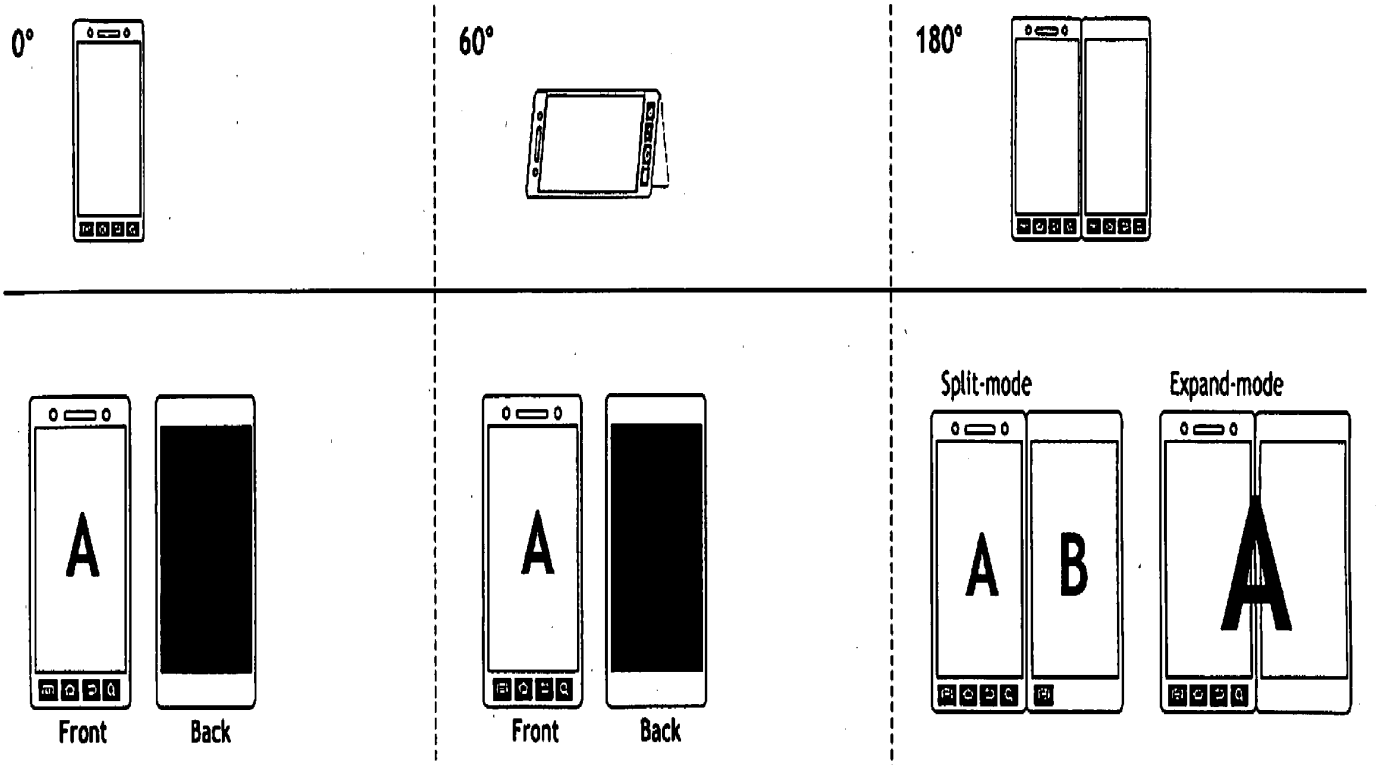
The graphic is for illustrative purposes only and may not represent the actual implementation.

1. Definition of Mode

1.1 – 3 Mode Definition (0°, 60°, 180°)

v.1.6 Updated
Screen Layout mode changed

● 3 Mode Definition



When the screens folded into 0°, display main screen only, and turn off back screen.

In some applications, user can turn on back screen by option menu.

When the screens folded out into 60°, display main screen only, and turn off back screen.

In some applications, user can turn on back screen by option menu.

When the screens folded out into 180°, display two screens with Split-mode, or Expand-mode layout.

Two screen layout is explained in detail in the '2.1 Basic Screen Layout' section.

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

1.2 – Portrait & Landscape Mode Change Rule

● **Portrait & Landscape Mode Change Rule**

- Portrait & Landscape Mode Change Rule follows Single screen interaction rule.

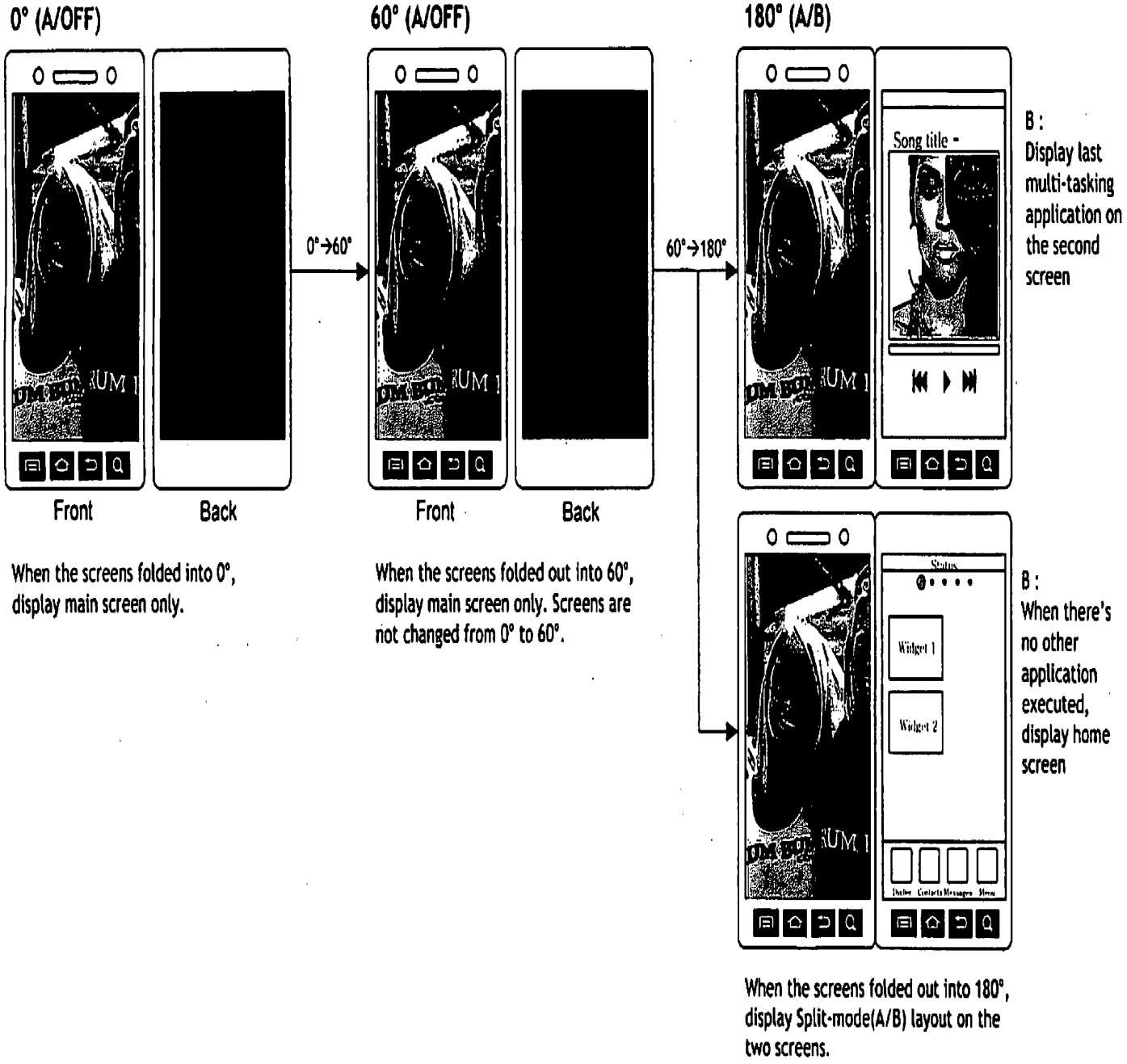
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.3 – Basic Rule of Mode Change (Portrait)

● 0° → 60° → 180° Basic Flow



When the screens folded into 0°, display main screen only.

When the screens folded out into 60°, display main screen only. Screens are not changed from 0° to 60°.

When the screens folded out into 180°, display Split-mode(A/B) layout on the two screens.

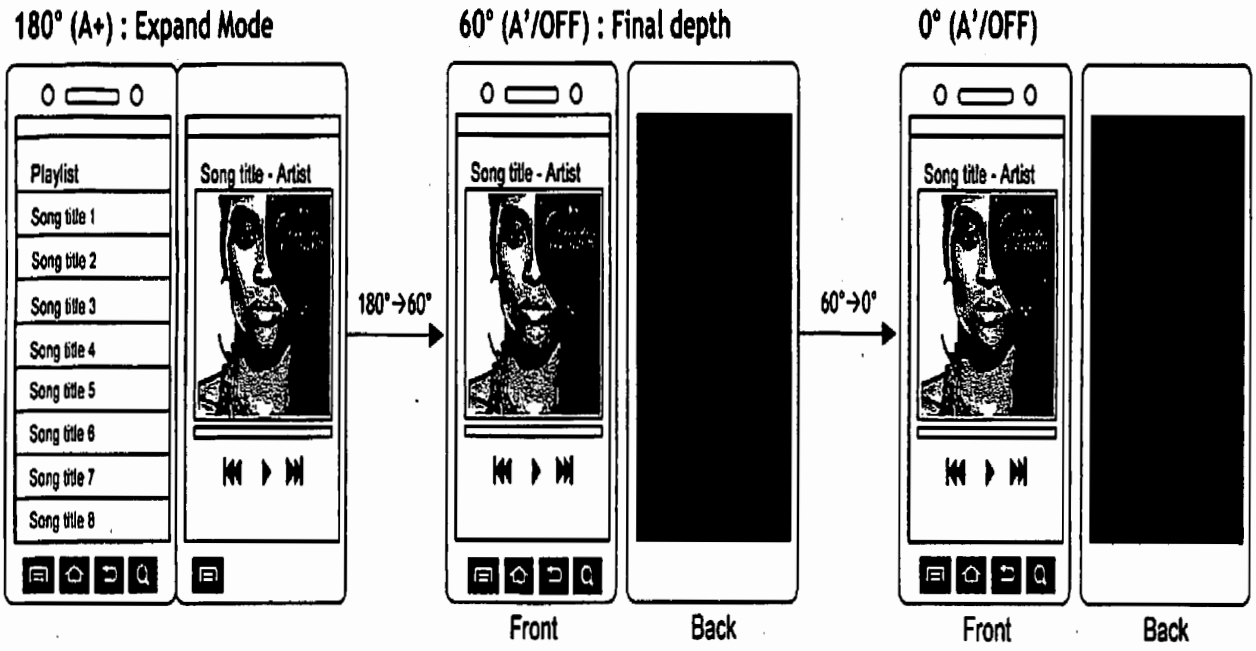
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.3 – Basic Rule of Mode Change (Portrait)

● 180° → 60° → 0° Basic Flow (1/2)



Front : final depth screen of Expand-mode application
Back : OFF

When the screens folded into 60°, display final depth screen of Expand-mode application on the main screen, and turn off back screen.

When the screens folded into 0°, display final depth screen of Expand-mode application on the main screen, and turn off back screen. Screens are not changed from 60° to 0°.

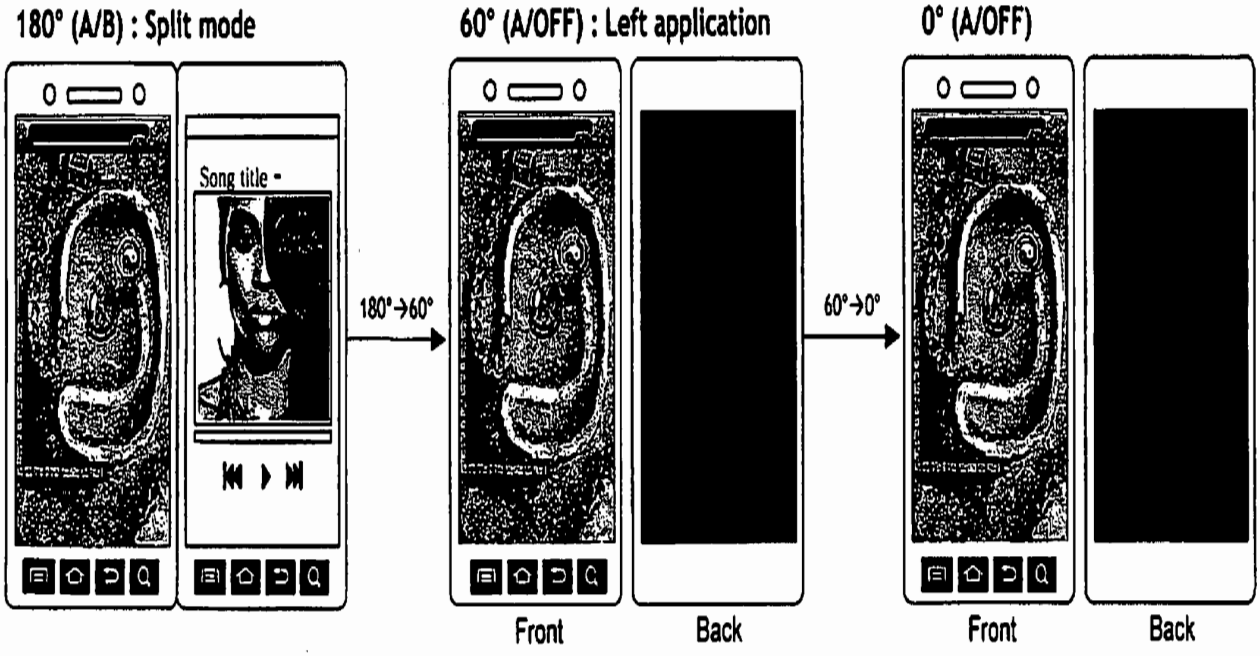
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.3 – Basic Rule of Mode Change (Portrait)

- 180° → 60° → 0° Basic Flow (2/2)



Front : Left application (application on the main screen)
Back : OFF

When the screens folded into 60°, display an application on the main screen (left application) only, and turn off back screen.

When the screens folded into 0°, display an application on the main screen (left application) only, and turn off back screen.
Screens are not changed from 60° to 0°.

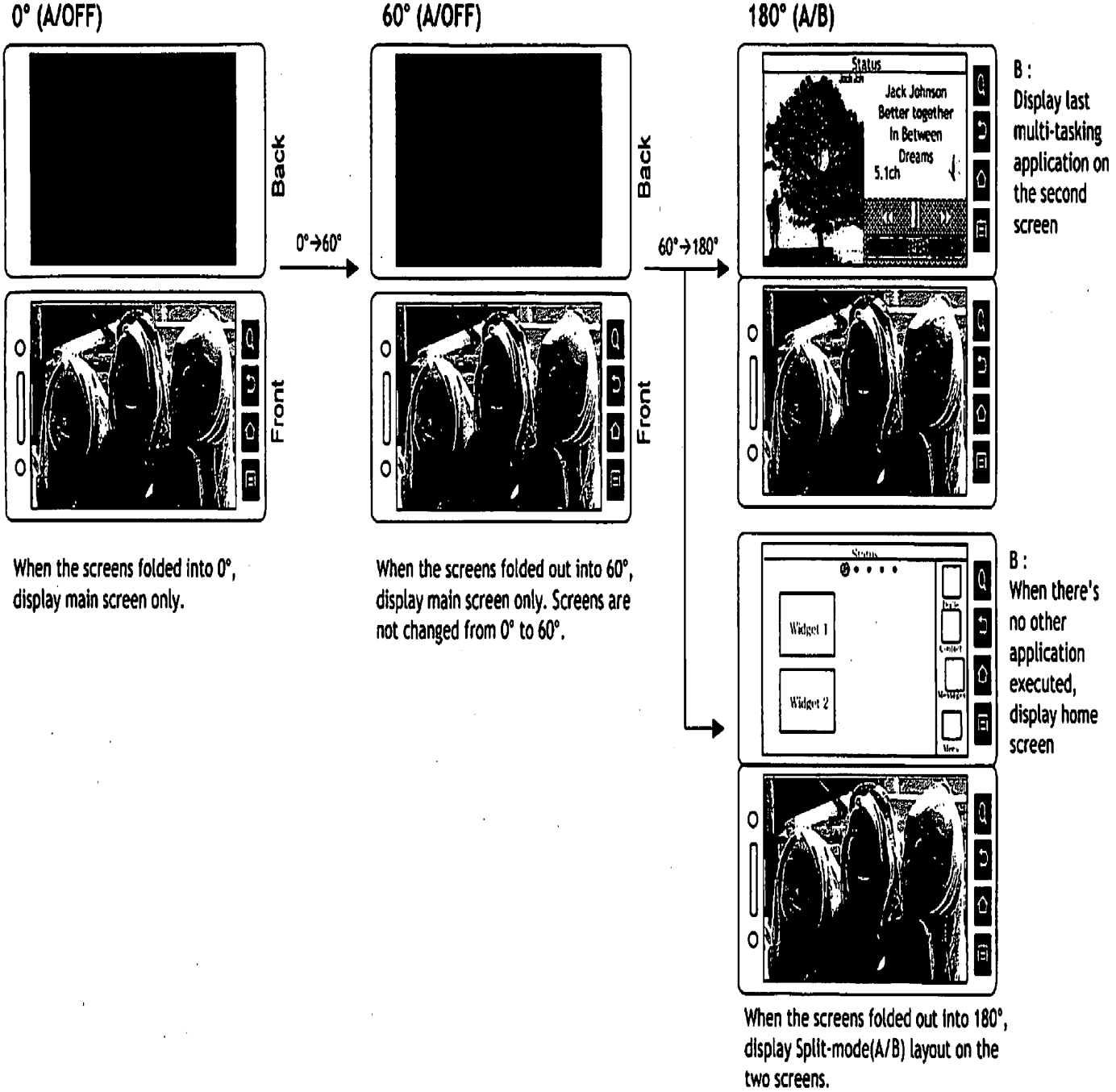
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.4 – Basic Rule of Mode Change (Landscape)

● 0° → 60° → 180° Basic Flow (Landscape 90)



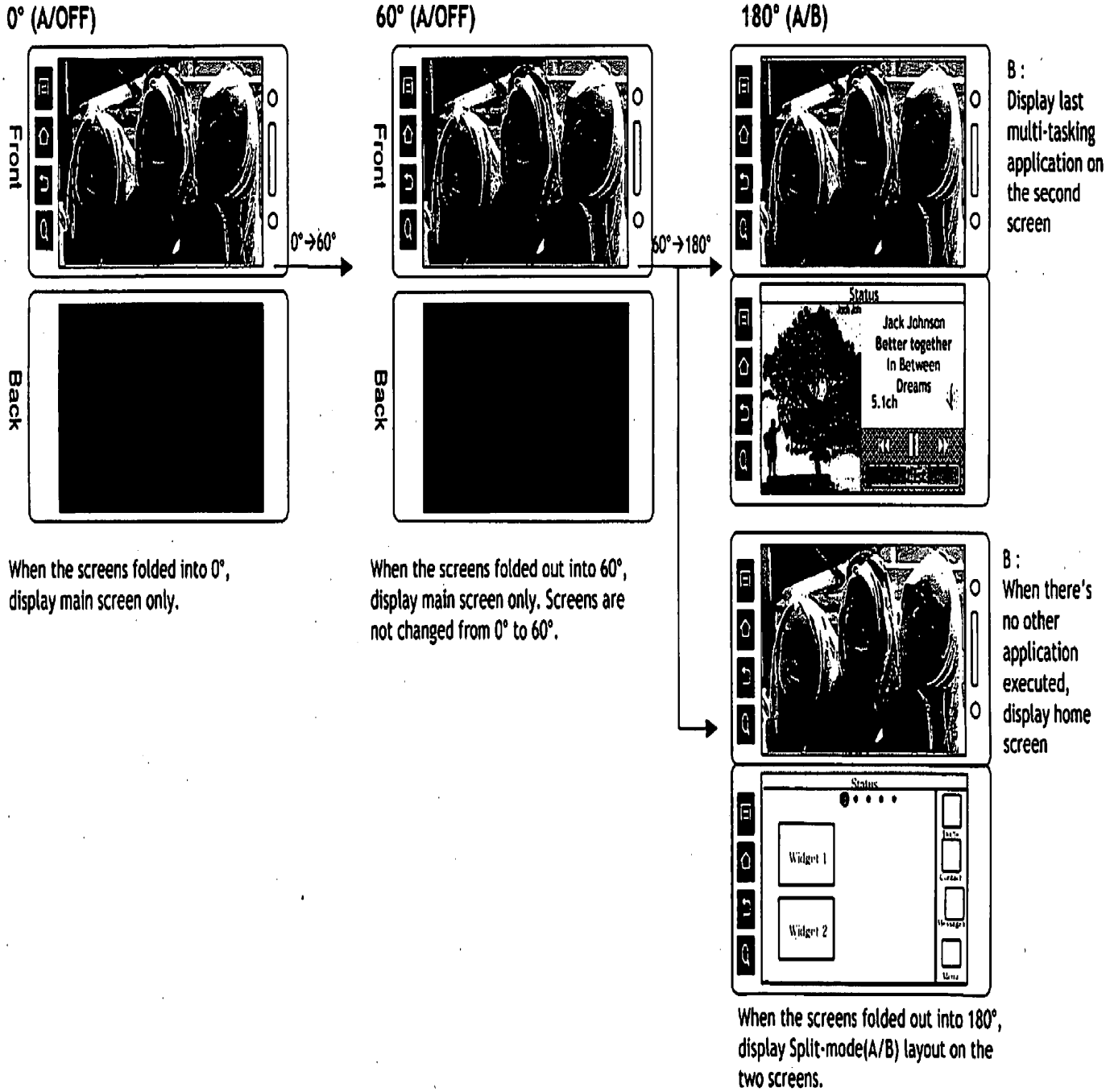
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.4 – Basic Rule of Mode Change (Landscape 2)

● 0° → 60° → 180° Basic Flow (Landscape -90)



When the screens folded into 0°, display main screen only.

When the screens folded out into 60°, display main screen only. Screens are not changed from 0° to 60°.

B : Display last multi-tasking application on the second screen

B : When there's no other application executed, display home screen

When the screens folded out into 180°, display Split-mode(A/B) layout on the two screens.

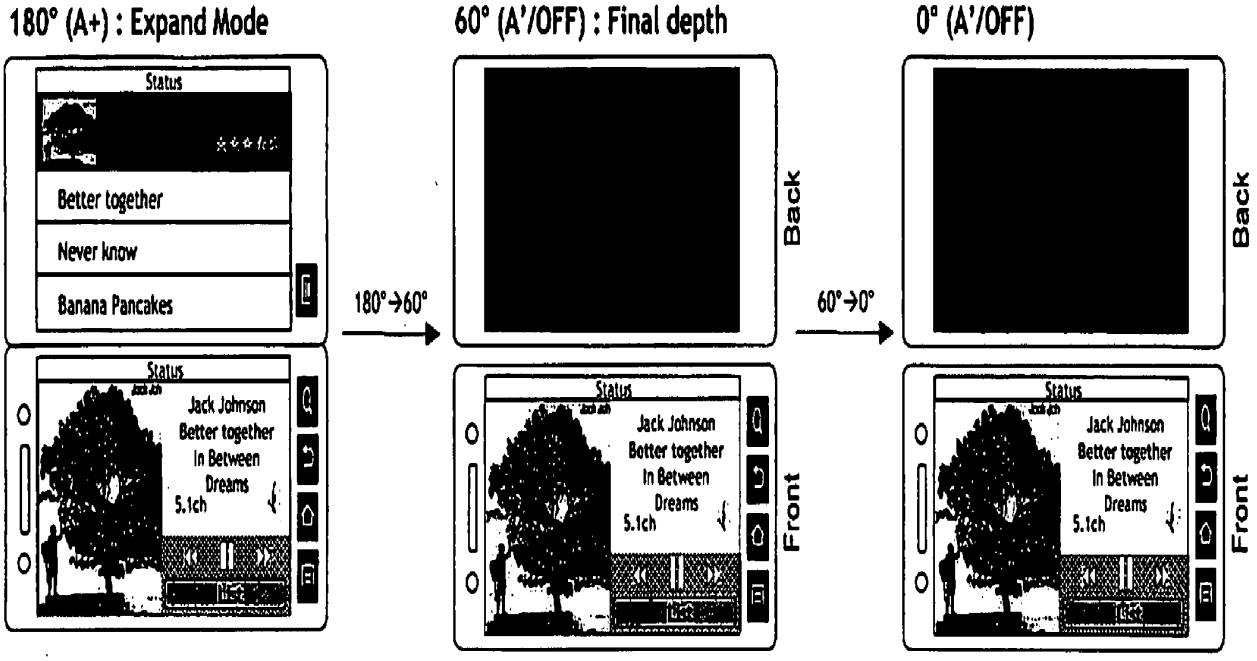
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.4 – Basic Rule of Mode Change (Landscape)

● 180° → 60° → 0° Basic Flow (1/2)



Front : final depth screen of Expand-mode application
Back : OFF

When the screens folded into 60°, display final depth screen of Expand-mode application on the main screen, and turn off back screen.

When the screens folded into 0°, display final depth screen of Expand-mode application on the main screen, and turn off back screen. Screens are not changed from 60° to 0°.

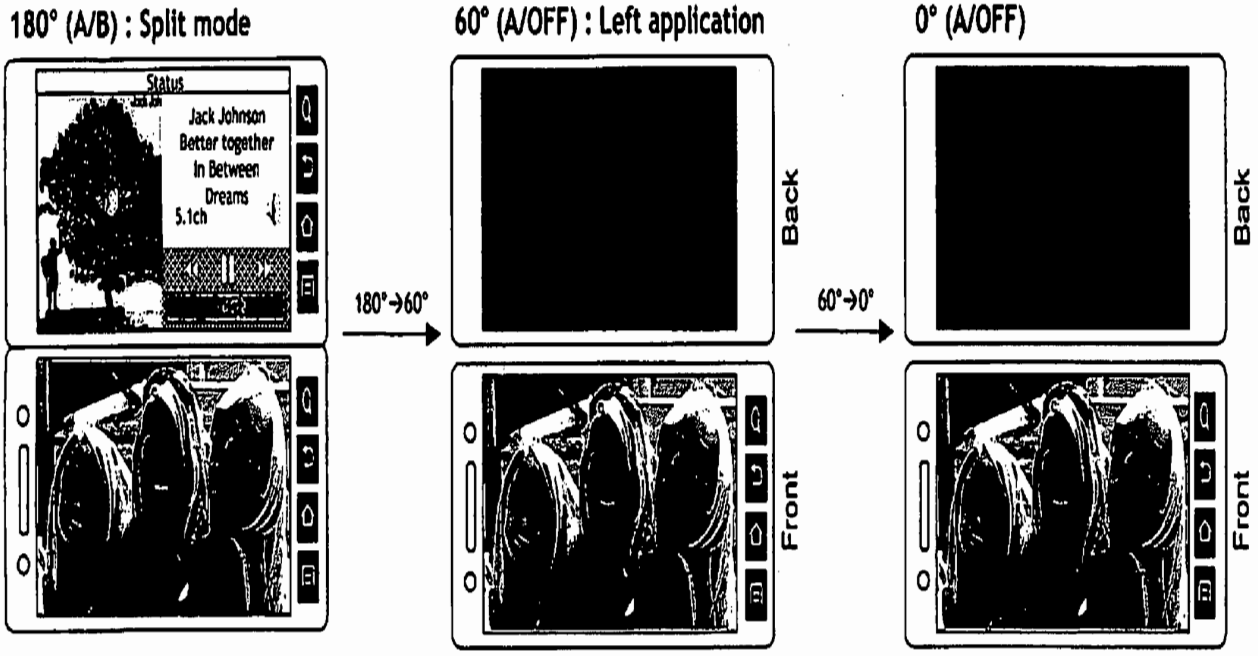
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

1.4 – Basic Rule of Mode Change (Landscape)

● 180° → 60° → 0° Basic Flow (2/2)



Front : Left application (application on the main screen)
Back : OFF

When the screens folded into 60°, display an application on the main screen (left application) only, and turn off back screen.

When the screens folded into 0°, display an application on the main screen (left application) only, and turn off back screen.
Screens are not changed from 60° to 0°.

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Home Screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

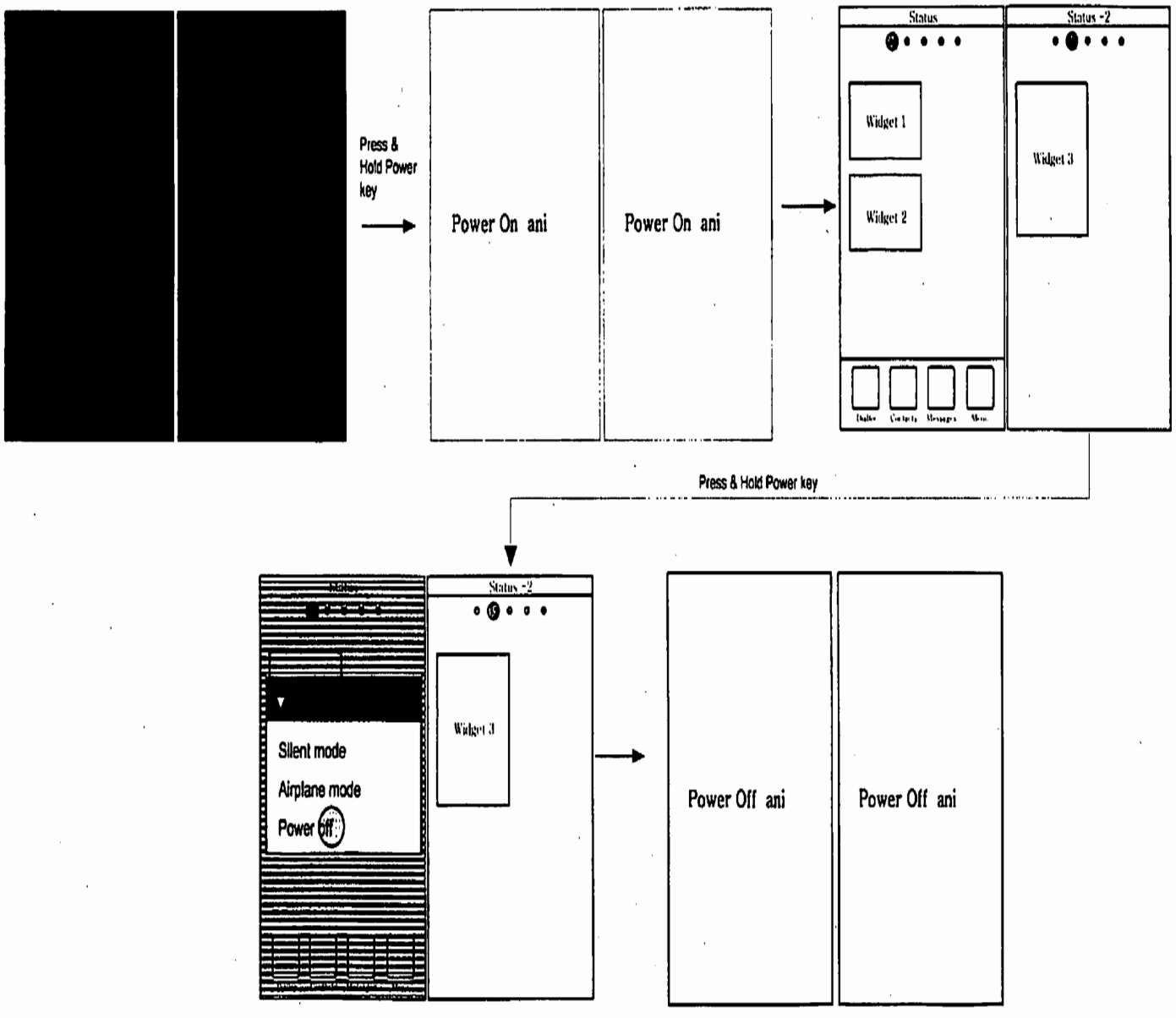
2. Home Screen

2.1 Overview

The graphic is for illustrative purposes only and may not represent the actual implementation.

Home screen

• Press & hold POWER On ↔ Off



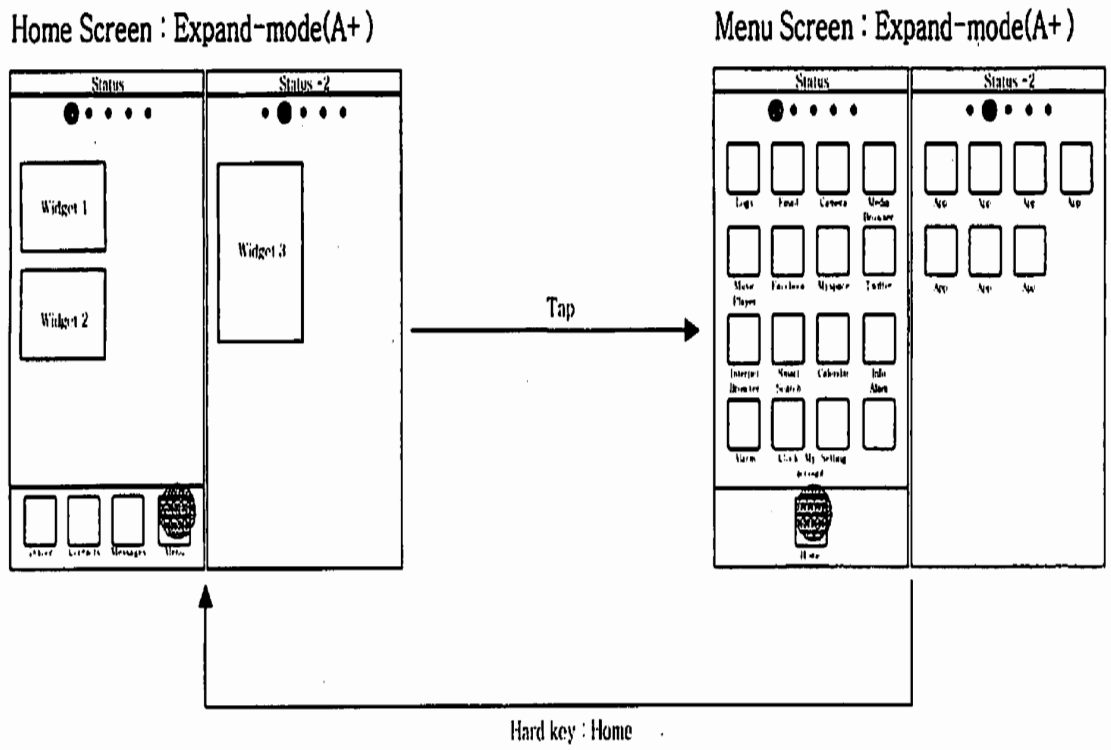
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

2.1 Overview

v.1.6 Updated
Screen Layout mode Updated.

• Expand-mode(A+) Home screen / Expand-mode(A+) Application Menu Screen



© 2010 SAMSUNG Electronics. All rights reserved.

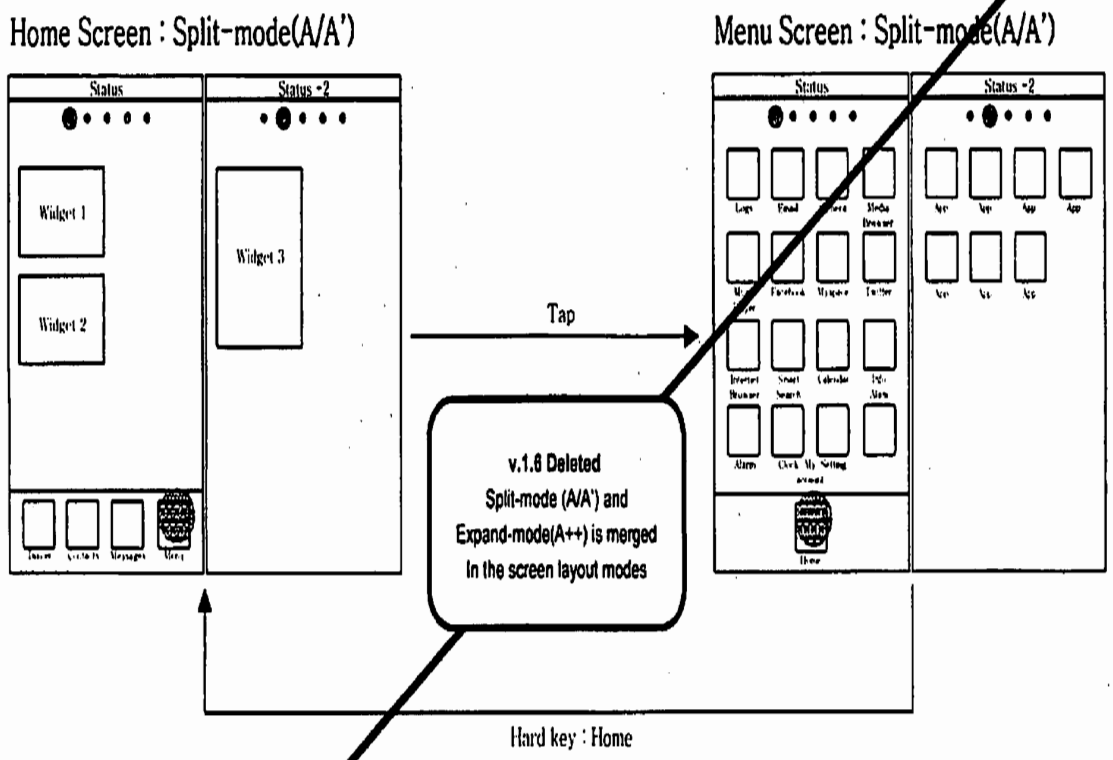
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.1 Overview

v.1.5 Added
Layout for Split-mode Home screen Added.

• Split-mode(A/A') Home screen / Split-mode(A/A') Application Menu Screen



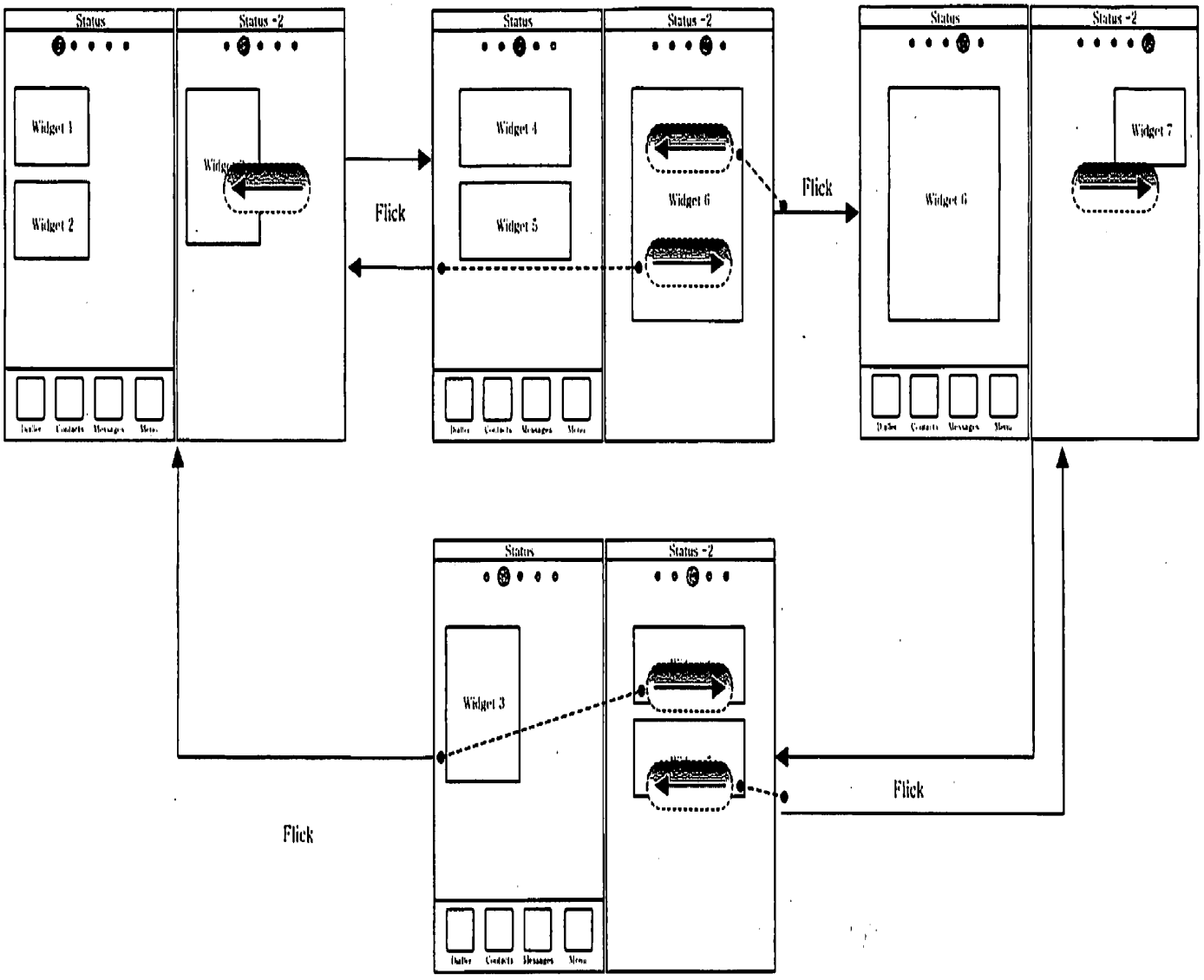
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 Page Navigation

- Page Navigation for Expand-mode(A+) Home
- Quick Page Navigation per 2 pages
- Dock area : Fixed
- Maximum Number of Home screen Page : 8 Page



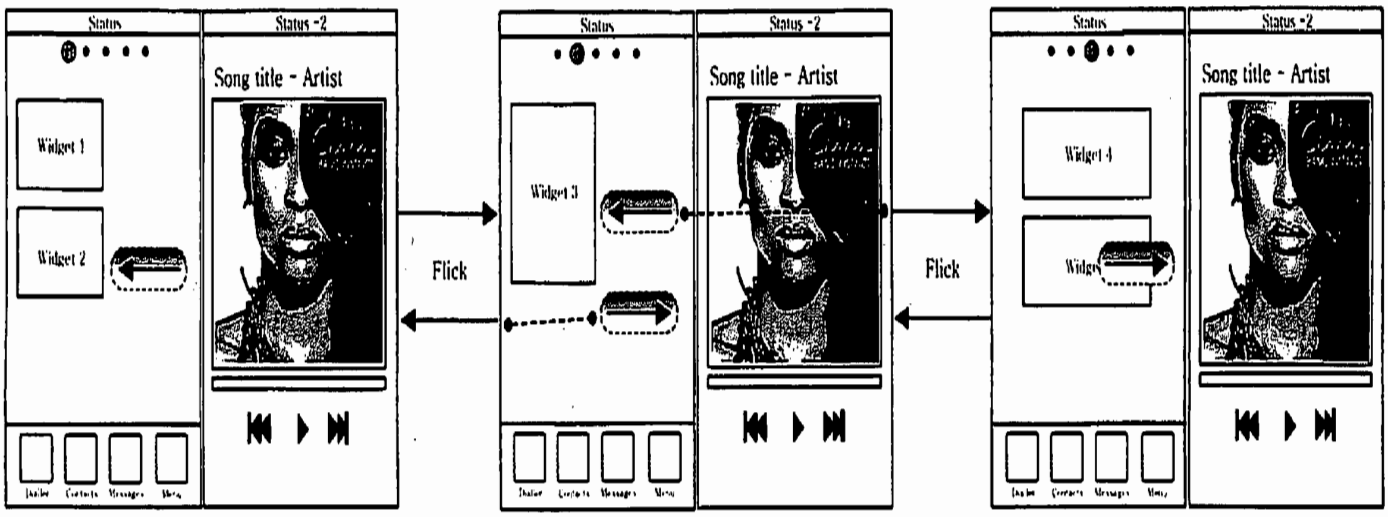
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.2 Page Navigation

- Page Navigation for Split-mode Home (Single Screen Home)
- Quick Page Navigation per 1 pages
- Dock area : Fixed
- Maximum Number of Home screen Page : 8 Page

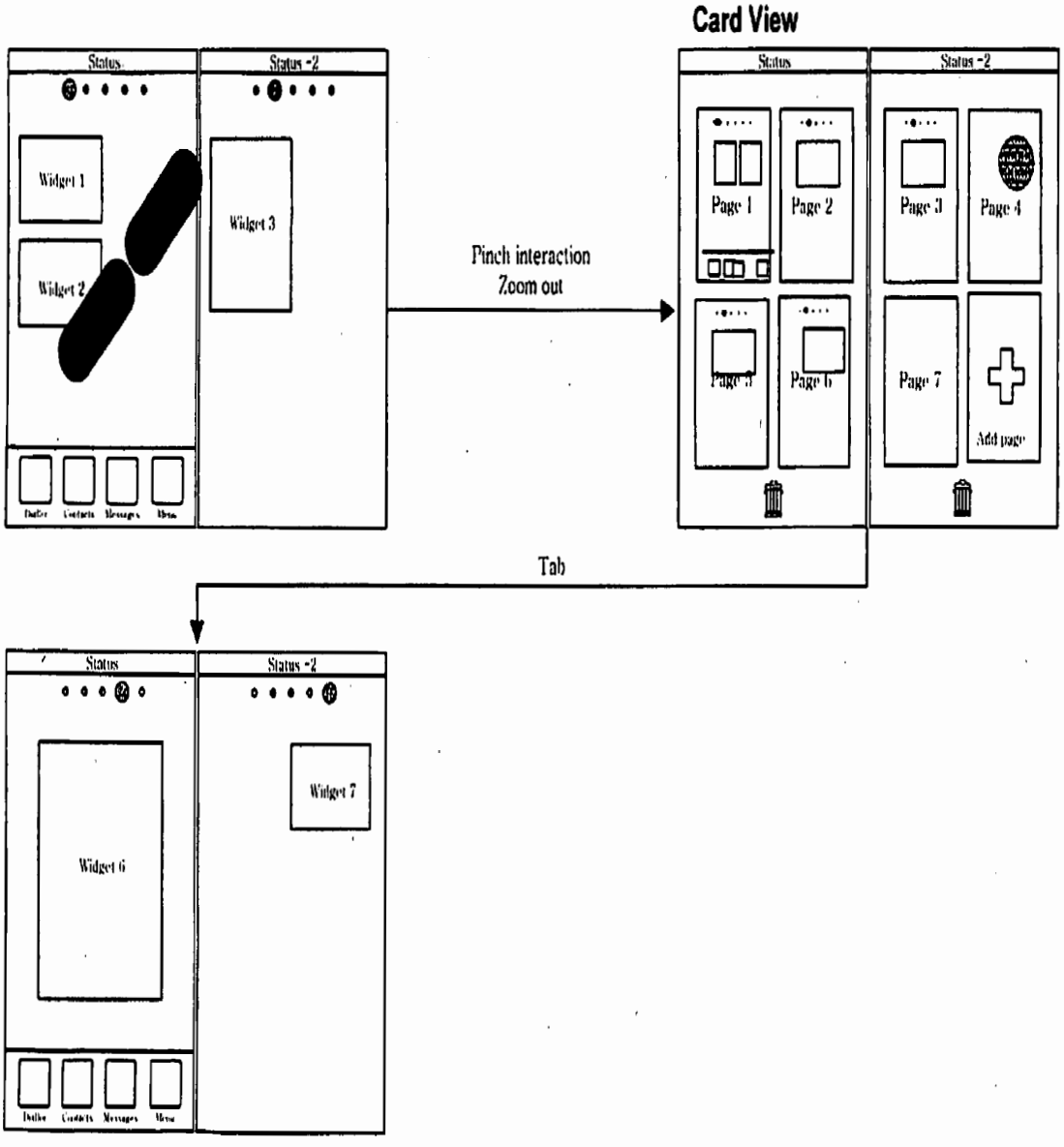


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

2.2 Page Navigation

- Quick access for Page Navigation
  - Enable user navigate between pages(card view) easily with Pinch zoom out



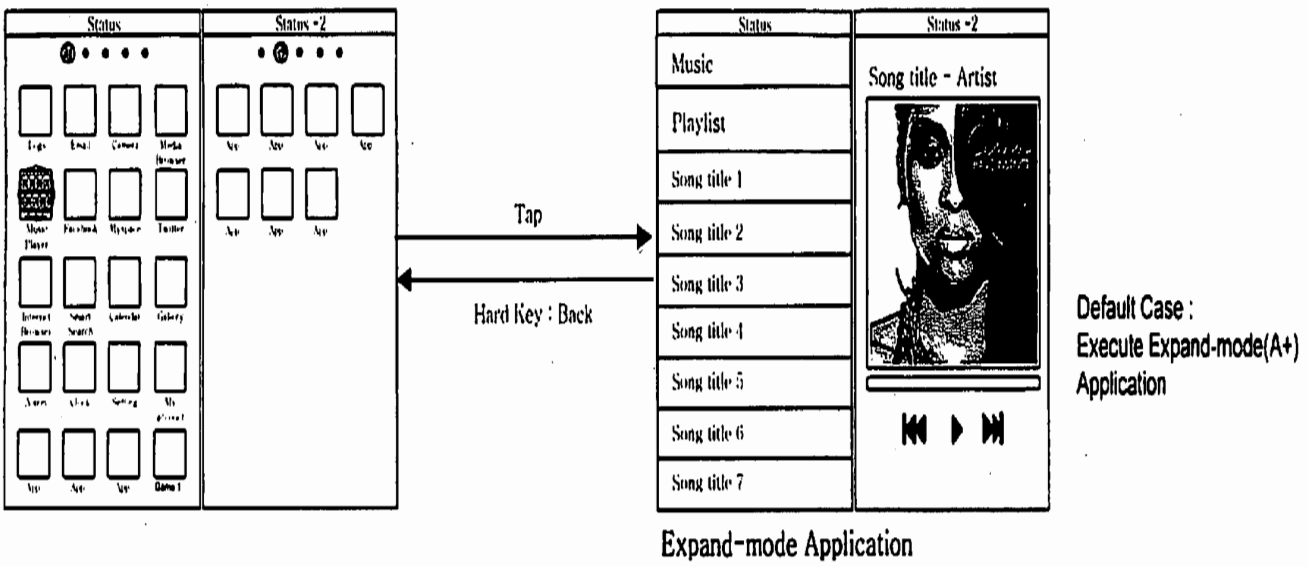
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Application Execution

• Application Execution for Expand-mode(A+) Home (1/2)
- Default : Execute Expand-mode(A+) Application



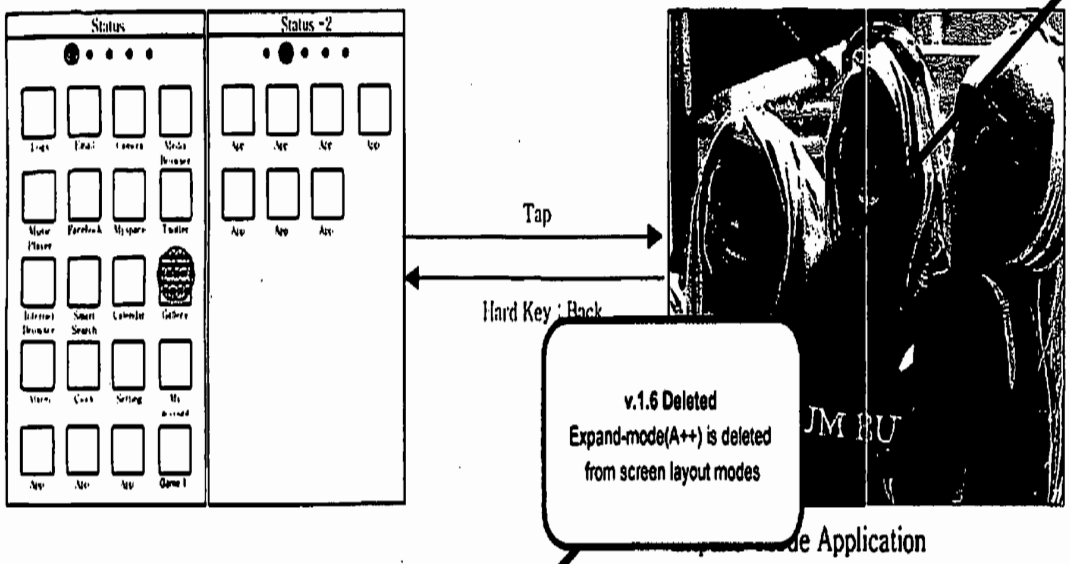
©2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Application Execution

- Application Execution for Expand-mode(A+) Home (2/3)
  - When Expand-mode(A+) Application was executed just before home screen, then execute Expand-mode(A++) Application



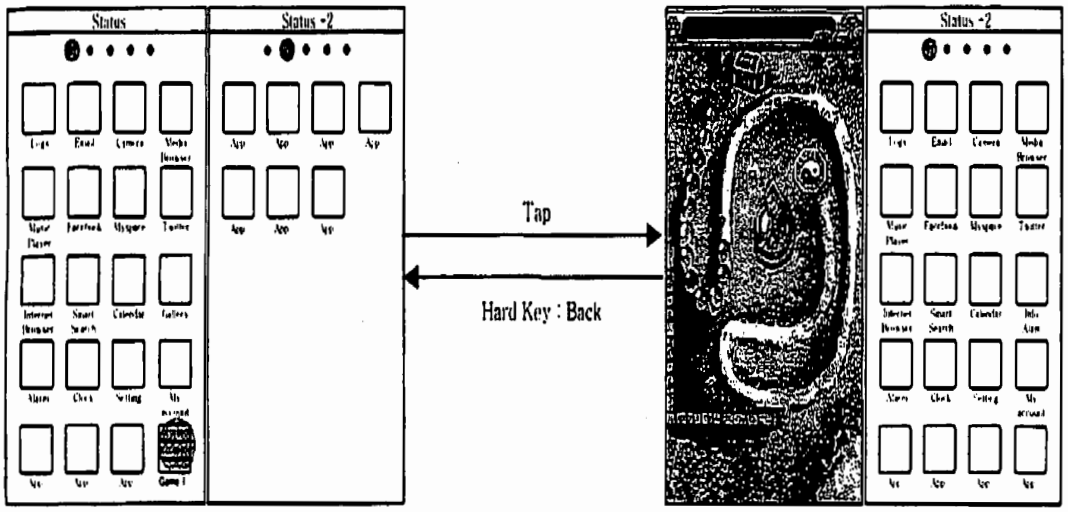
©2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Application Execution

- Application Execution for Expand-mode(A+) Home (2/2)
  - 3rd Party Application that does not support Expand-mode(A+) : Execute Split-mode Application on the selected screen, and Display Split-mode Home on the other screen



When the selected application does not support Expand-mode(A+), Execute Single Screen Application on the selected screen, and display Single screen home on the other screen.

Single Screen Application + Home

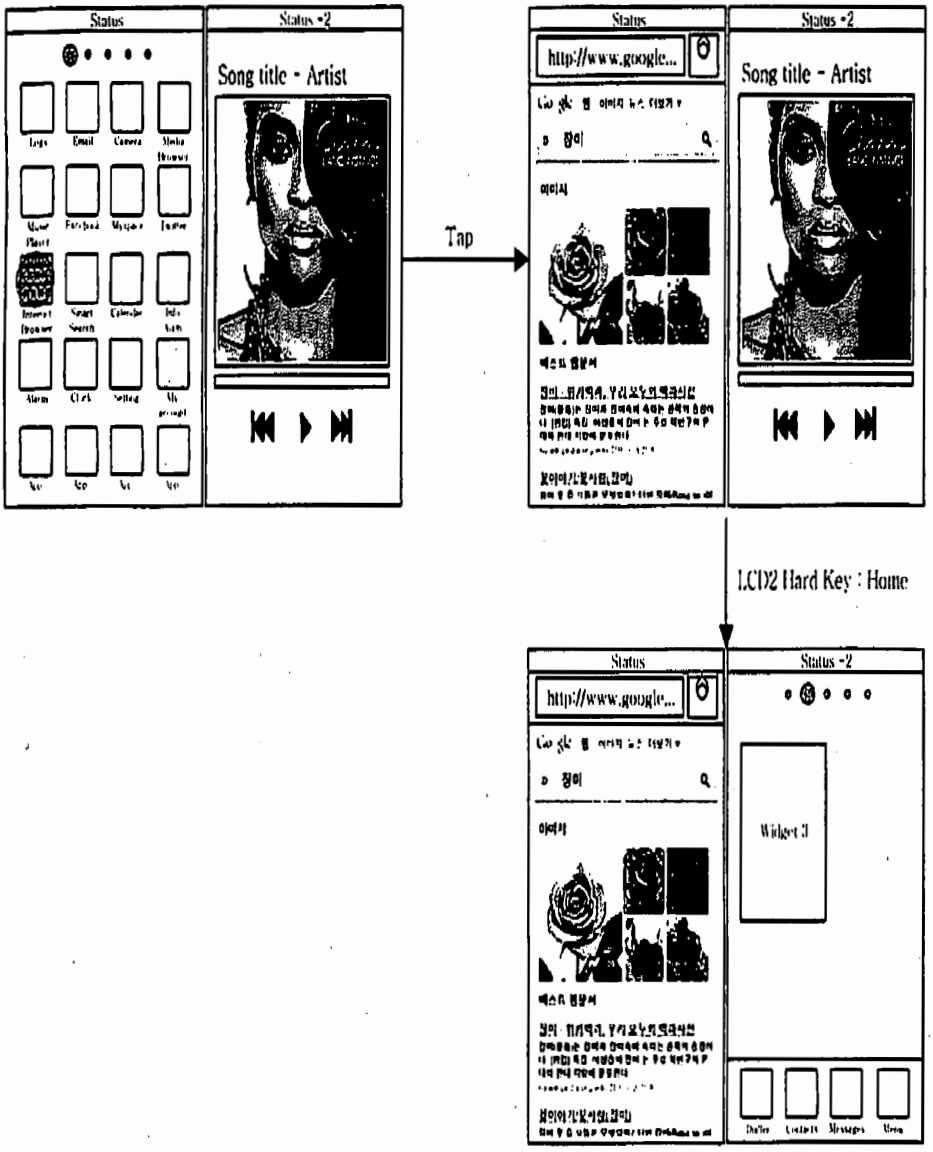
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.3 Application Execution

- Application Execution for Split-mode Home (Single Screen Home) (1/2)
  - Execute an Application on the screen which display home screen, and the other screen is not changed

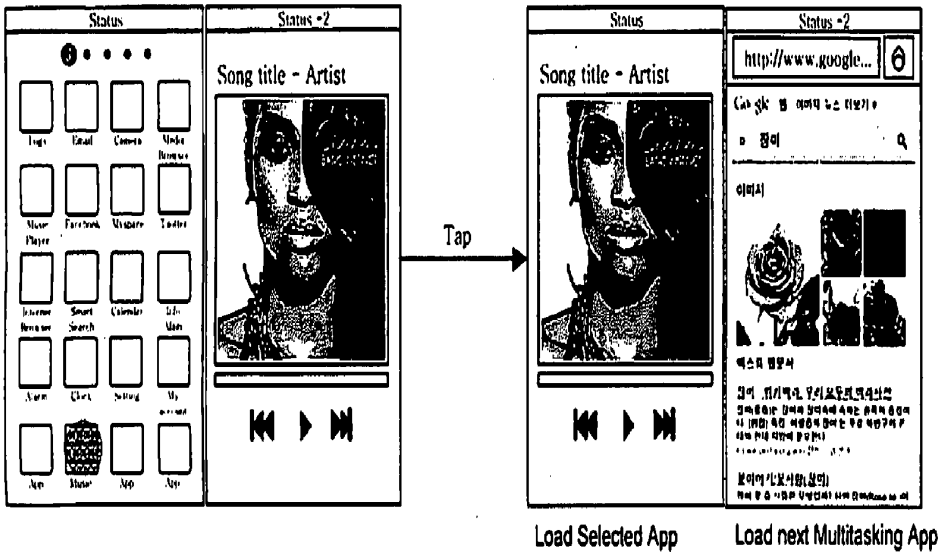


© 2010 SAMSUNG Electronics All rights reserved.

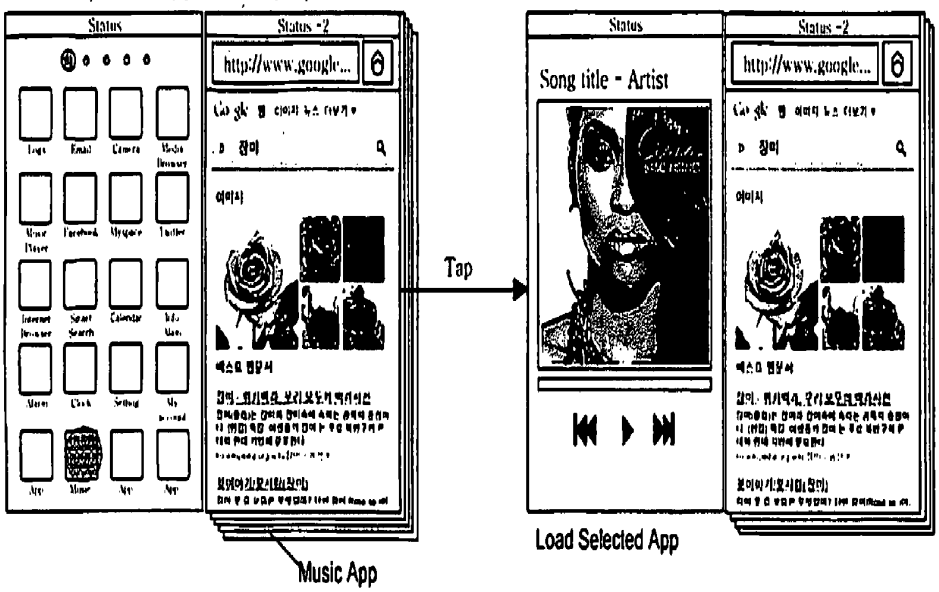
Copied from 13370939 on 05/11/2012

- Application Execution for Split-mode Home (Single Screen Home) (2/2) : Load Duplicate Application
  - When the selected application is playing on the other screen, load the selected application on the screen which display home screen, and load the next multitasking application on the other screen.

Load Duplicate application playing on the other screen



Load Duplicate application played on the other screen



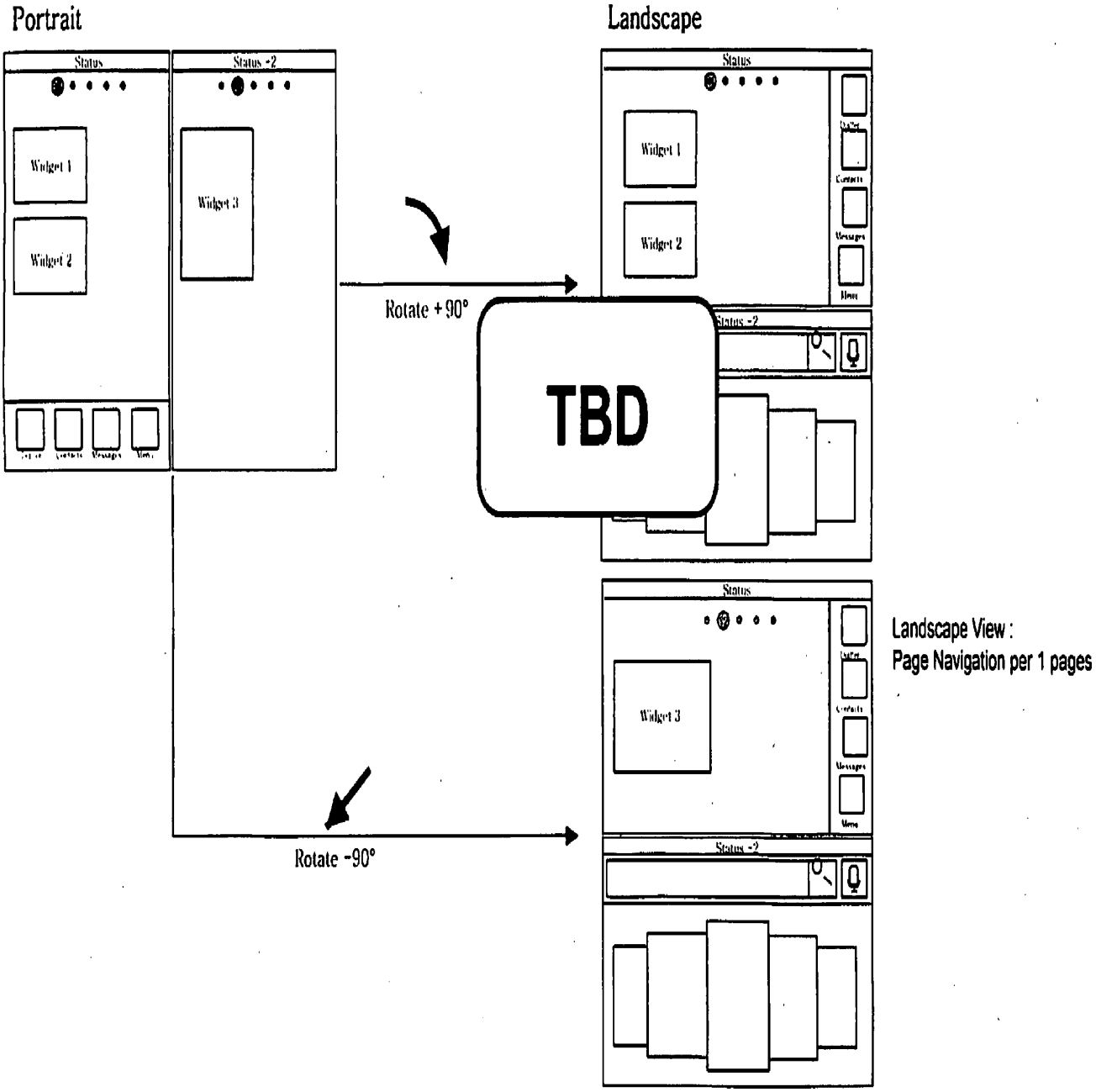
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 Portrait view to Landscape view

- Rotating in the home screen
- Landscape View : Additional search box and multitasking application list would be displayed on the second screen

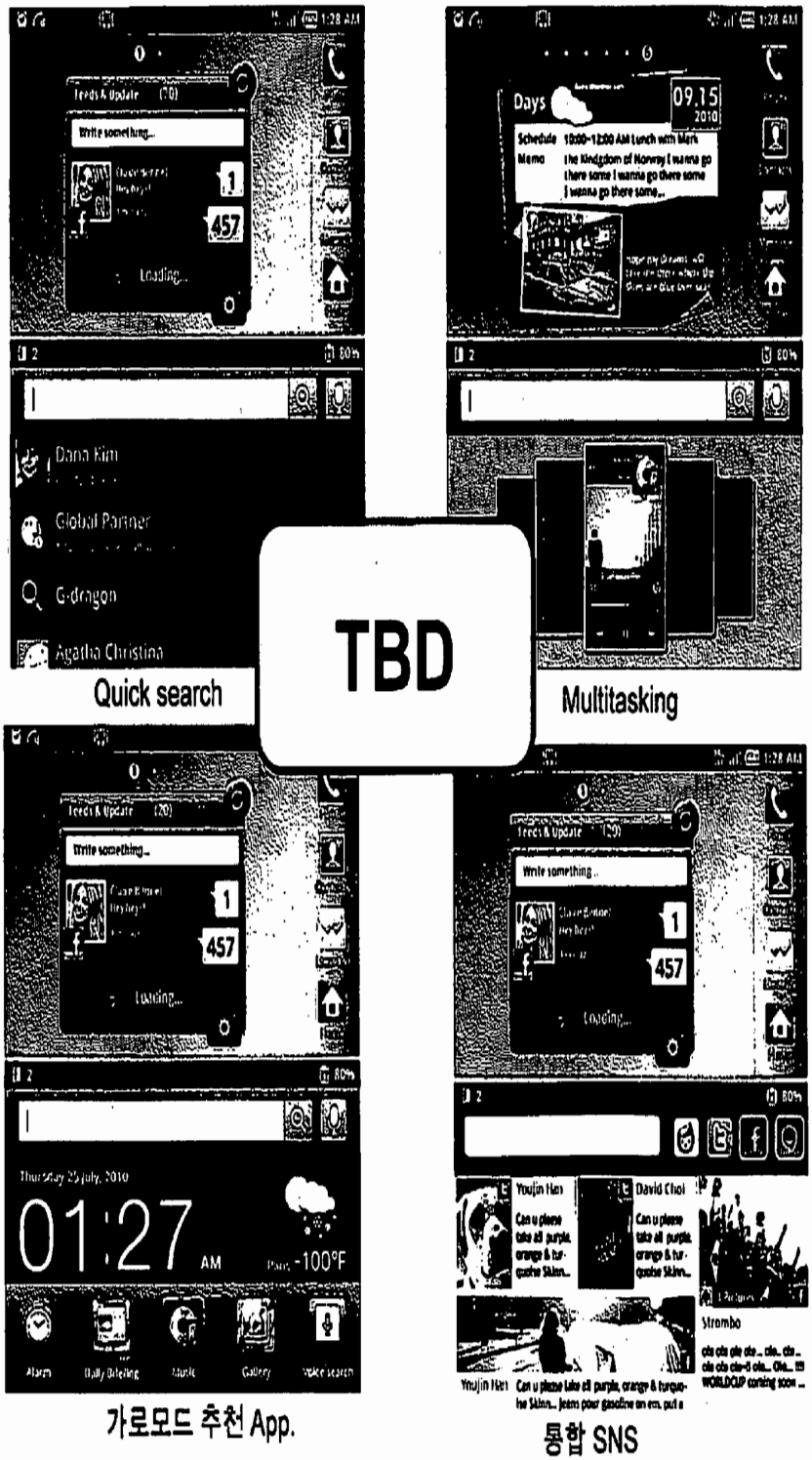


© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.4 Portrait view to Landscape view



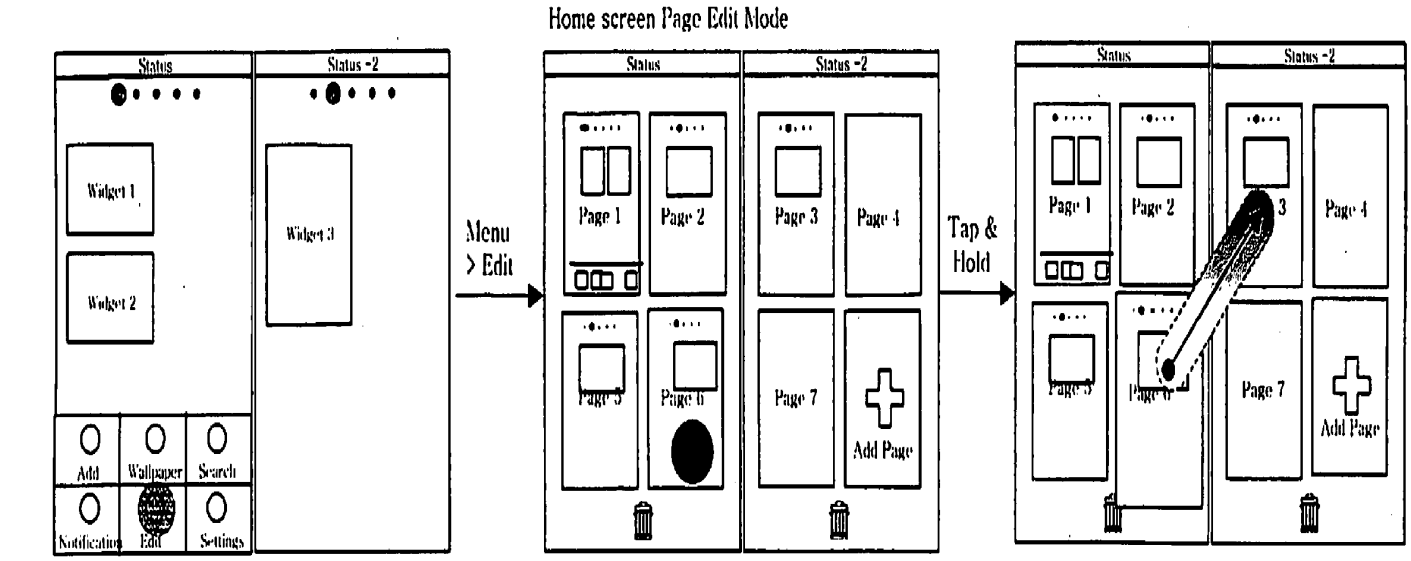
© 2010 Samsung Electronics All rights reserved.

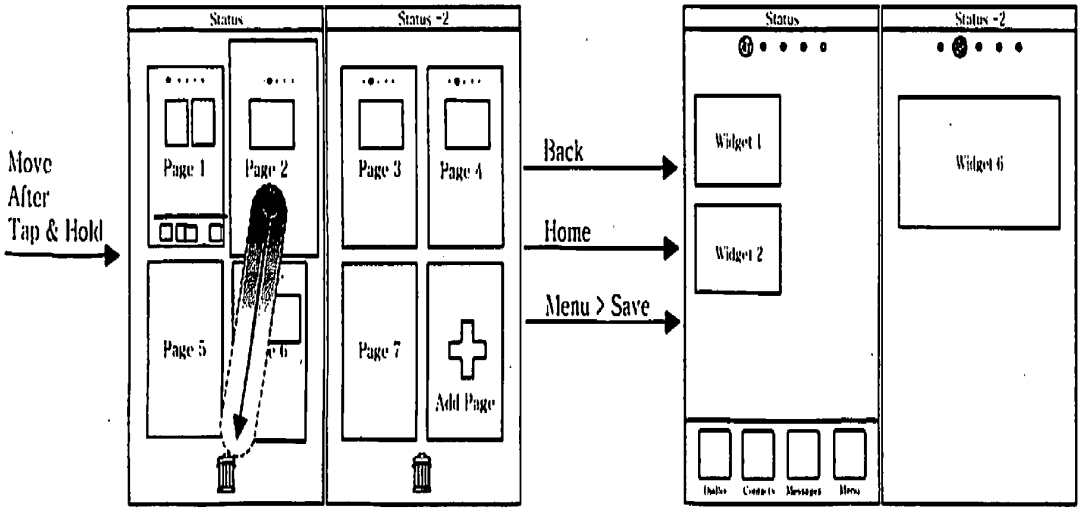
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.5 Edit

- Edit Mode : Page Edit
- User will be able to edit the order and number of those multiple home screens. (Conforming to Samsung android UI Guide)





Delete page with Dragging
If there is a Widget, it should displays Confirmation popup. ("This page has widgets. remove?")

Save and
Return to Home screen

© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

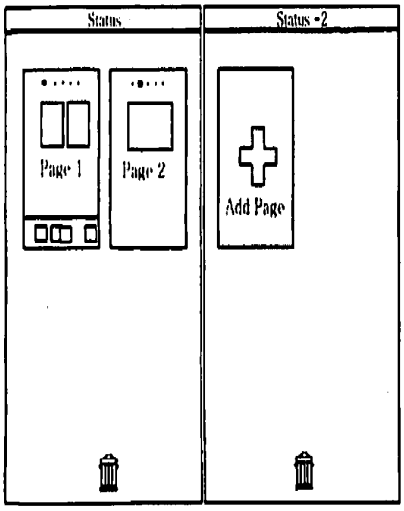
The graphic is for illustrative purposes only and may not represent the actual implementation.

2.5 Edit

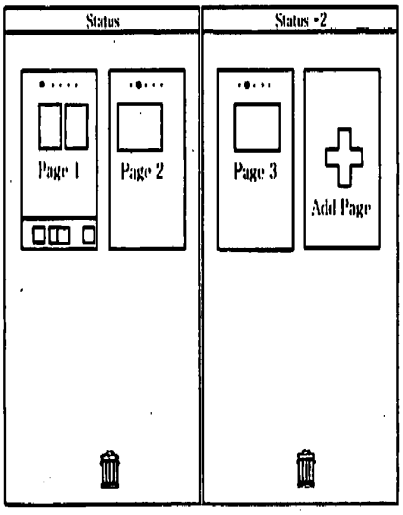
v.1.5 Updated
Min Num of Home screen Page Updated

- Edit Mode : Page Edit
- Layouts for Home screen Page Edit Mode
- Maximum Number of Home screen Page : 8 Page
- Minimum Number of Homescreen Page : 2 Page

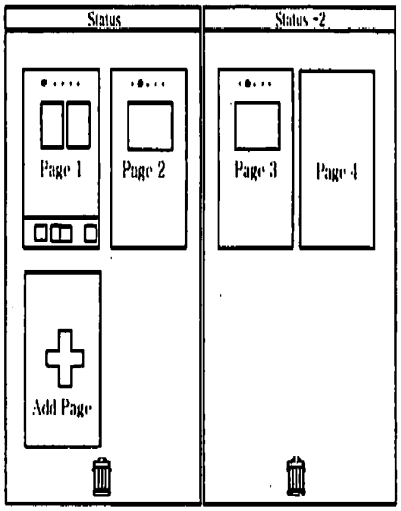
Home screen Page Edit Mode : 2 Page



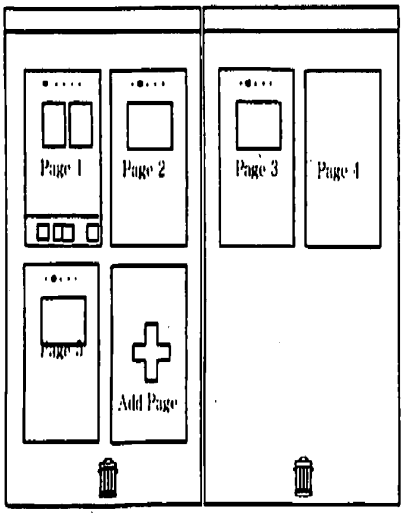
Home screen Page Edit Mode : 3 Page



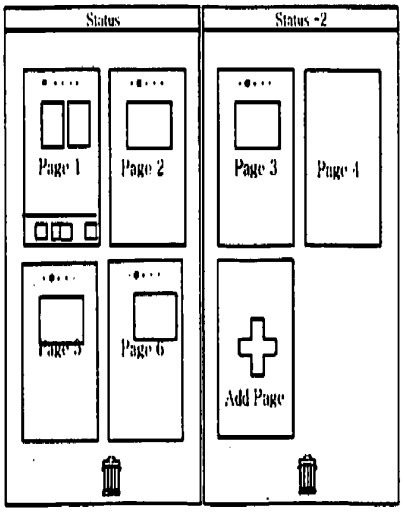
Home screen page Edit Mode : 4 Page



Home screen page Edit Mode : 5 Page



Home screen page Edit Mode : 6 Page



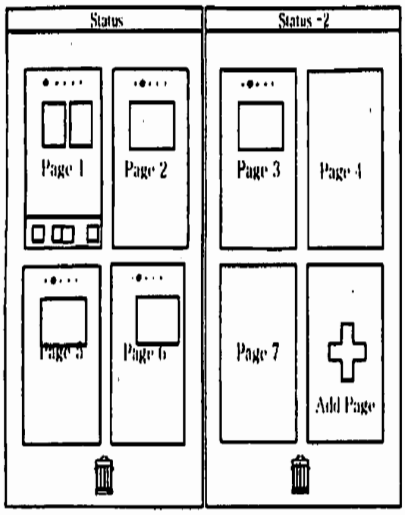
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

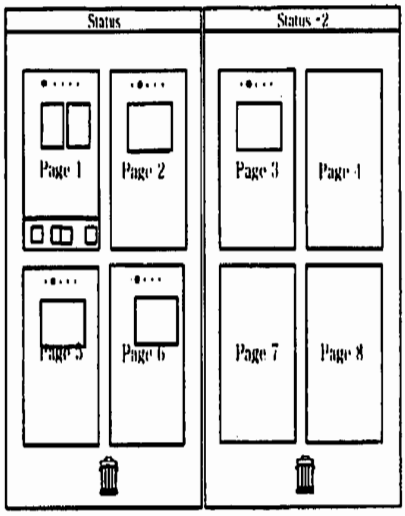
2.5 Edit

- Edit Mode : Page Edit
- Layouts for Home screen Page Edit Mode
- Maximum Number of Home screen Page : 8 Page
- Minimum Number of Homescreen Page : 2 Page

Home screen Page Edit Mode : 7 Page



Home screen Page Edit Mode : 8 Page



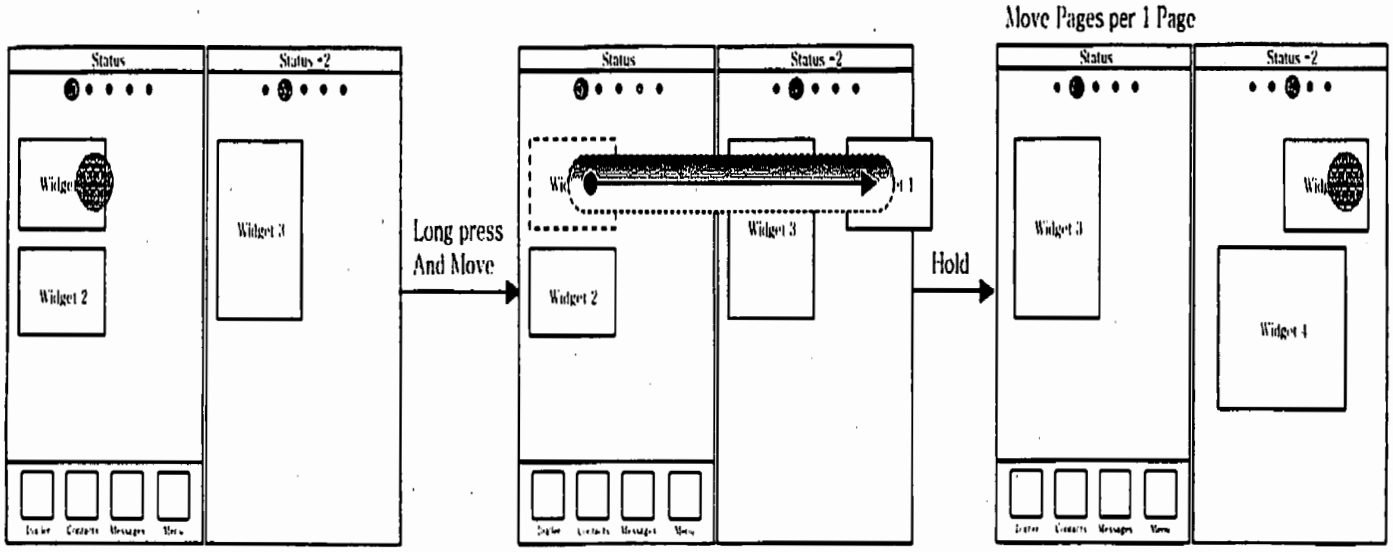
© 2010 SAMSUNG Electronics All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.5 Edit

- Edit Mode : Move Items
  - Moving interaction is very similar to android method.
  - Visual cue should applied to the outline of widget item if automatically scrolling is available (Conforming to Samsung android UI Guide)



- Visual cue will be supported similar to delete case
  When the ¼ of icon area goes to edge of screen, border of icon color will be changed
- Improve the speed of auto scrolling.

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

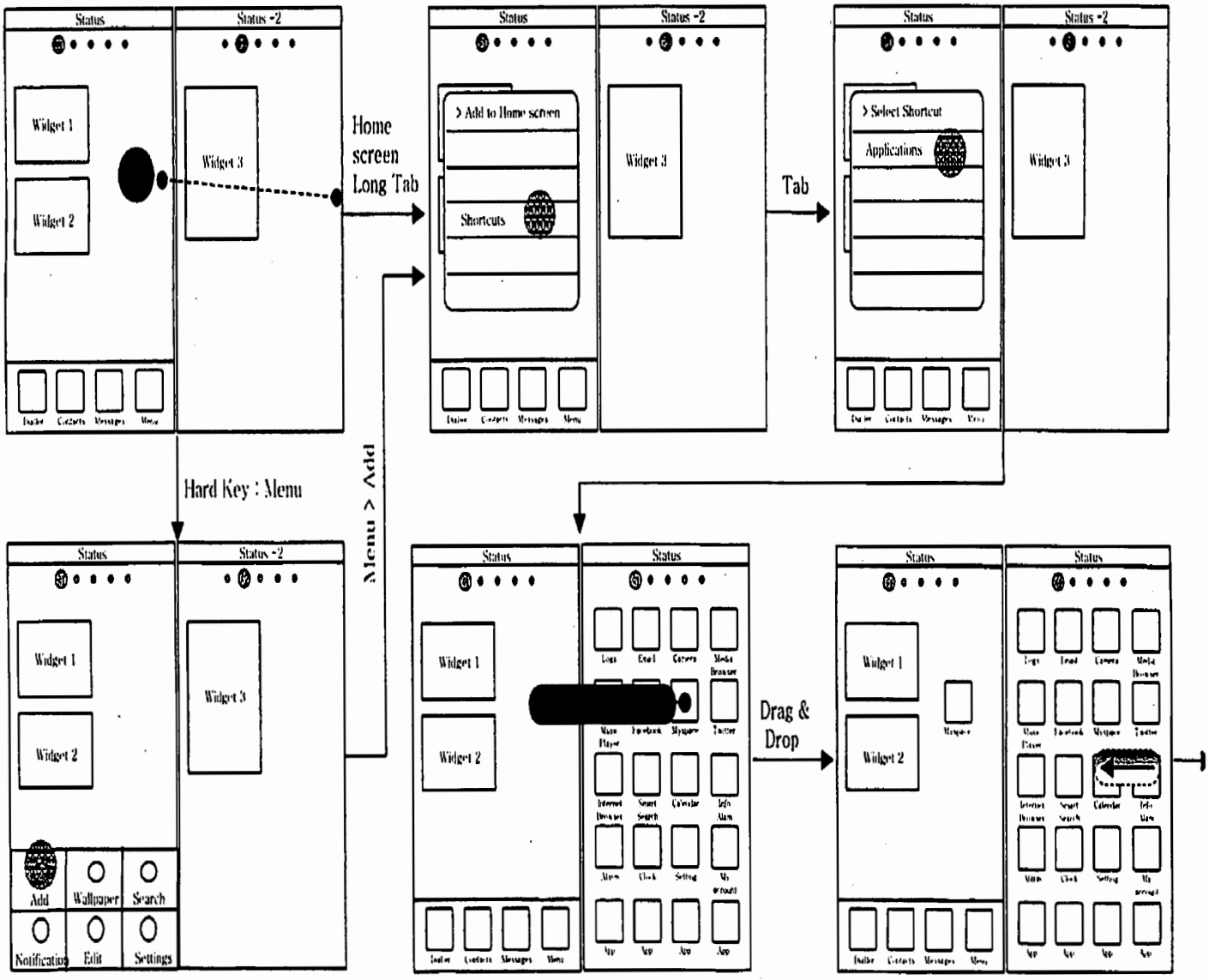
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.6 Add Application Shortcut

Comment
GUI Effect for shortcut mode icon

- Application shortcut creation
- Home > Long Tab > Add to Home screen Popup > Shortcut > Application
- User may create application shortcut on home screen by drag & drop on an icon from application menu screen to home screen
- User may create multiple application shortcuts on home screen by drag & drop icons multiple times



[Quick Add Shortcut Mode]

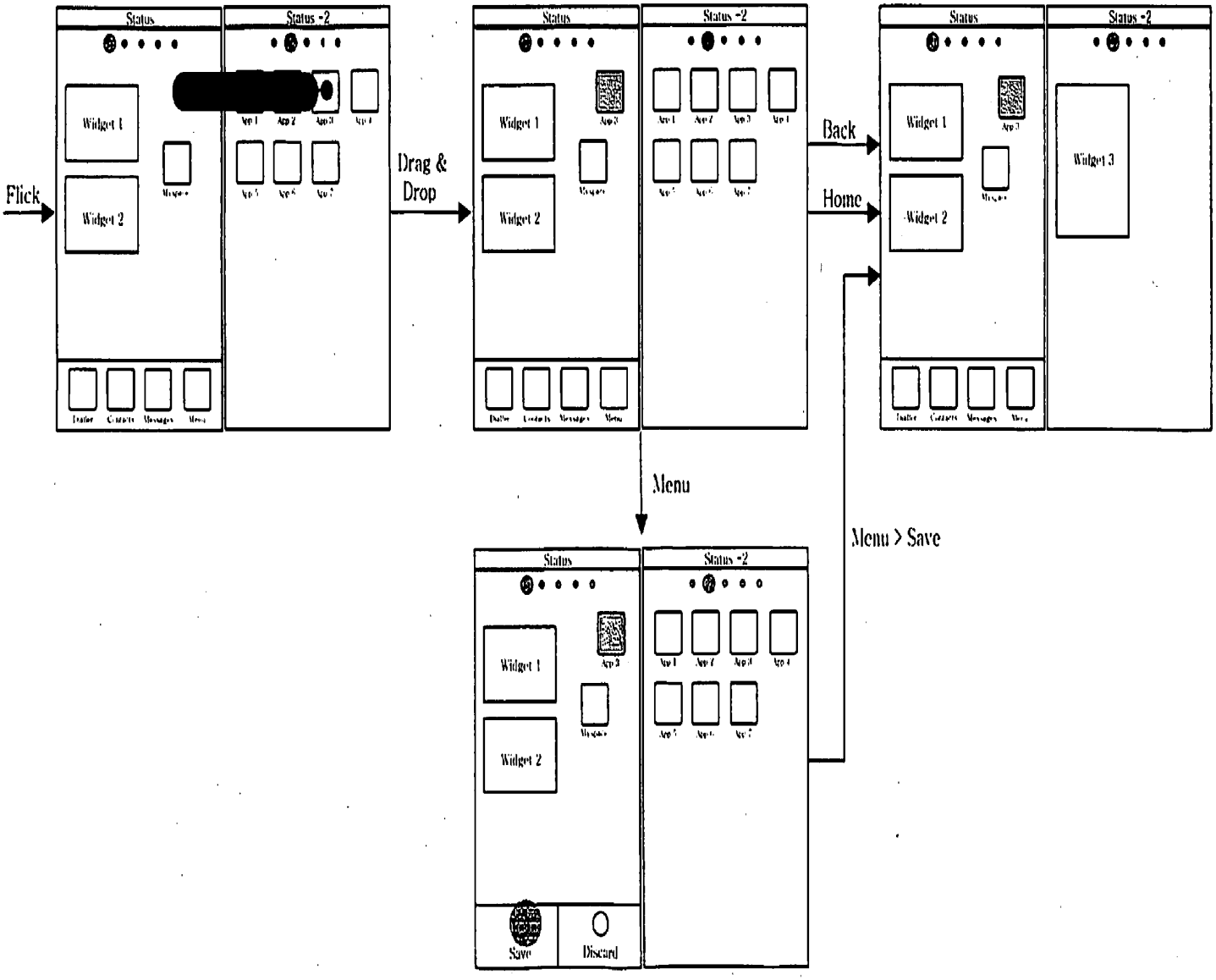
©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

2.6 Add Application Shortcut

- Application shortcut creation
  - Home > Long Tab > Add to Home screen Popup > Shortcut > Application
  - User may create application shortcut on home screen by drag & drop on an icon from application menu screen to home screen
  - User may create multiple application shortcuts on home screen by drag & drop icons multiple times



© 2010 Samsung Electronics All rights reserved
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Application Screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

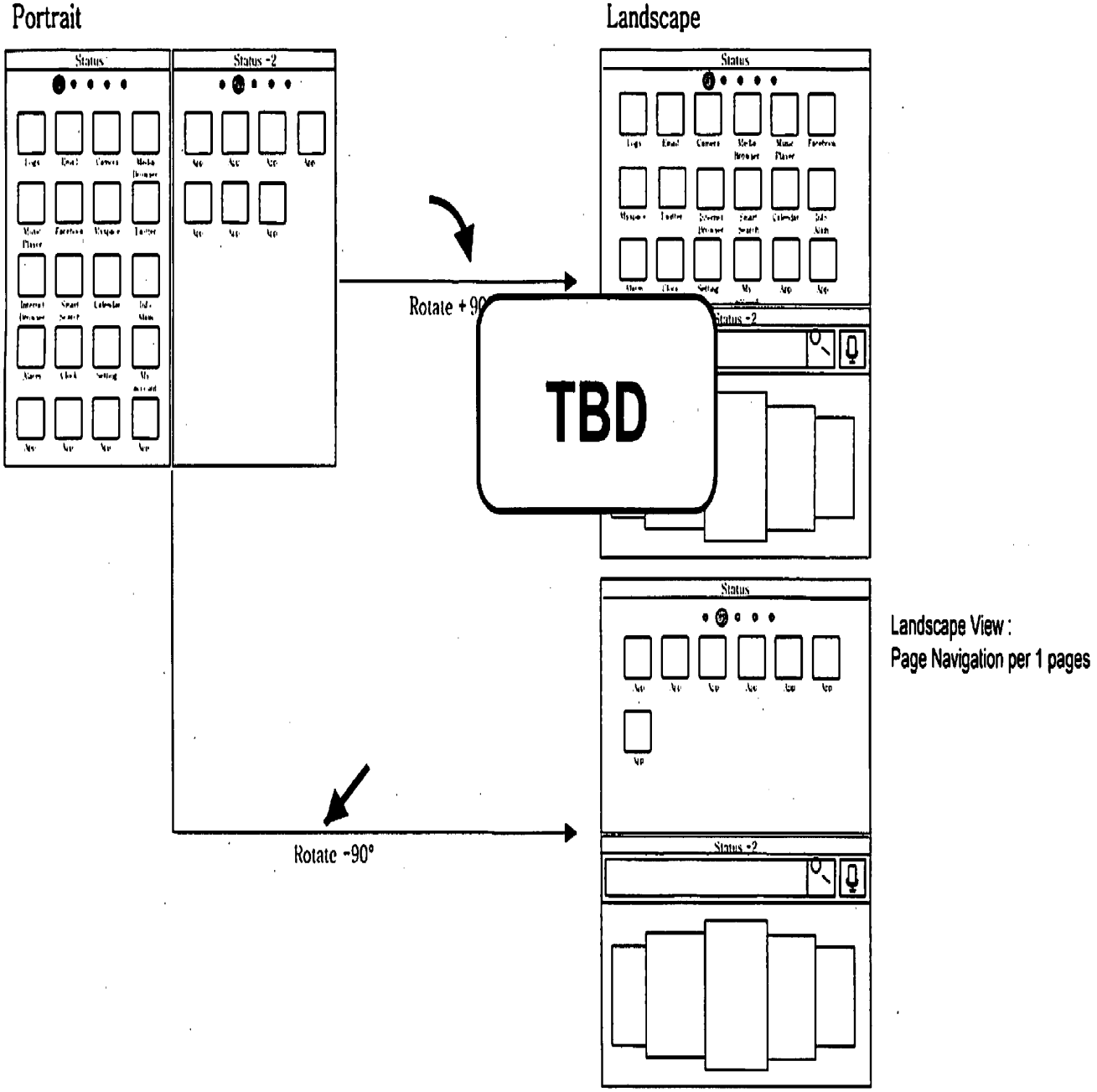
The graphic is for illustrative purposes only and may not represent the actual implementation.

3. Application Screen

3.1 Portrait view to Landscape view

- Rotating in the application

- Landscape View : Additional search box and multitasking application list would be displayed on the second screen

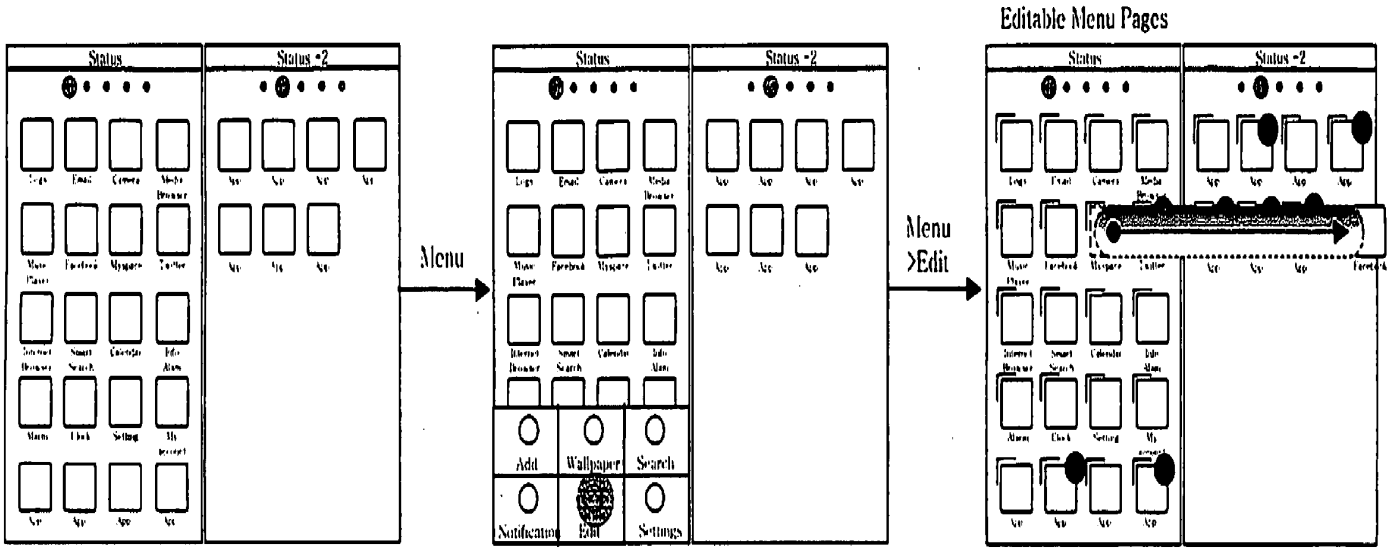


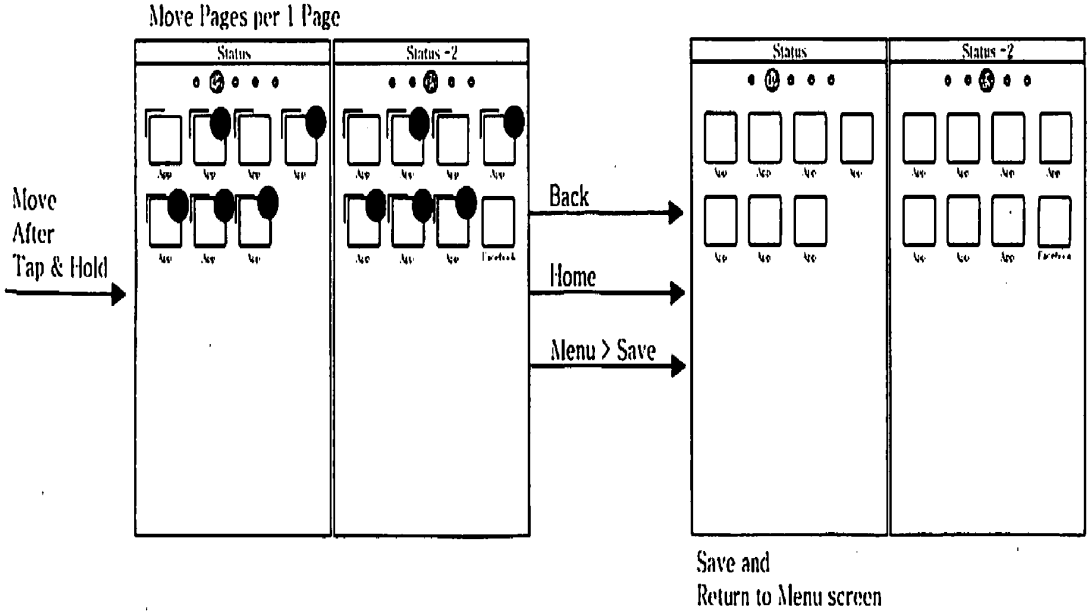
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

3.2 Edit

- Edit Mode
  - User may change location of applications by drag & drop in menu edit mode. (Conforming to Samsung android UI Guide)



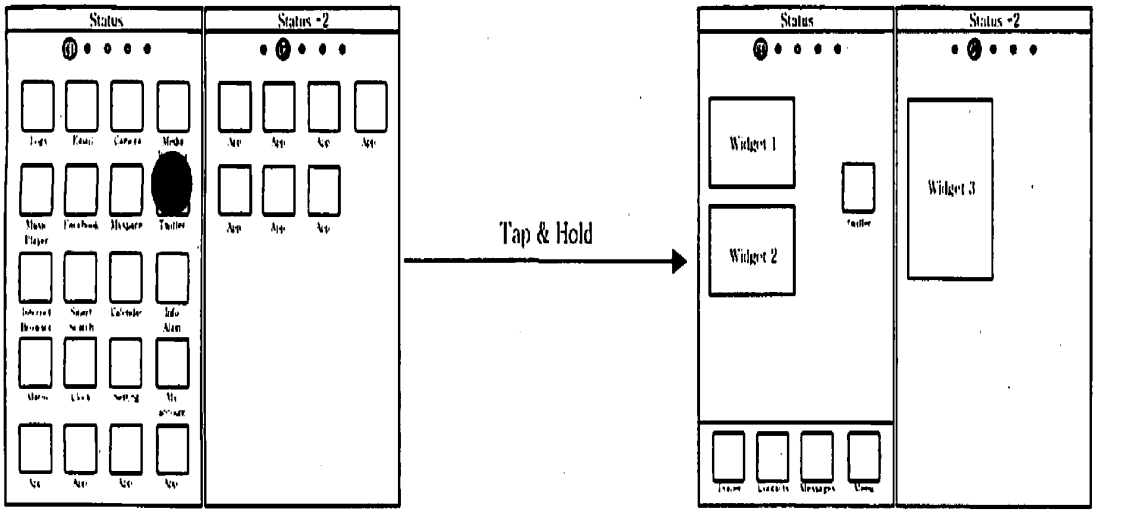


Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

3.3 Add Application Shortcut

- Application shortcut creation
  - User may create application shortcut on home screen by tap & hold on an icon in application menu (Conforming to Android UI)



Application shortcut creation is conforming to Android UI

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

Multi-tasking

© 2010 SAMSUNG Electronics Co., Ltd. All rights reserved.

Copied from 13370939 on 05/11/2012

4.1 Overview

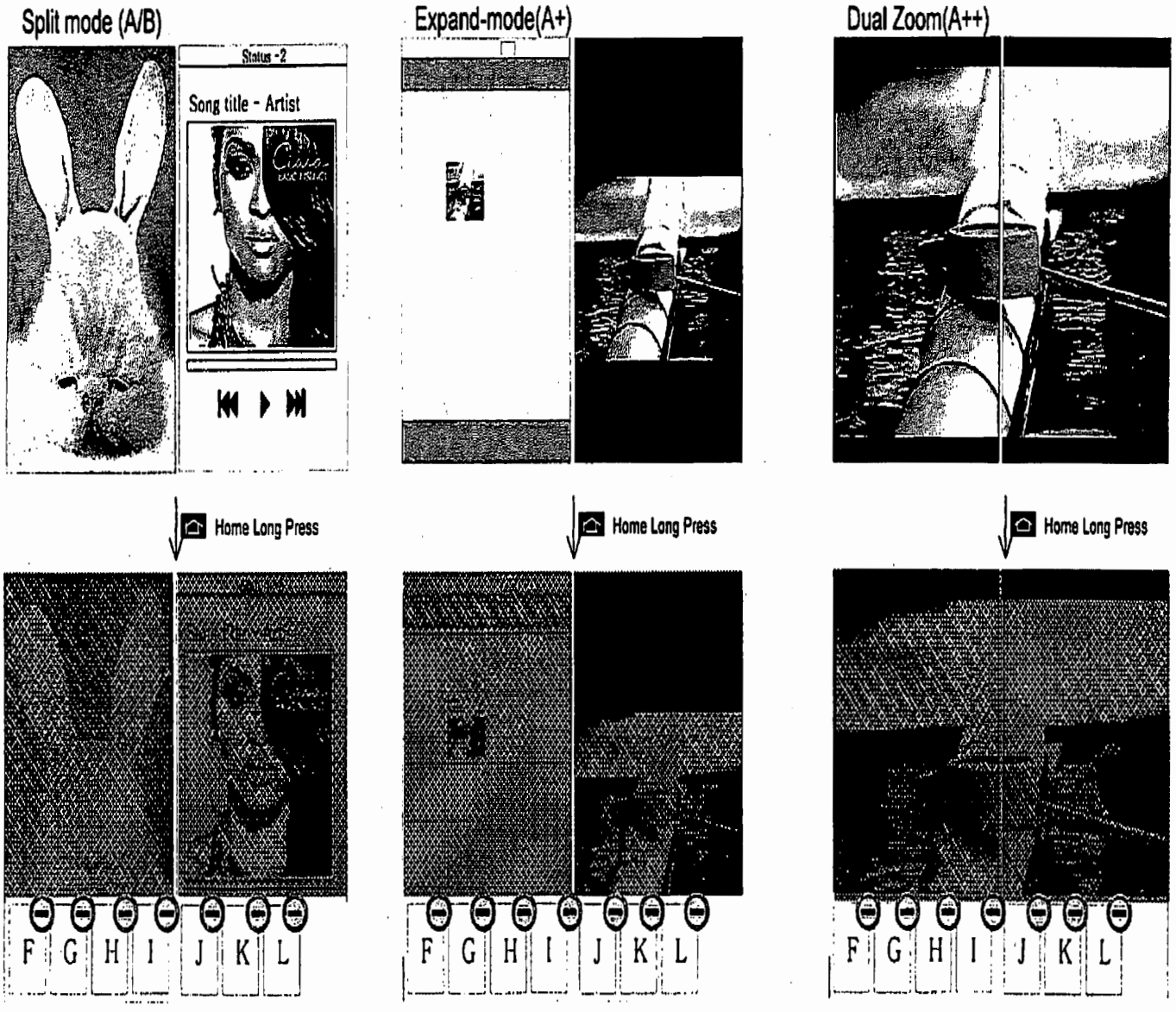
issue

Multi-Tasking Interaction in folding case.
Follow the android multitasking guideline for single display.

v.1.5 Updated
Task Manager Layout Updated
Task Manager for Split & Expand Mode Updated

User can change task using Task Manger.

- Task change using Task Manger



Task Manager Screen

© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

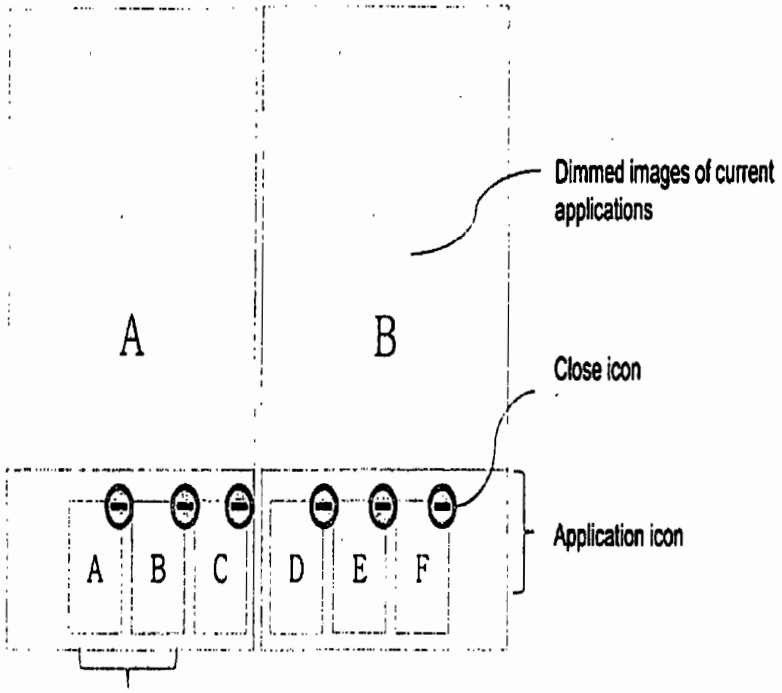
Copied from 13370939 on 05/11/2012

4.2 Task Manager

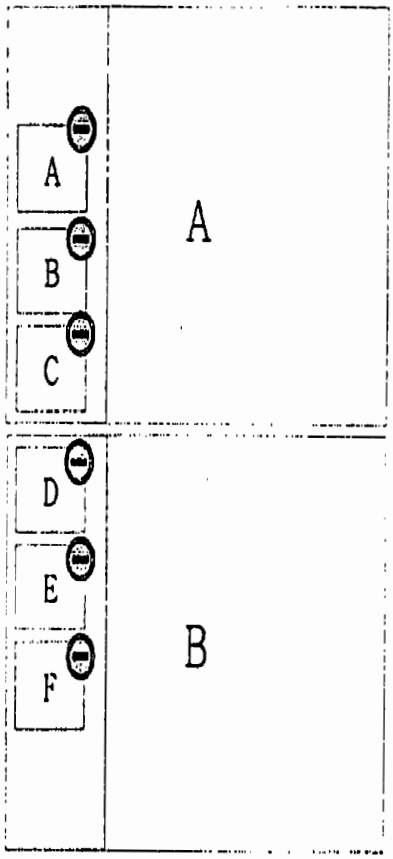
v.1.5 Updated
Task Manager Layout Updated
Task Manager for Split & Expand Mode Updated

- Task manager

[Portrait mode]



[Landscape mode]

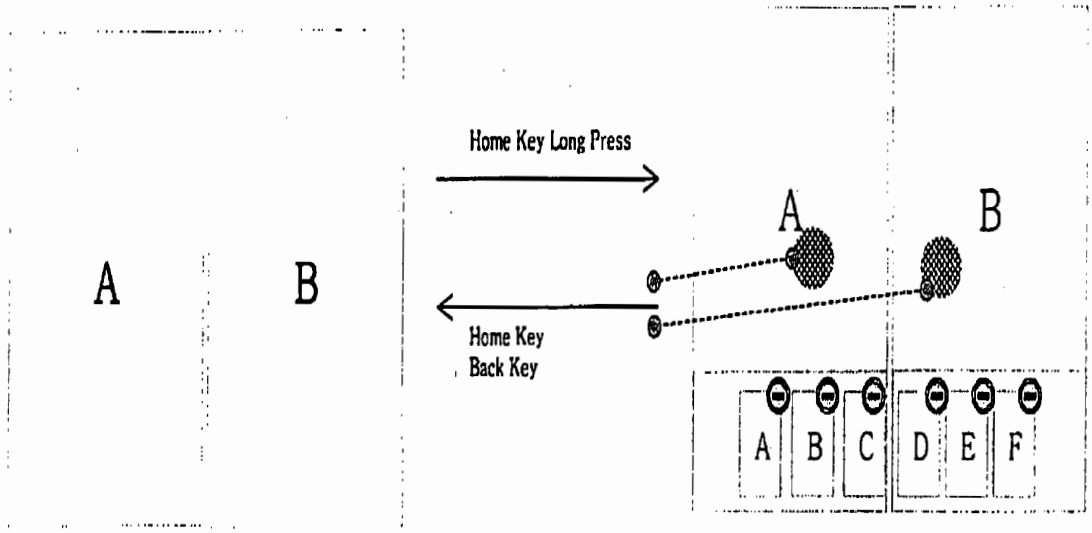


© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

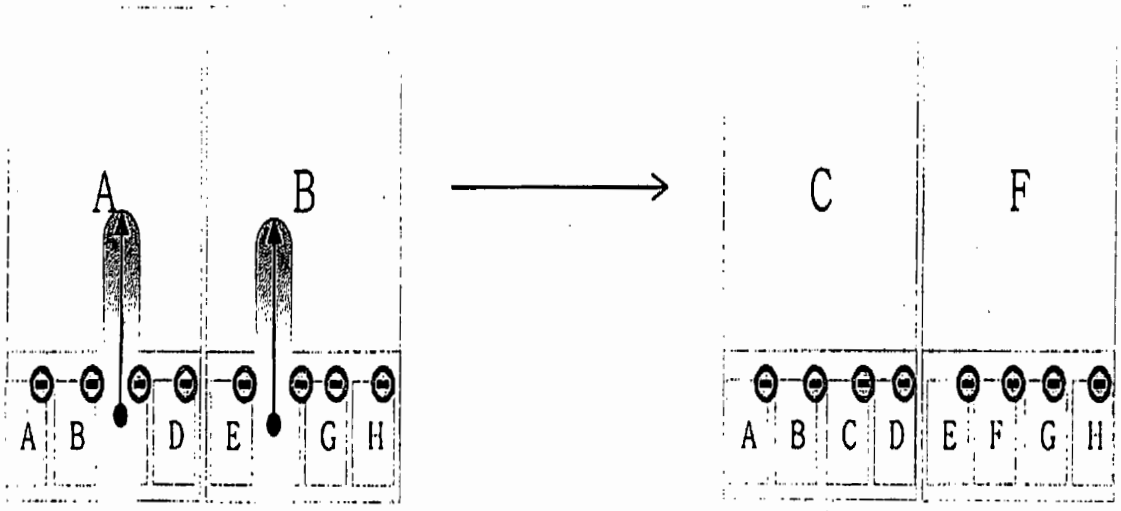
Copied from 13370939 on 05/11/2012

4.3 Basic Flow

- If user drag an App icon to current screen, the screen is change to the dragged App.



- Split mode (A/B)
- If user select an App icon to one screen, the screen is change to the selected App.



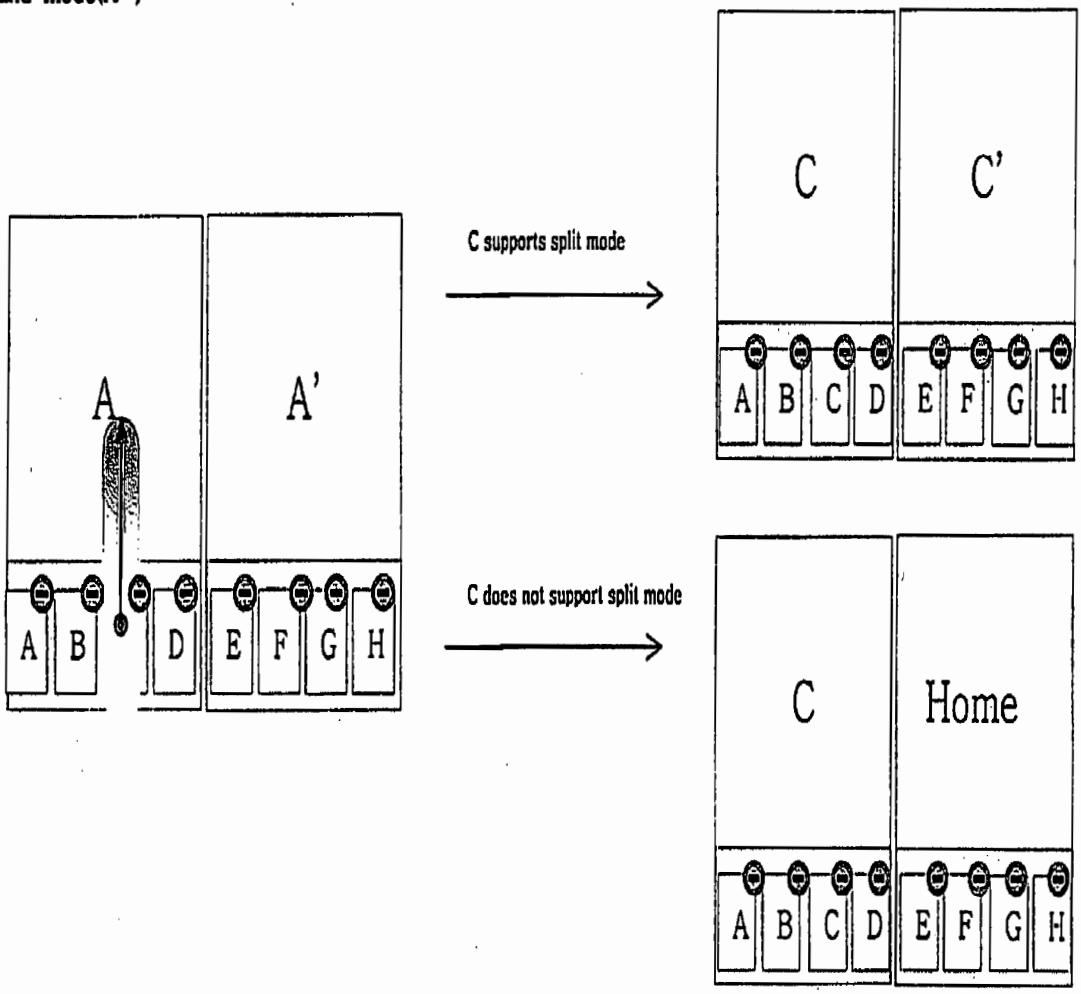
©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

4.3 Basic Flow

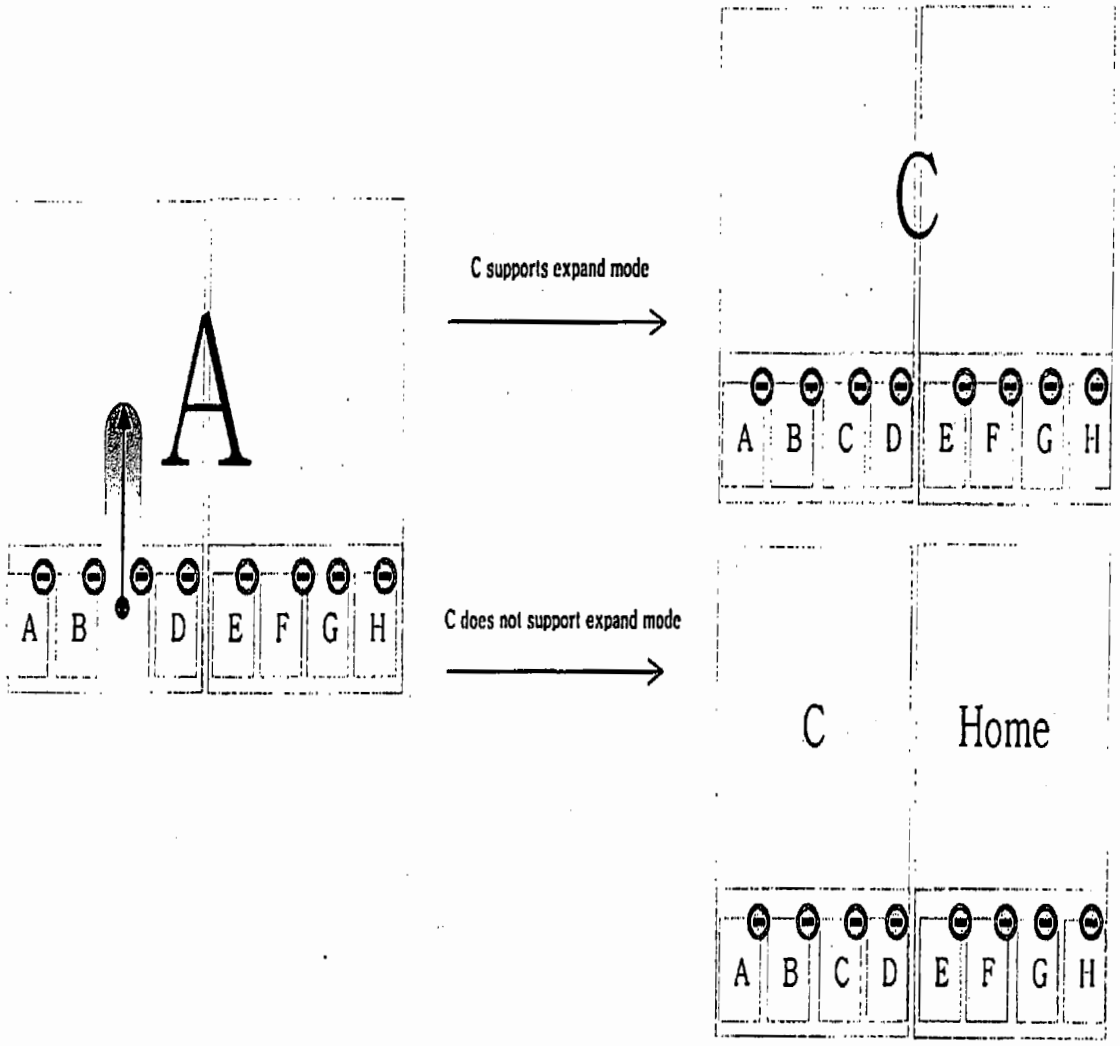
v.1.5 Added
Task Manager for Split Mode Added

- Expand-mode(A+)



Copied from 13370939 on 05/11/2012

- Dual Zoom(A++)



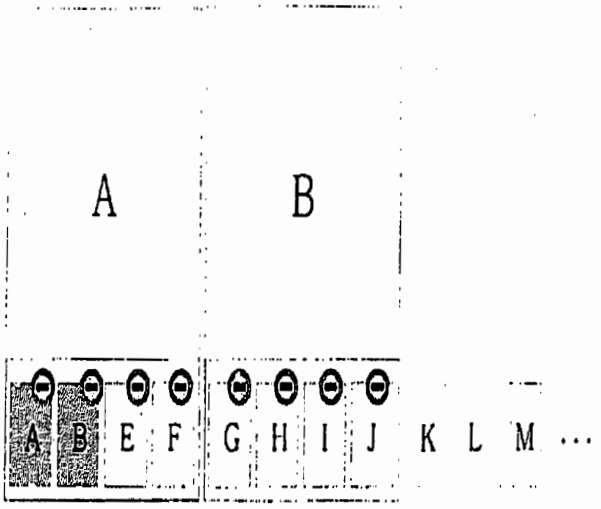
© 2010 SAMSUNG Electronics All rights reserved

Copied from 13370939 on 05/11/2012

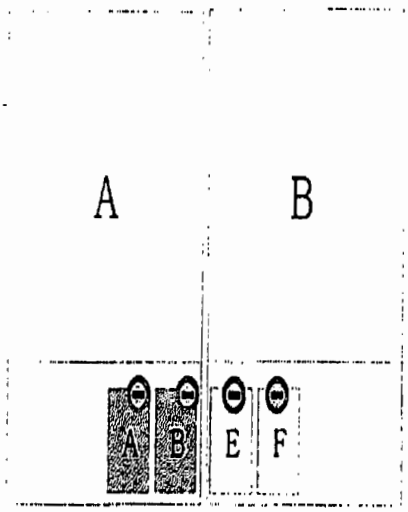
4.3 Basic Flow

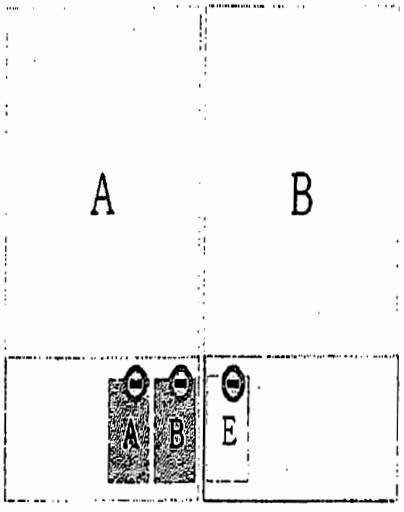
- Alignment
  - The order of App list is base on last played time.
  - Current displayed App is located in 1st, 2nd position.

1. More than 8 App : Left-aligned



2. Less than 8 App : center-aligned



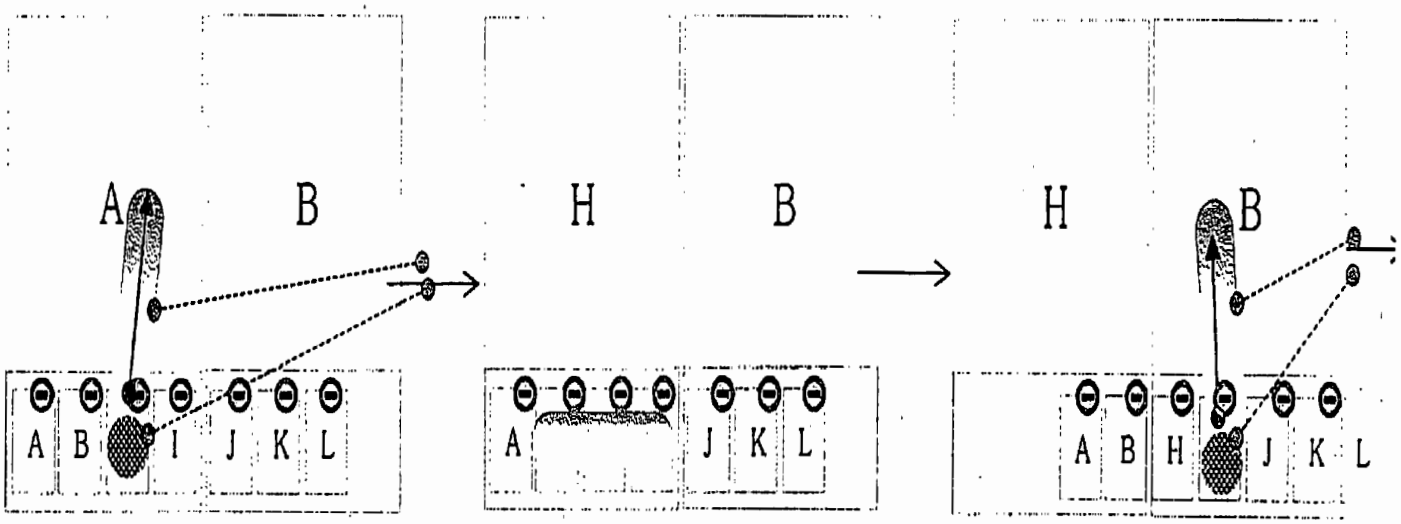


© 2010 SAMSUNG Electronics. All rights reserved.

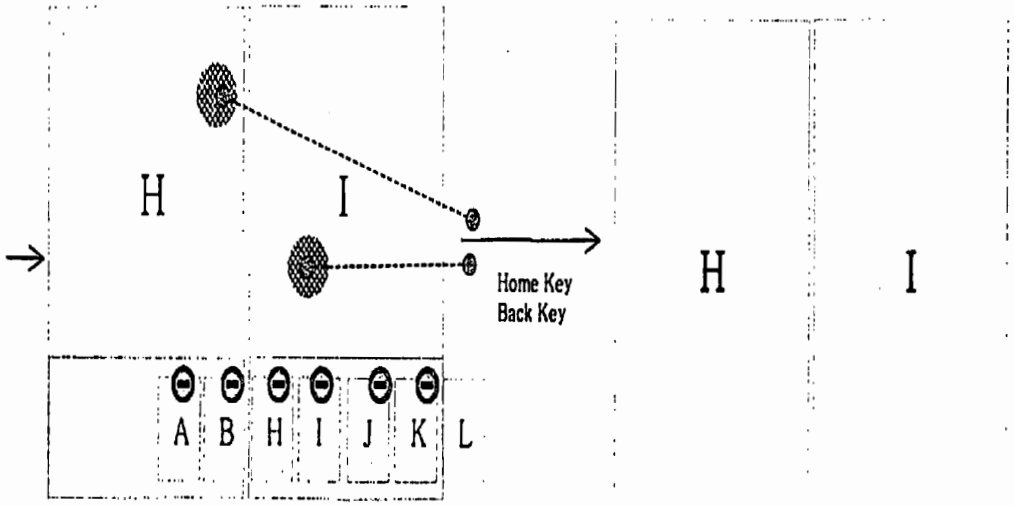
Copied from 13370939 on 05/11/2012

4.3 Basic Flow

- Application Assign
- User can assign App to current screen by Tap or Drag & Drop.
- If user tap current screen area or press Home/Back key, Task Manager is closed.



Left screen is assigned H App



Right screen is assigned I App.

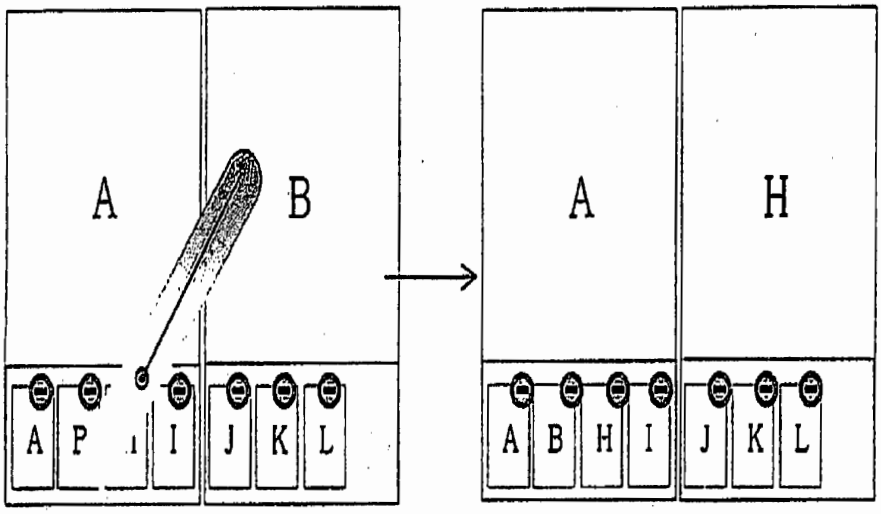
Multitasking mode 종료

© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

4.4 Basic Flow

- Application Assign
- User can assign App to the other screen by Drag & Drop.



Right screen is assigned H App

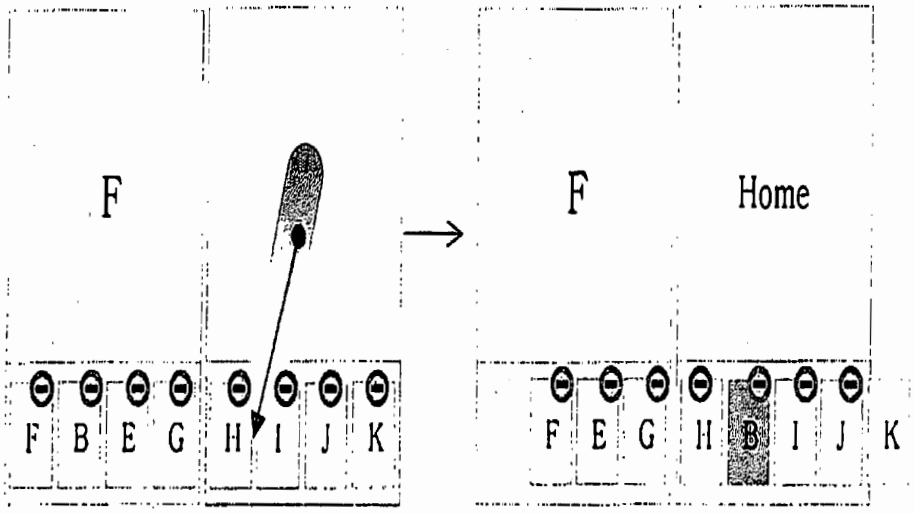
(c) 2010 SAMSUNG Electronics All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

4.4 Basic Flow

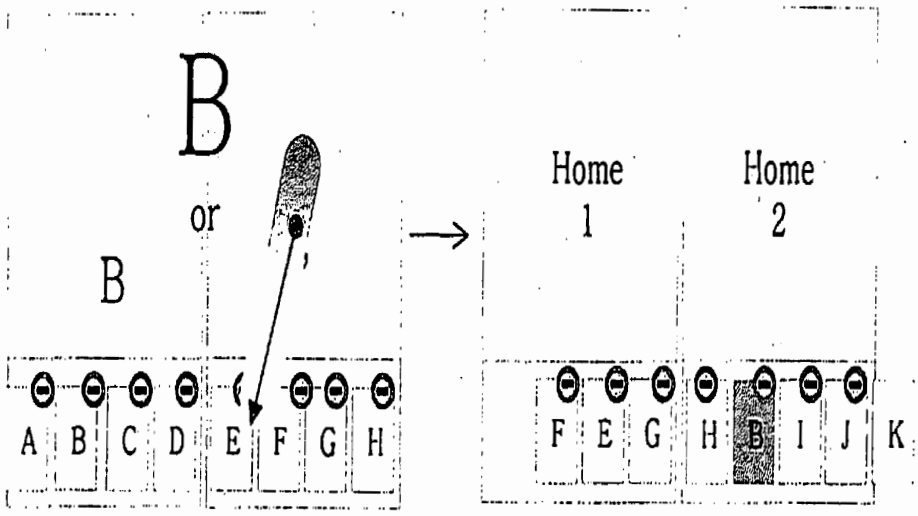
v.1.5 Updated
Application Deletion Rule Updated -

- Application Deletion
- User can close the app on the screen by Drag & drop, and then the screen would display home screen instead.



Delete B application on the right screen.

Home screen would be displayed on the right screen.



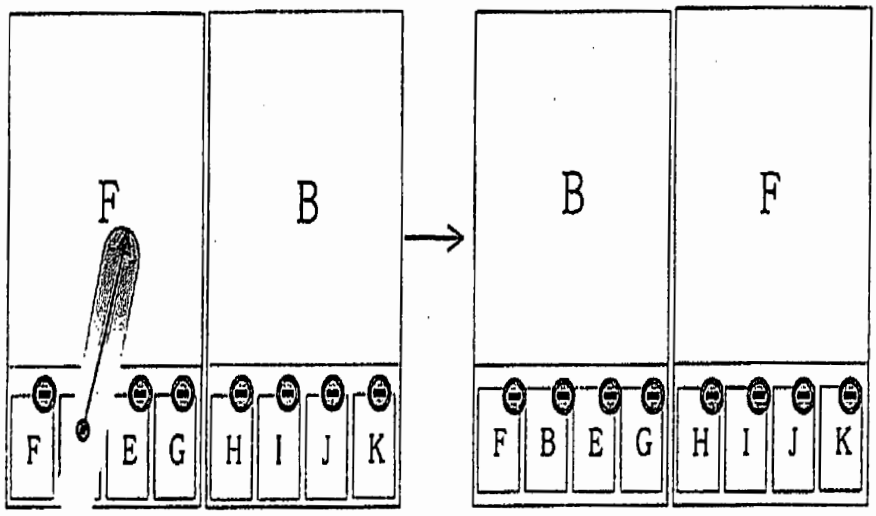
Home screen would be displayed on both screens.

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

7.4 Basic Flow

- Assign duplicated App with the other screen.
- Swap two applications on both screens



Assign the duplicated App with the right screen on the left screen

Swap two applications on both screen.

© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

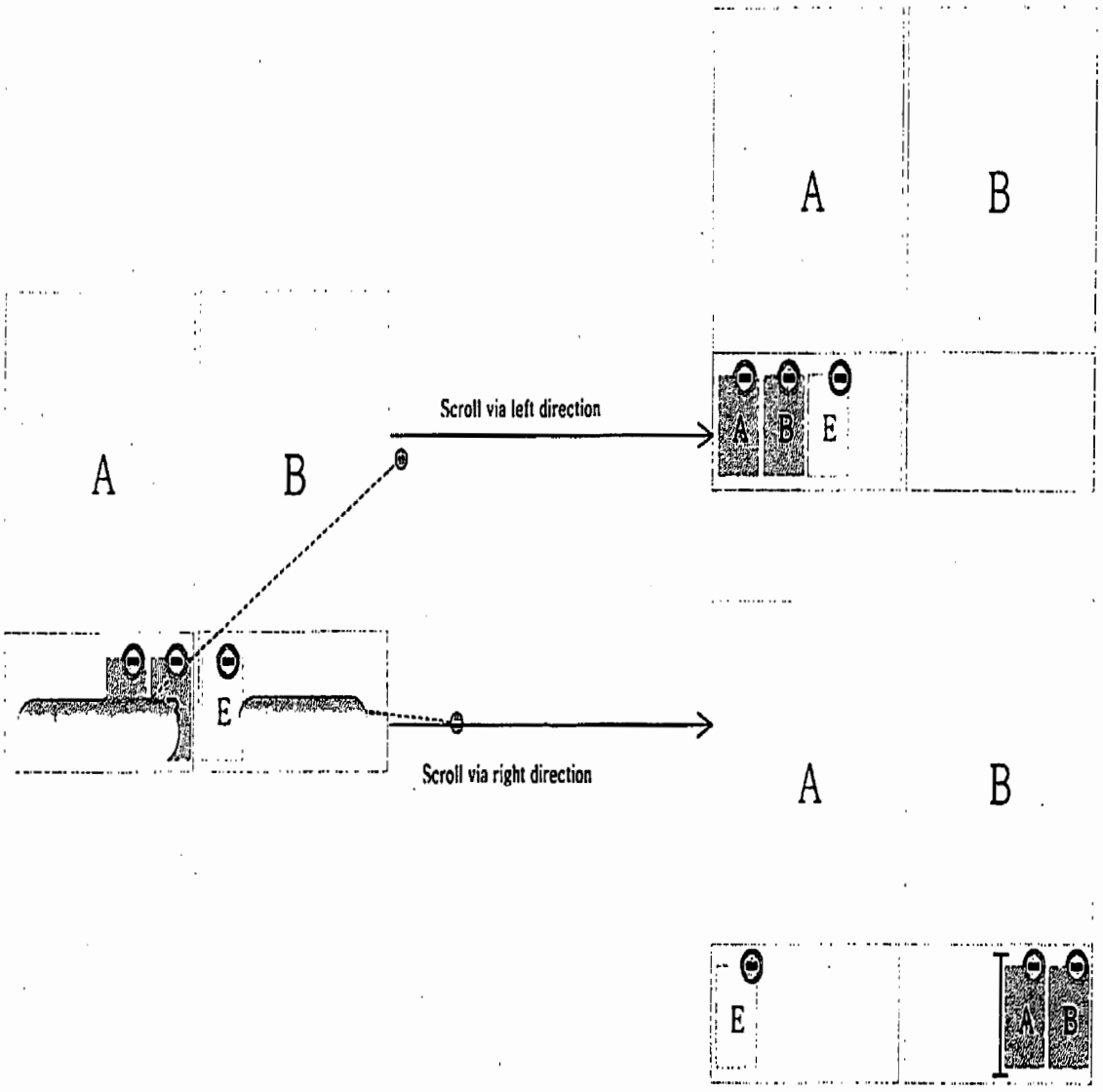
Copied from 13370939 on 05/11/2012

4.4 Basic Flow

v.1.5 Updated
Application list Scrolling Rule Updated -

- **User can scroll App list at left/right screen.**
- App list could be rotated via left and right direction.

1. Less than 8 App



©2010 SAMSUNG Electronics. All rights reserved.

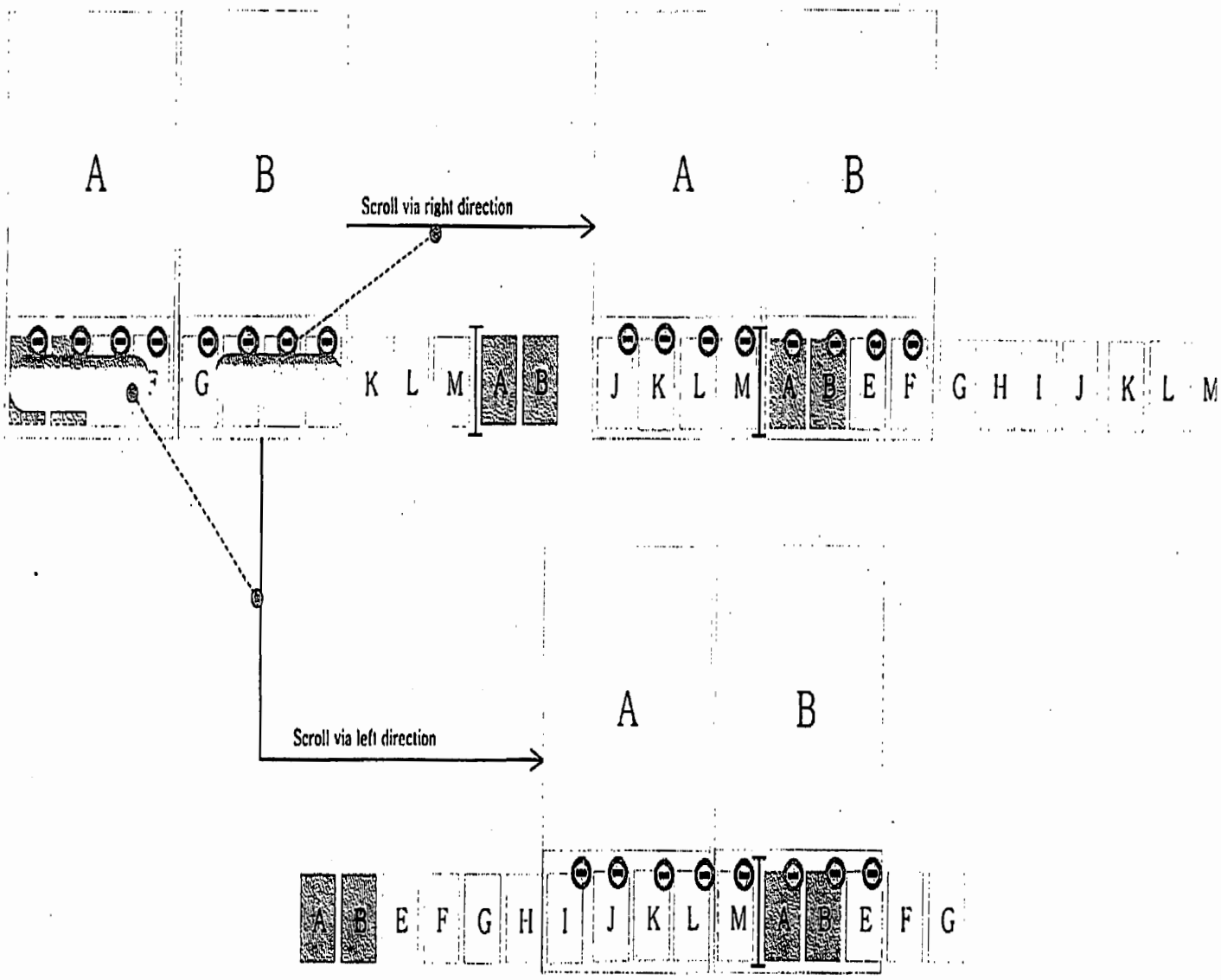
Copied from 13370939 on 05/11/2012

4.4 Basic Flow

v.1.5 Updated
Application list Scrolling Rule Updated -

- **User can scroll App list at left/right screen.**
- App list could be rotated via left and right direction.

2. More than 8 App



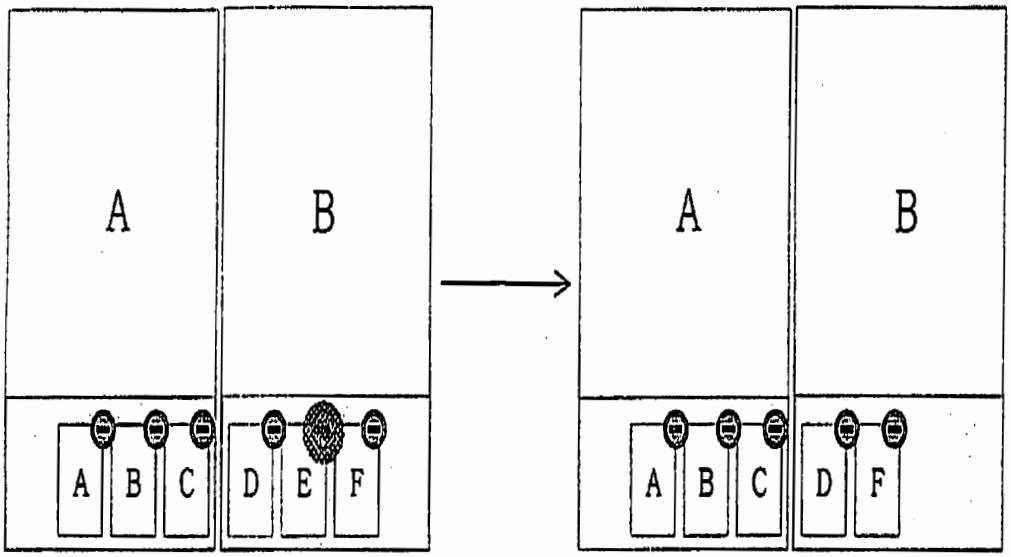
© 2010 SAMSUNG Electronics All rights reserved.

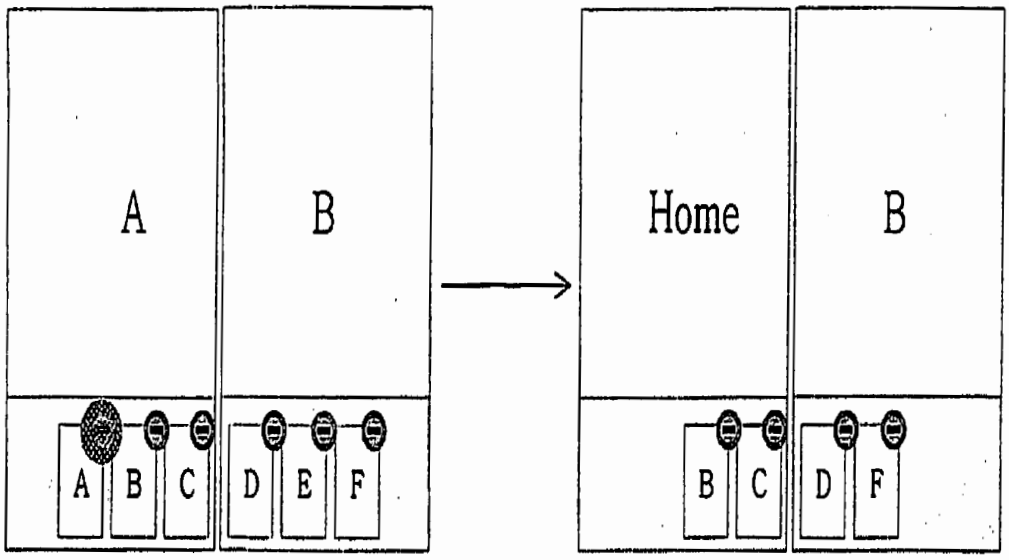
Copied from 13370939 on 05/11/2012

4.4 Basic Flow

v.1.5 Updated
Application Closing Rule Updated

- **User can close applications**





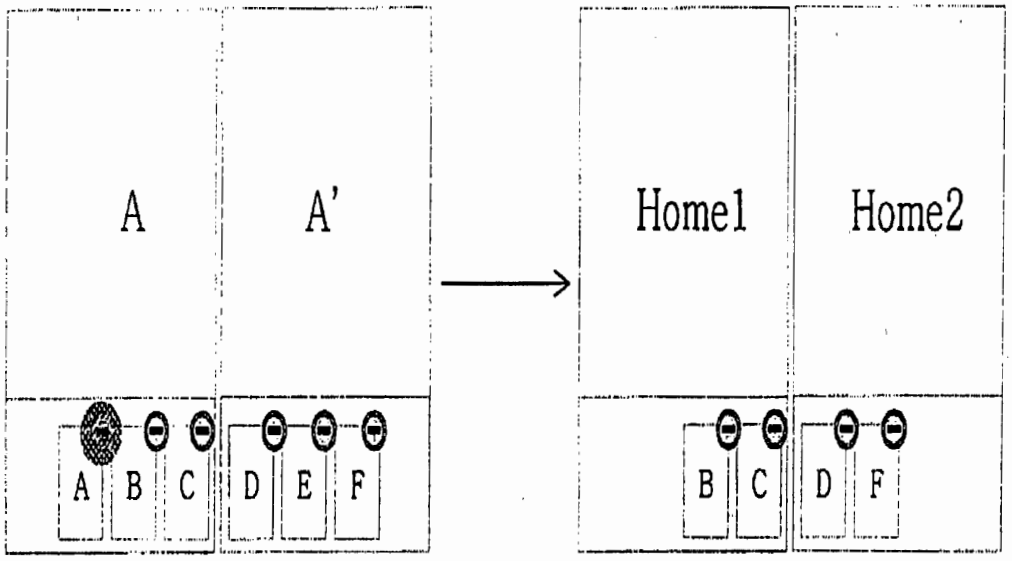
(c) 2010 SAMSUNG Electronics. All rights reserved.

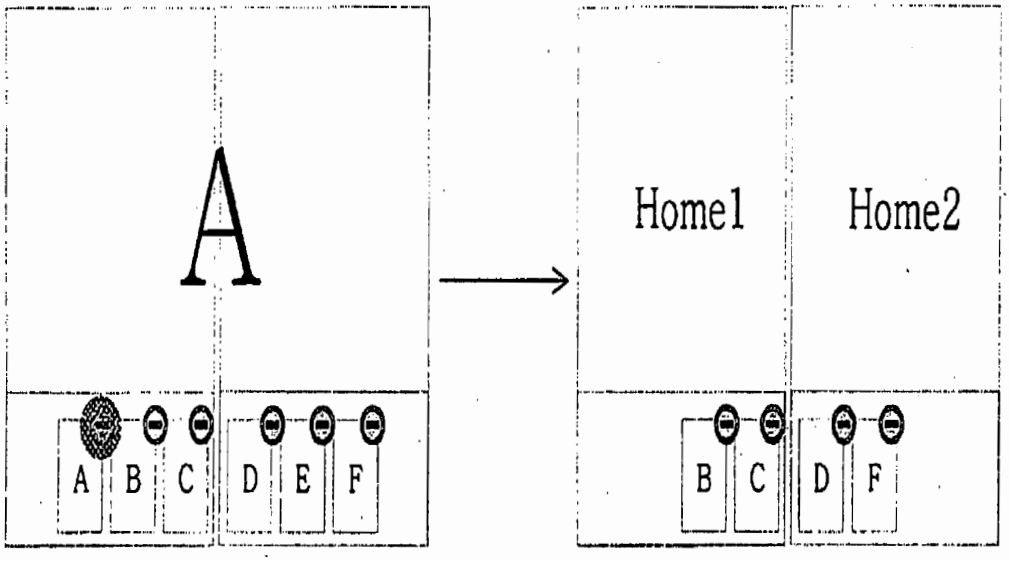
Copied from 13370939 on 05/11/2012

4.4 Basic Flow

v.1.5 Added
Application Closing Rule for Split & Expand Mode Added

- **User can close applications**





© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

v.1.5 Updated
Gesture Rule Updated
Gesture only support Mode Change, not support Task switching

v.1.6 Updated
Titles and interaction rules of layout modes Updated

Gesture Mode Change

(C) 2010 SAMSUNG Electronics. All rights reserved.

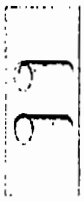
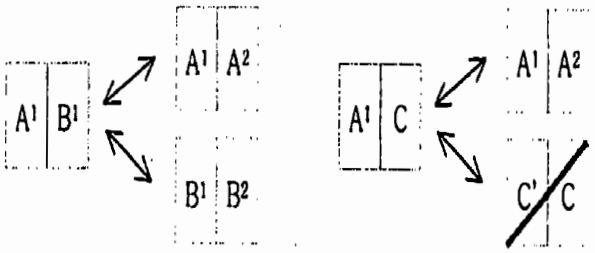
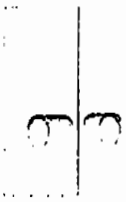
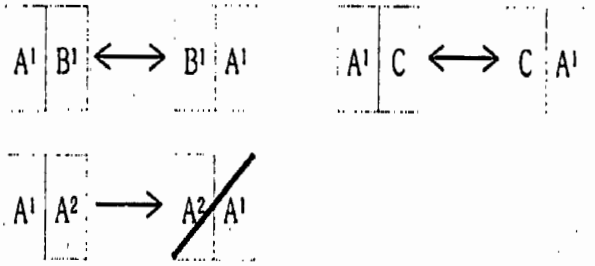
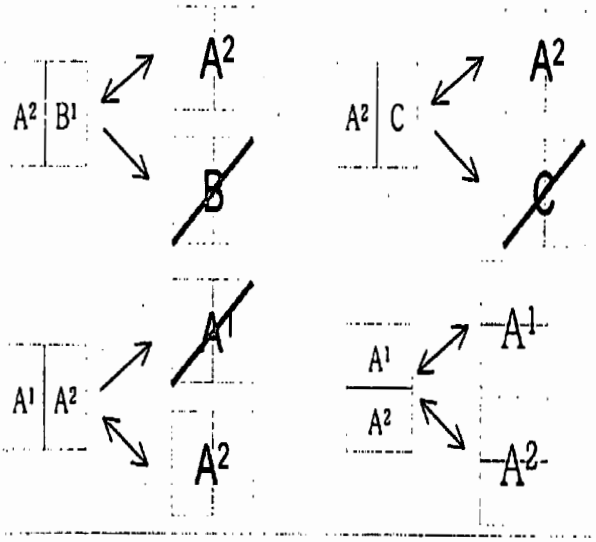
Copied from 13370939 on 05/11/2012

head.jpg

5. Gesture Mode Change

5.1 Definition of Gesture

● Gesture Interaction

Type		Description	Use cases
Split-mode(A/B) ↔ Expand-mode(A+)		Two finger touch input in one screen and Drag to the other screen. Split-mode(A/B) → Expand-mode(A+) or Expand-mode(A+) → Split-mode(A/B) Horizontal Mode is same rule	
Swapping		Two finger touch input in another screen and Drag to hinge. This gesture is possible only at Multi-tasking mode . Horizontal Mode is same rule.	
Dual Zoom(A++)		Start pinch zoom-in in same screen and end one finger is in same screen but another finger is in different screen. Single screen pinch zoom-in : contents zoom-in (Photo, Web Browser, Map) Dual screen pinch zoom-in : contents zoom-in over two screens(Photo, Web Browser, Map, ...) Dual zoom (A++) could be changed to previous screen layout : Two finger touch input in different screen and do pinch zoom-out to same screen Horizontal Mode is same rule	

A : Application Support Expand Mode
(A¹ : First Depth like Contents List, A² : Contents that could be zoom in over two screens like Photo contents)
B : Application Support Expand Mode
(B¹ : First Depth like Contents Group, B² : Second Depth like Contents List)
C : Application only support Split Mode

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

5. Gesture Mode Change

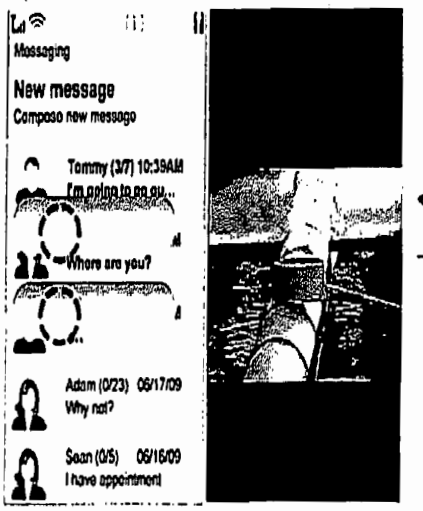
5.1 Definition of Gesture

v.1.5 Updated
Gesture Rule for transit between Split-mode & Split mode Updated
Gesture only support Mode Change, not support Task switching

v.1.6 Updated
Titles of Layout mode changed

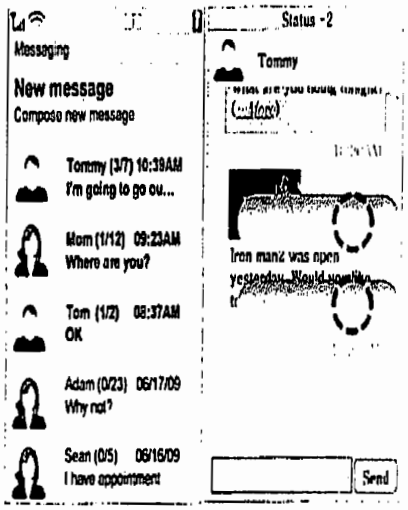
- Split-mode(A/B) ← → Dual-mode(A+)
- User can change mode using view mode button of quick panel or two finger flick gesture.
- View mode is dependent on current view mode and displayed App.

Split-mode(A/B)



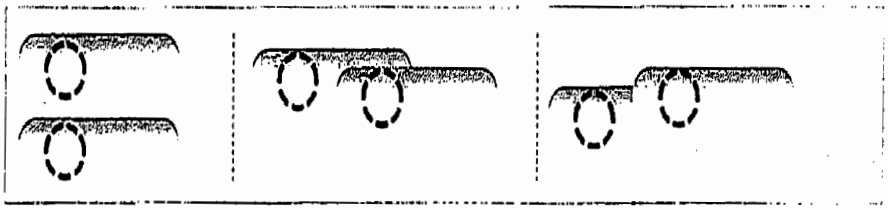
A : Message App B' : Gallery App

Dual-mode(A+)



A : Message App A' : Next depth of A

Two finger flick gesture

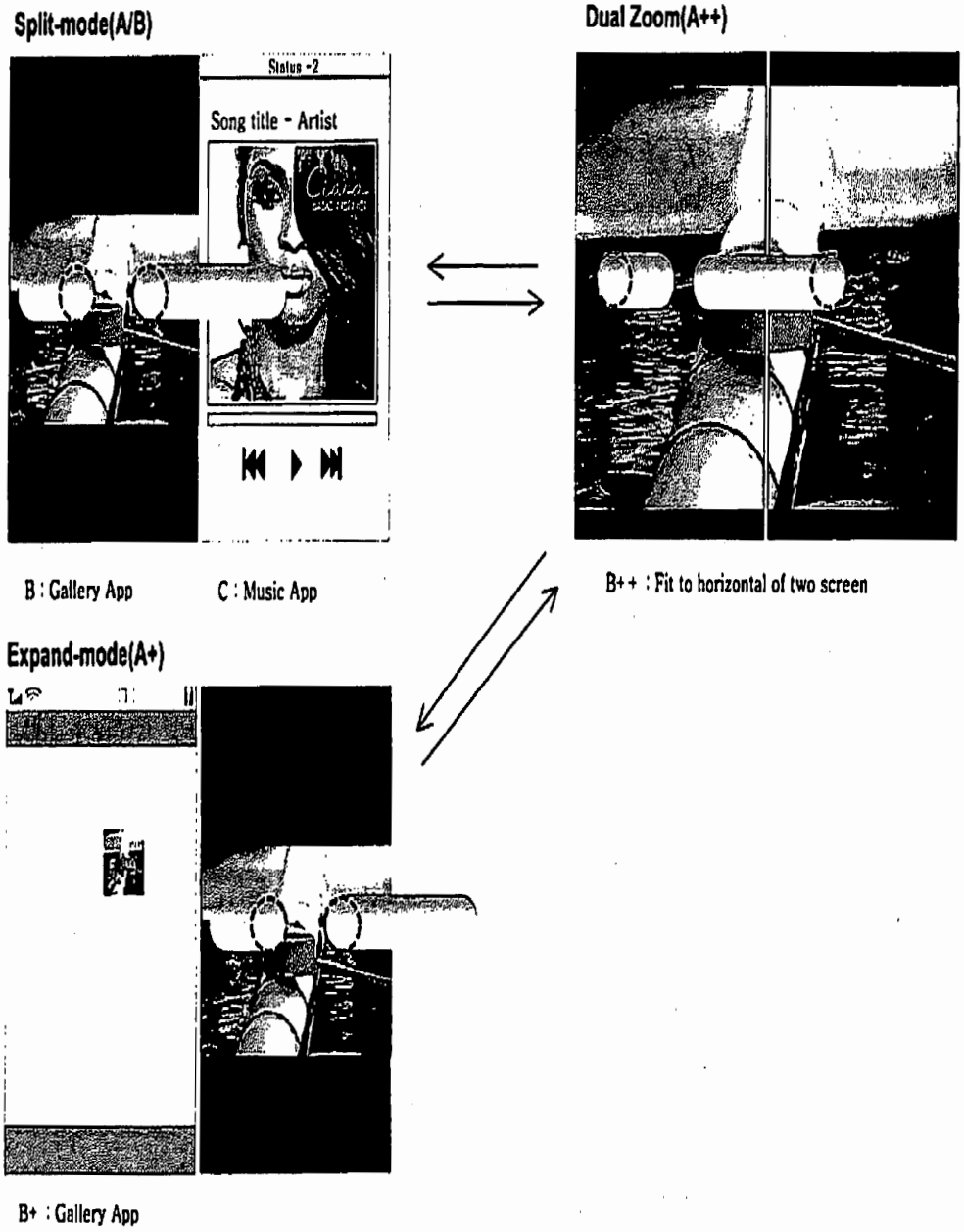


(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

● Dual Zoom(A++)

- User can change mode using view mode button of quick panel or pinch zoom.
- View mode is dependent on current view mode and current displayed App.



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

5. Gesture Mode Change

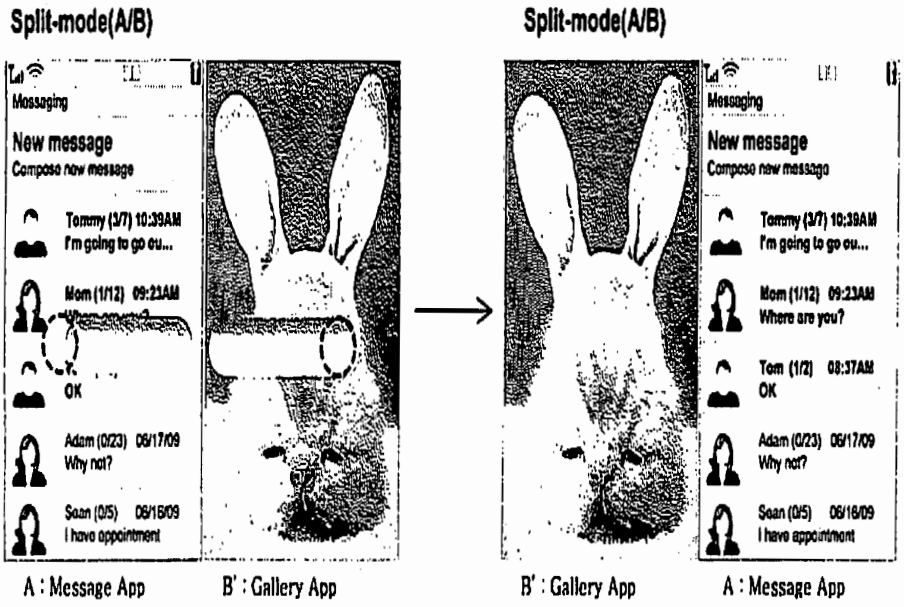
5.1 Definition of Gesture

● Split-mode(A/B) Swapping

- User can swap using view mode button of quick panel or two screen touch & move to hinge.

Swapping supported only Two Application Displayed

Only Split-mode available
Two finger touch at same time.



Copied from 13370939 on 05/11/2012

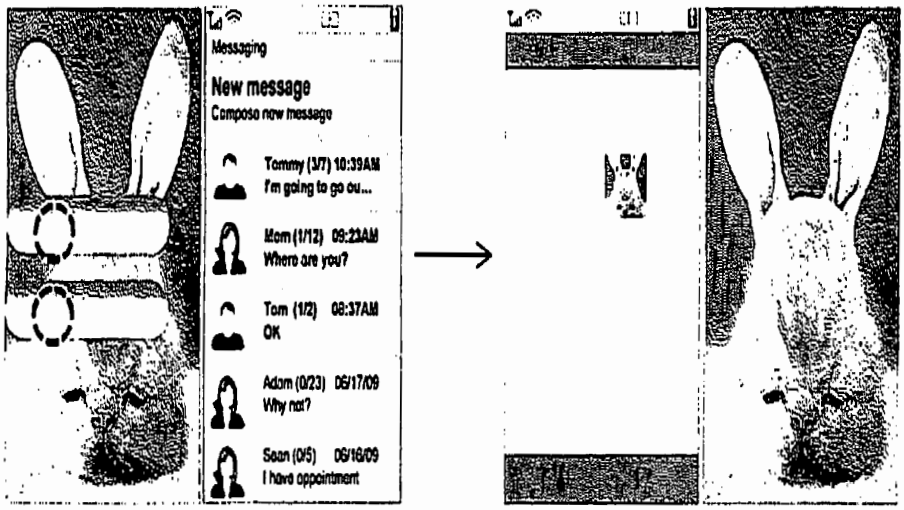
head.jpg

5. Gesture Mode Change

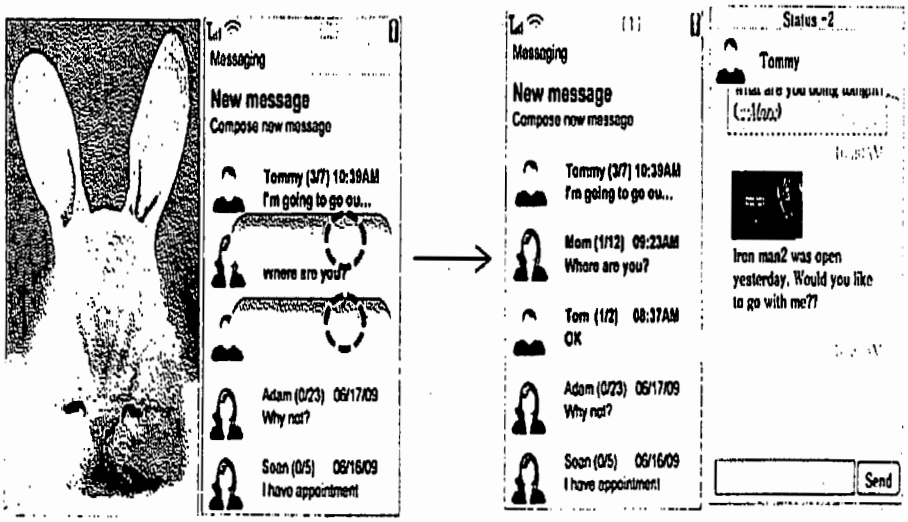
5.2 Basic Flow | Split-mode to Expand-mode

- Split-mode(A/B) ← → Expand-mode(A+) Gesture
- This Gesture only available View mode change. Task Change doesn't Support.
- Touch one screen & Drag to hinge.
- Touched screen is expanded.

v.1.5 Updated
Gesture Rule for transit between Split-mode & Split mode Updated
Gesture only support Mode Change, not support Task switching



B'' (Last Depth) A (First Depth) B' (2nd Depth) B'' (Last Depth)



B'' (Last Depth) A (First Depth) A (First Depth) A' (Last Depth)

(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

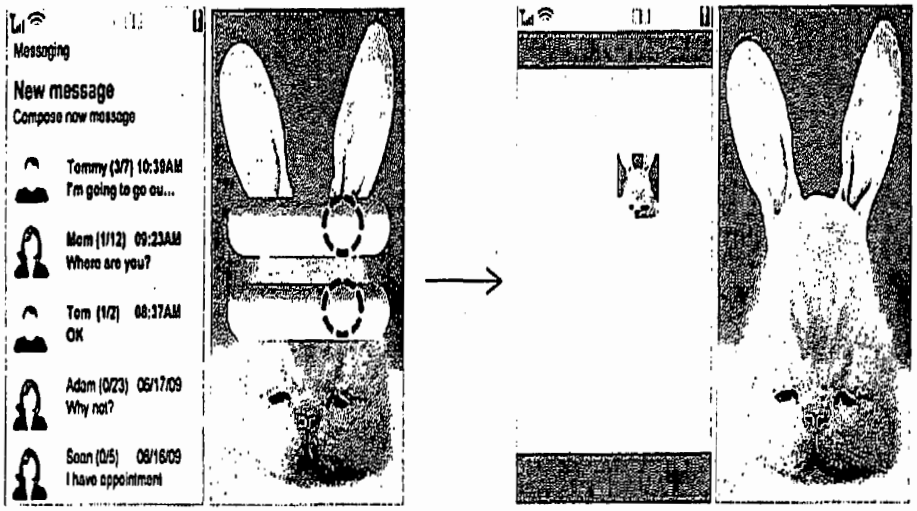
head.jpg

5. Gesture Mode Change

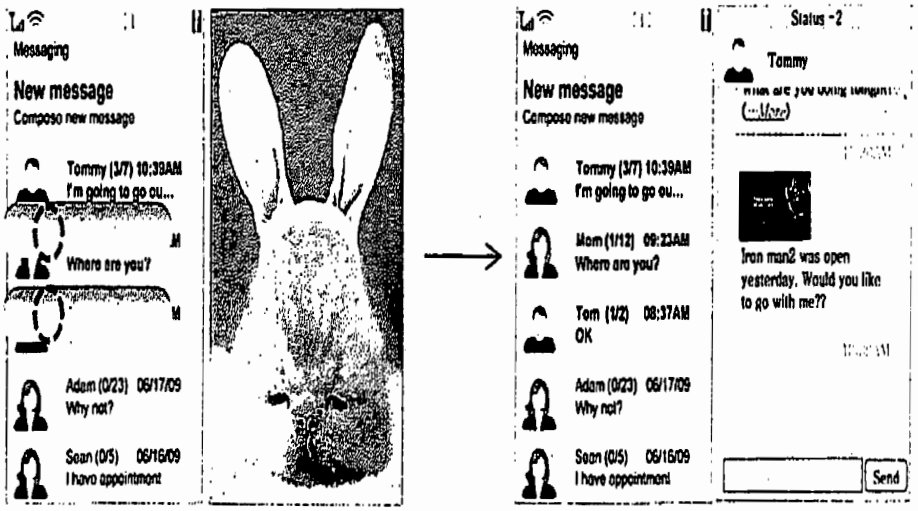
5.2 Basic Flow | Split-mode to Expand-mode

- Split-mode(A/B) ← → Expand-mode(A+) Gesture
- Displayed on the left is former depth.
- Exceptional Case : When the second screen is Last depth of an App or the first screen is First depth

v.1.5 Updated
Gesture Rule for transit between Split-mode & Split mode Updated
Gesture only support Mode Change, not support Task switching



A (First Depth) B'' (Last Depth) B' (2nd Depth) B'' (Last Depth)



A (First Depth) B'' (Last Depth) A (First Depth) A' (Last Depth)

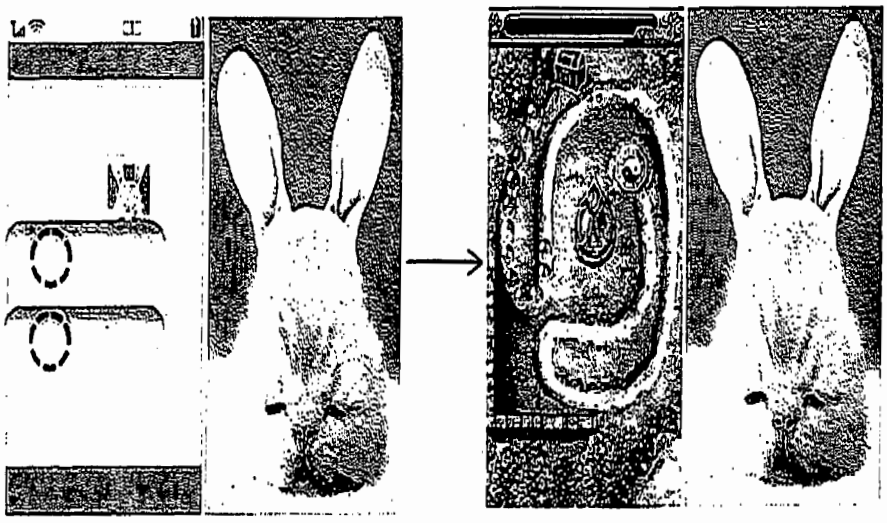
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

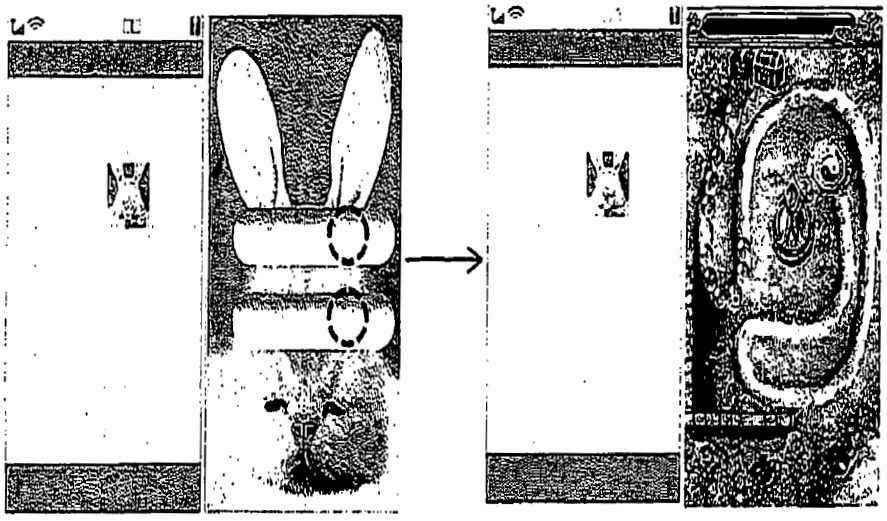
5.2 Basic Flow | Split-mode to Expand-mode

- Expand-mode(A/A') ← → Split-mode(A/B) Gesture
- User can change view mode. 'Two Finger Drag' from selected screen to hinge.
- last screen of previous application is displayed.

v.1.5 Updated
Gesture Rule for transit between Split-mode & Split mode Updated
Gesture only support Mode Change, not support Task switching



Expand-mode(A+)　　Split-mode(B/A')



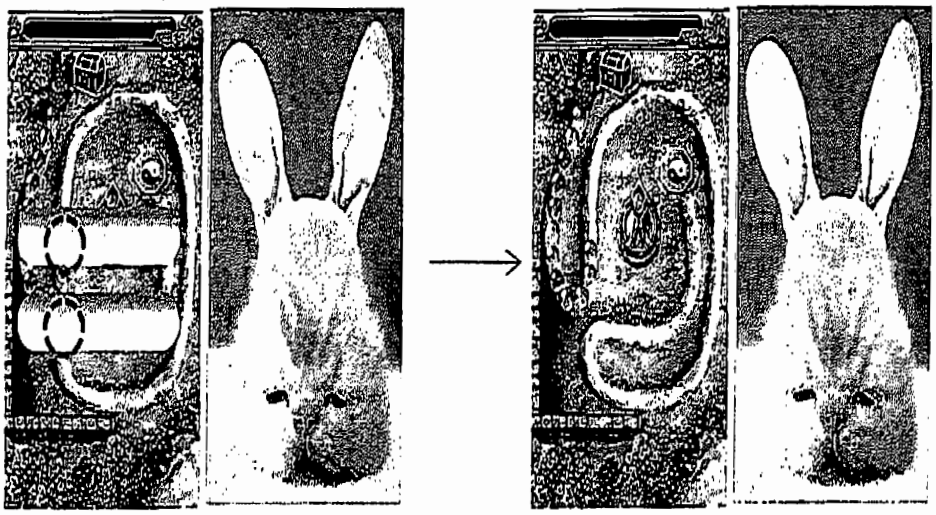
Expand-mode(A+)　　Split-mode(A/B)

©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

v.1.5 Updated
Gesture Rule for transit between Split-mode & Split mode Updated
Gesture only support Mode Change, not support Task switching

- Doesn't Support Task Change.



3rd party App
(not support Split-mode)

Does not change

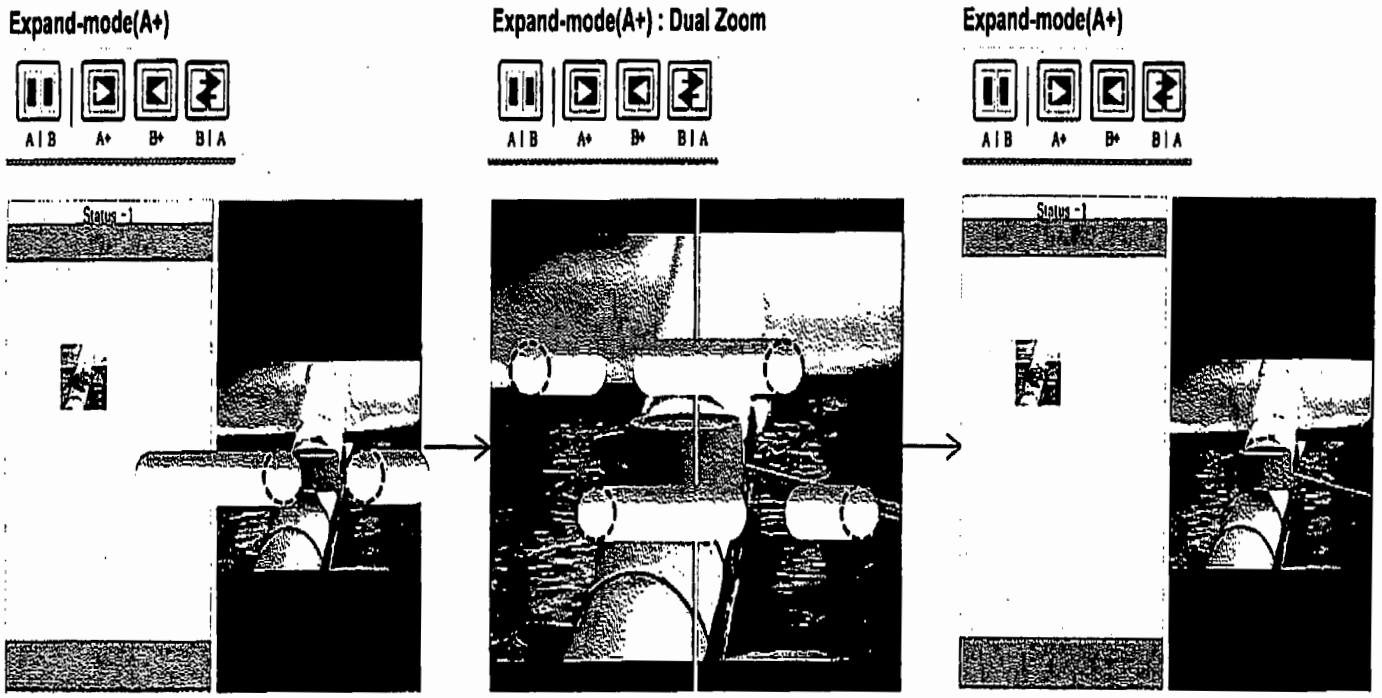
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

5.3 Basic Flow | Dual Zoom

v.1.6 Added
On Dual-mode, Dual zoom contents by Gesture added

● Expand-mode(A+) : Dual Zoom Contents by Gesture
- When two finger 'pinch zoom-in' above hinge at Dual-mode, expand the target contents over two screens.
- Dual zoom is spread from start screen of 'pinch zoom-in'.
- Quick panel is not changed when the contents expanding



- Quick panel is not changed when the contents expanding

Not available Available

(c) 2010 SAMSUNG Electronics Co. All rights reserved.

Copied from 13370939 on 05/11/2012

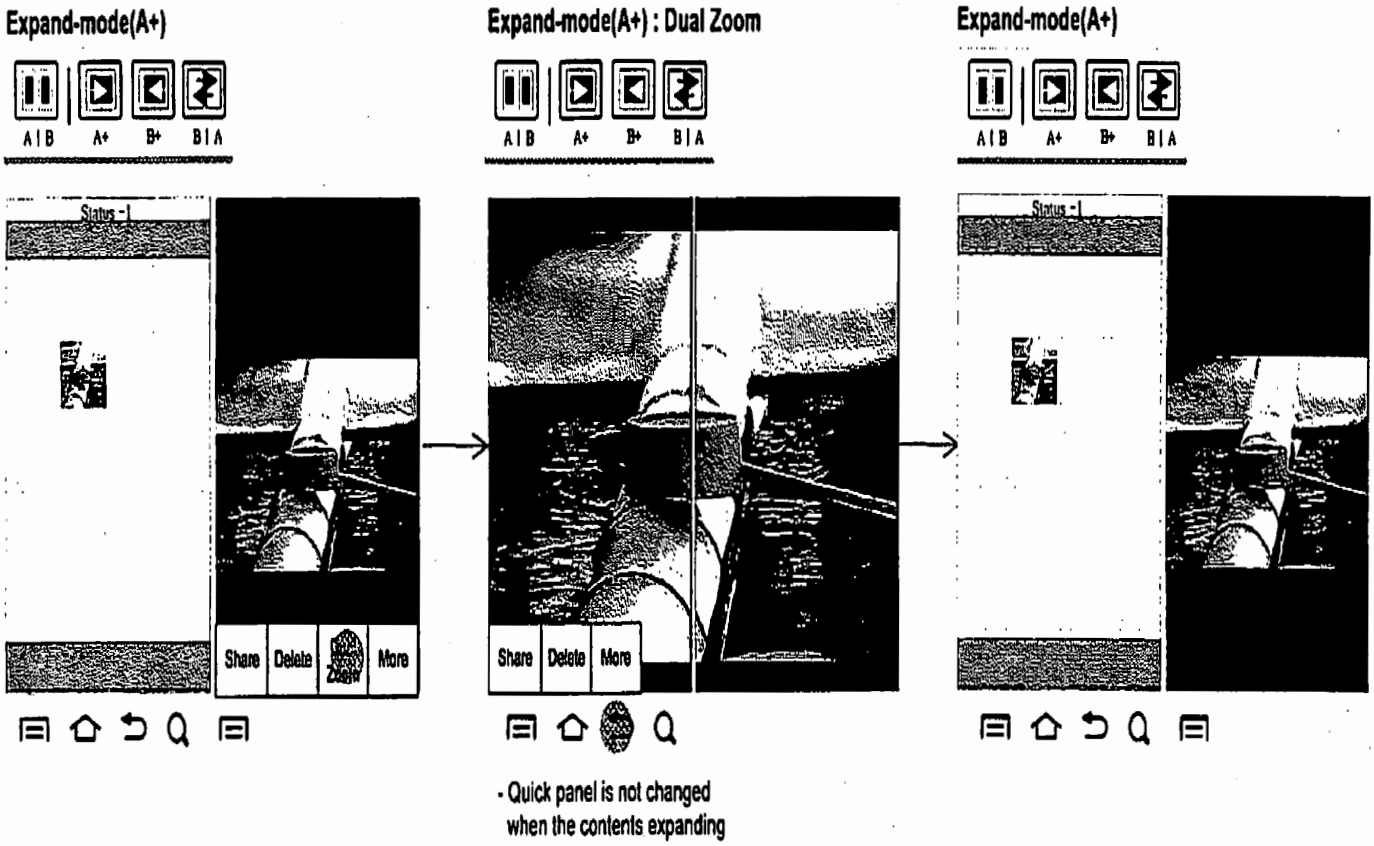
head.jpg

5. Gesture Mode Change

5.3 Basic Flow | Dual Zoom

v.1.6 Added
On Dual-mode, Dual zoom contents by Option menu added

● Expand-mode(A+) : Dual Zoom Contents by Option menu
- When select Expand menu on the option menu, expand the target contents over two screens.
- Dual zoom is spread from the selected screen.
- Quick panel is not changed when the contents expanding



- Quick panel is not changed when the contents expanding

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

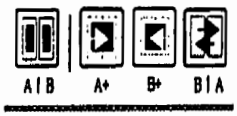
5. Gesture Mode Change

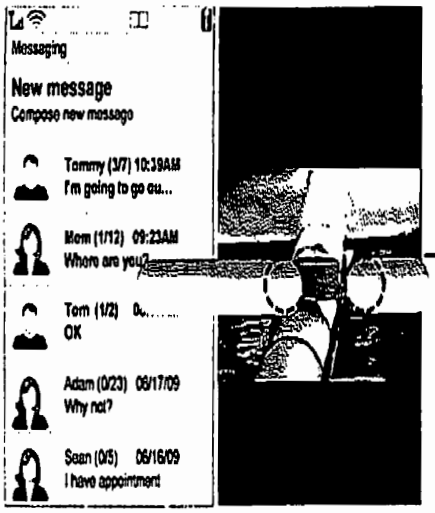
5.3 Basic Flow | Dual Zoom

v.1.6 Added
On Split-mode, Dual zoom contents by Gesture added

- Split-mode(A/B) : Dual Zoom Contents by Gesture
- When two finger 'pinch zoom-in' above hinge at Split-mode, expand the target contents over two screens.
- Dual zoom is spread from start screen of 'pinch zoom-in'.
- Quick panel is not changed when the contents expanding
- When back to Split-mode, screen position is not dependent on release position and task location.

Split-mode(A/B)

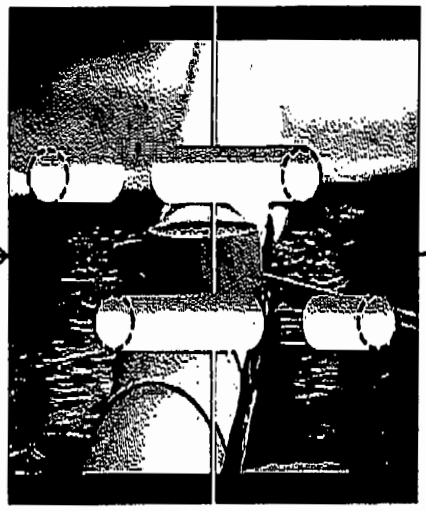




A : Message App B' : Gallery App

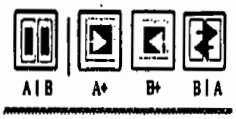
Split-mode(A/B) : Dual Zoom

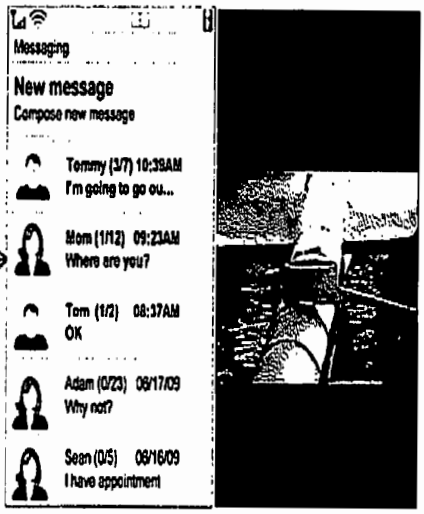




- Quick panel is not changed when the contents expanding

Split-mode(A/B)





A : Message App B' : Gallery App

- When back to Split-mode, screen position is not dependent on release position and task location.

Not available Available

(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

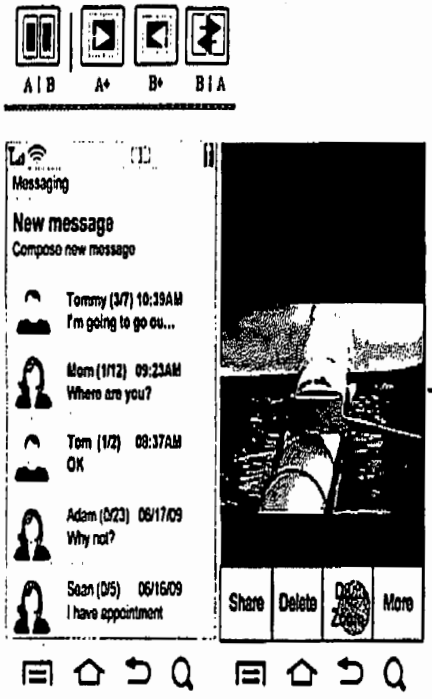
5. Gesture Mode Change

5.3 Basic Flow | Dual Zoom

v.1.6 Added
On Split-mode, Dual zoom contents by Option menu added

- Split-mode(A/B) : Dual Zoom Contents by Option menu
- When select Expand menu on the option menu, expand the target contents over two screens.
- Dual zoom is spread from the selected screen.
- Quick panel is not changed when the contents expanding.
- When back to Split-mode, screen position is not dependent on release position and task location.

Split-mode(A/B)



A : Message App B' : Gallery App

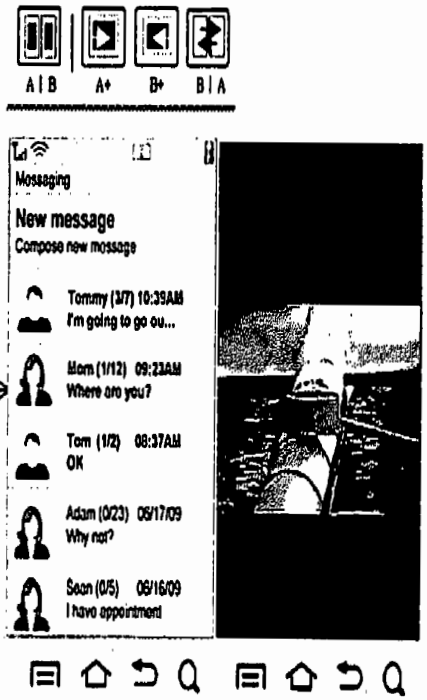
* Layout in the Option menu depends on each application.

Split-mode(A/B) : Dual Zoom



- Quick panel is not changed when the contents expanding

Split-mode(A/B)



A : Message App B' : Gallery App

- When back to Split-mode, screen position is not dependent on release position and task location.

Not available Available

© 2010 SAMSUNG Electronics. All rights reserved.

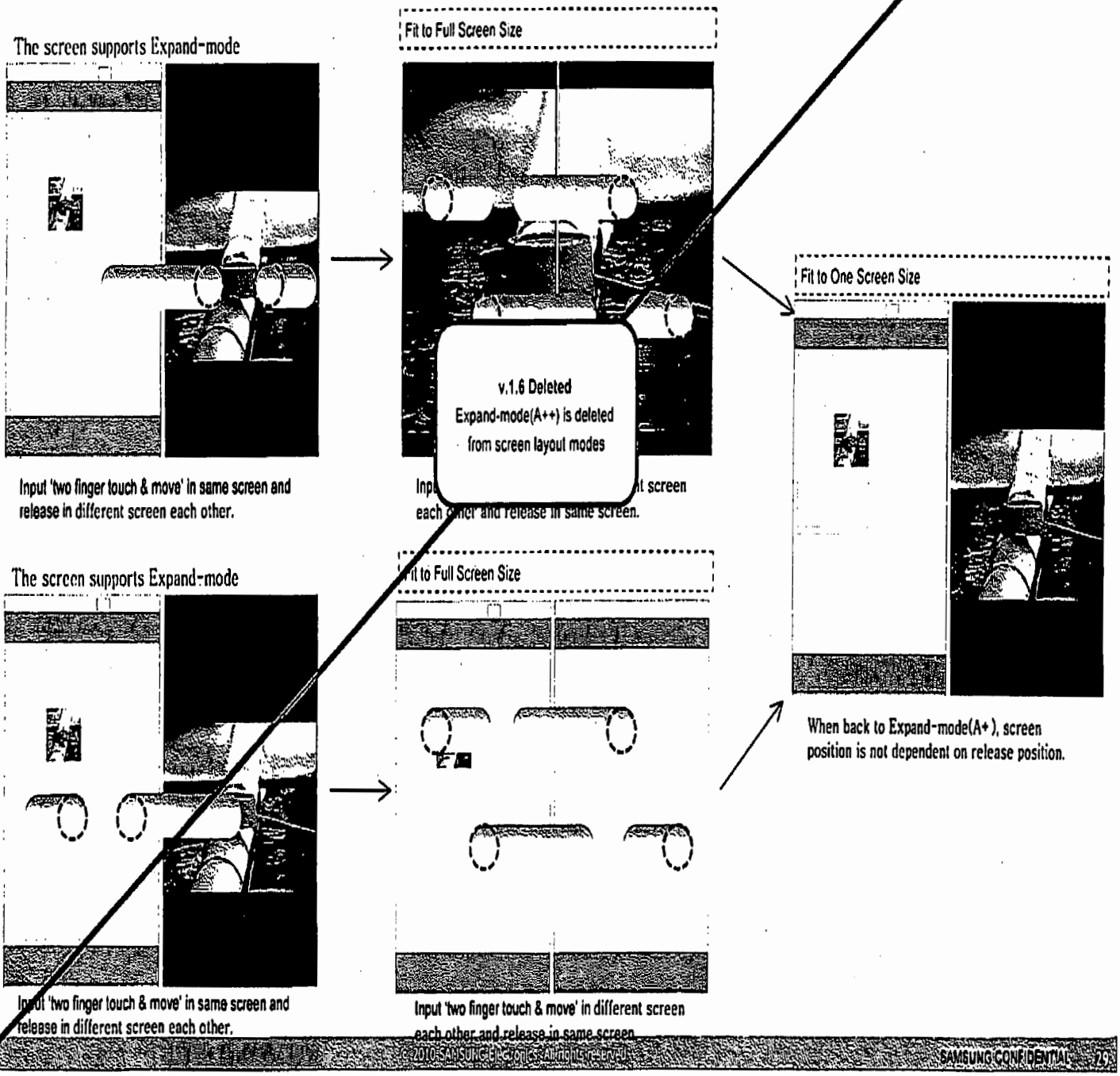
Copied from 13370939 on 05/11/2012

head.jpg

5. Gesture Mode Change

5.3 Basic Flow | Expand-mode

- Expand-mode(A+) to Expand-mode(A++)
- At Split-mode or Split-mode, Expand mode can use to Pinch Zoom-in gesture cross over a hinge.
- Start screen of gesture are expanded.



© 2010 SAMSUNG Electronics Co. All rights reserved.

Copied from 13370939 on 05/11/2012

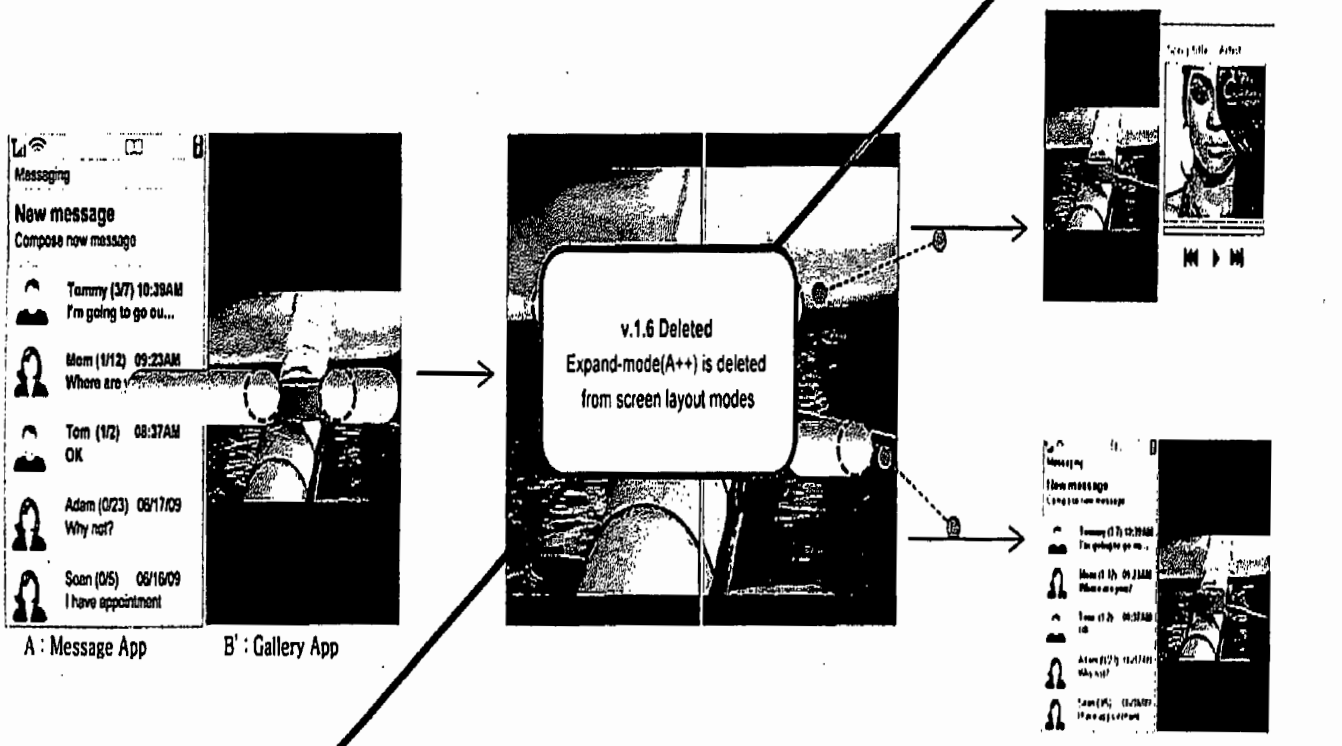
head.jpg

5. Gesture Mode Change

5.3 Basic Flow | Expand-mode

● Expand-mode(A+) to Expand-mode(A++)

- When two finger 'pinch zoom-in' above hinge at Split-mode, mode is changed to Expand-mode.
- Expand-mode is spread from start screen of 'pinch zoom-in'.
- When back to Split-mode, screen position is dependent on release position and task location.



A : Message App

B' : Gallery App

© 2010 SAMSUNG Electronics. All rights reserved.

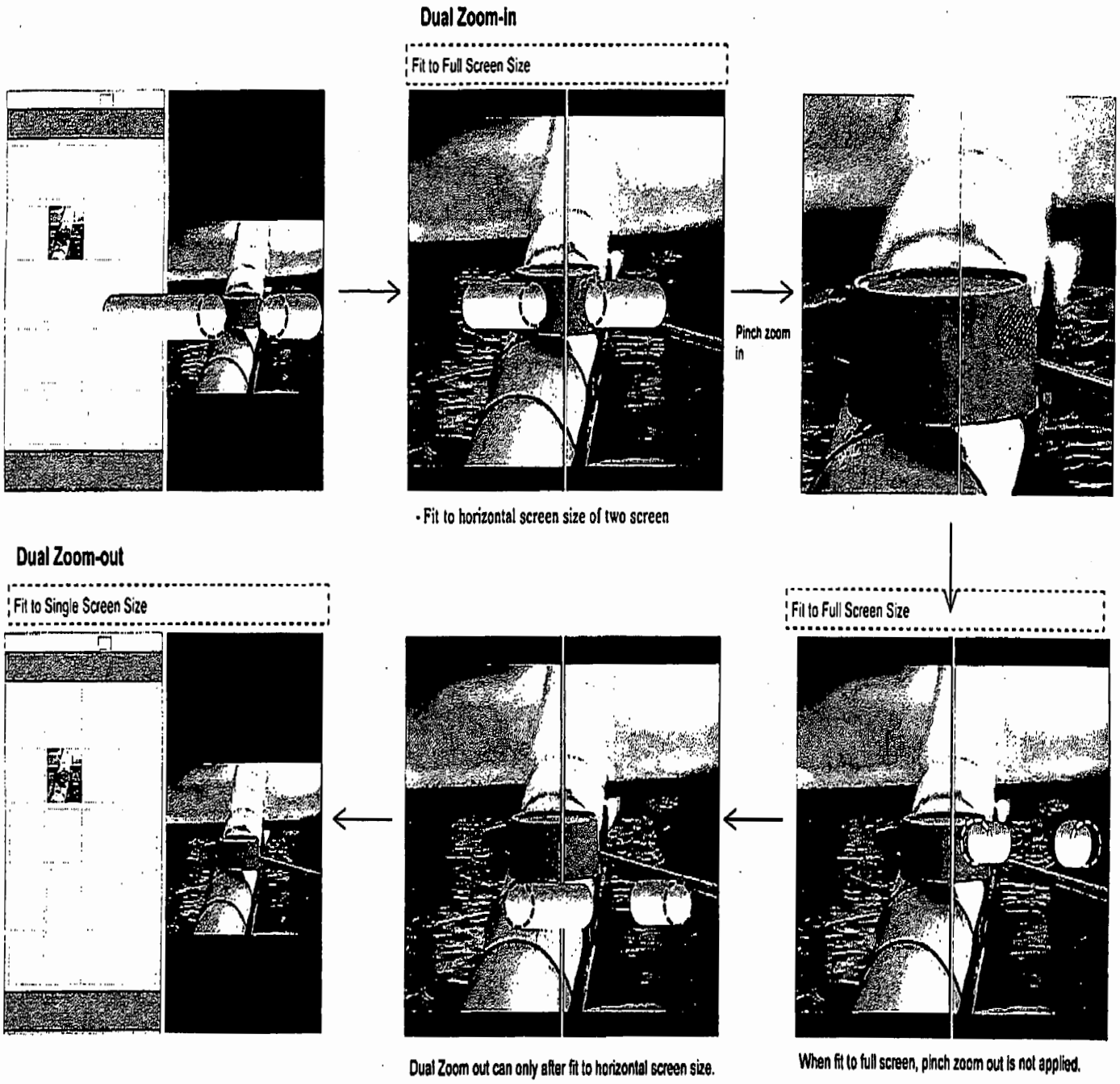
Copied from 13370939 on 05/11/2012

head.jpg

5. Gesture Mode Change

5.3 Basic Flow | Dual Zoom

- Fit to screen (1/2)
  - Fit to horizontal screen size of two screen



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

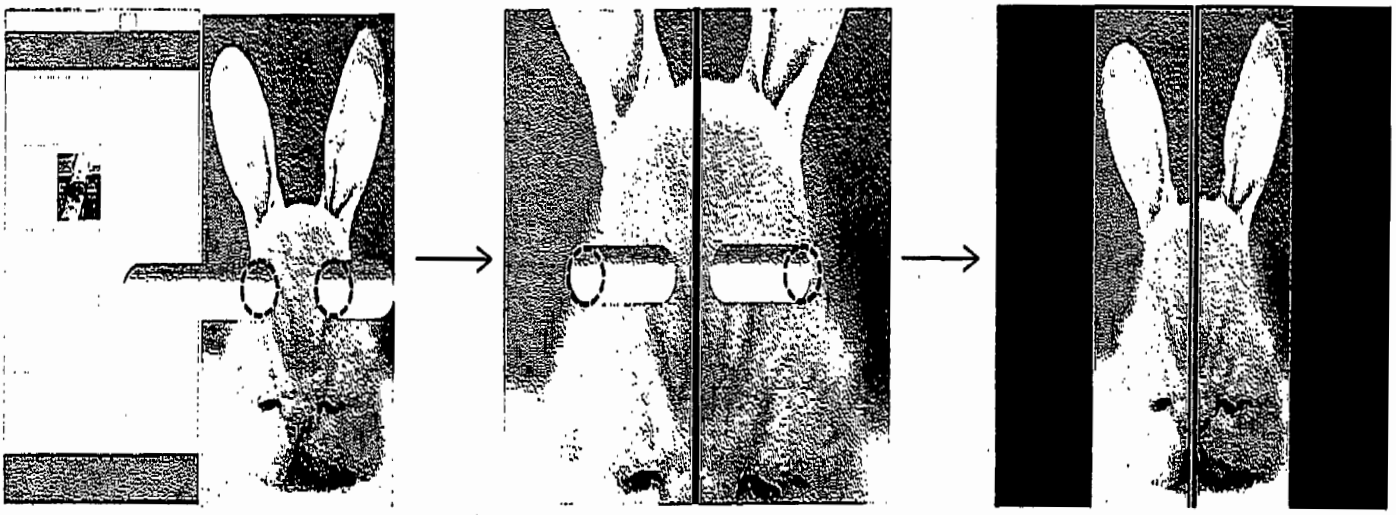
head.jpg

5. Gesture Mode Change

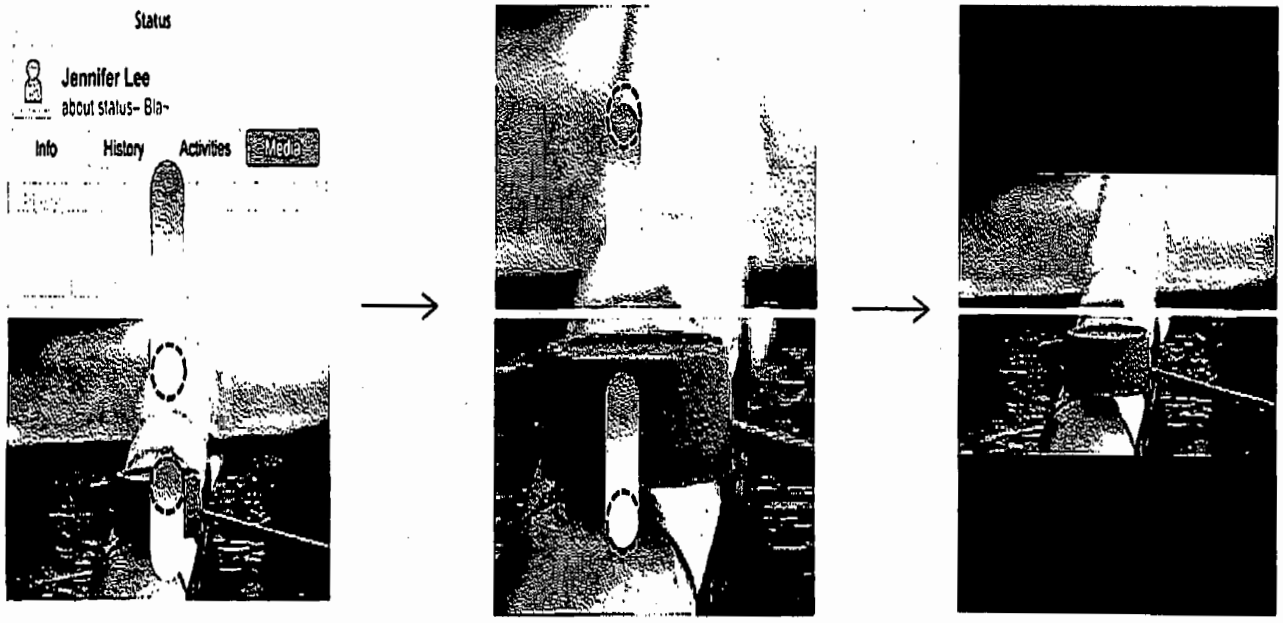
5.3 Basic Flow | Dual Zoom

● **Fit to screen (2/2)**

- In case vertical fit image in portrait mode, Fit to horizontal screen size of two screen.
- In case horizontal fit image in landscape mode , Fit to Vertical screen size of two screen.



- Fit to horizontal screen size of two screen



- Fit to vertical screen size of two screen

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

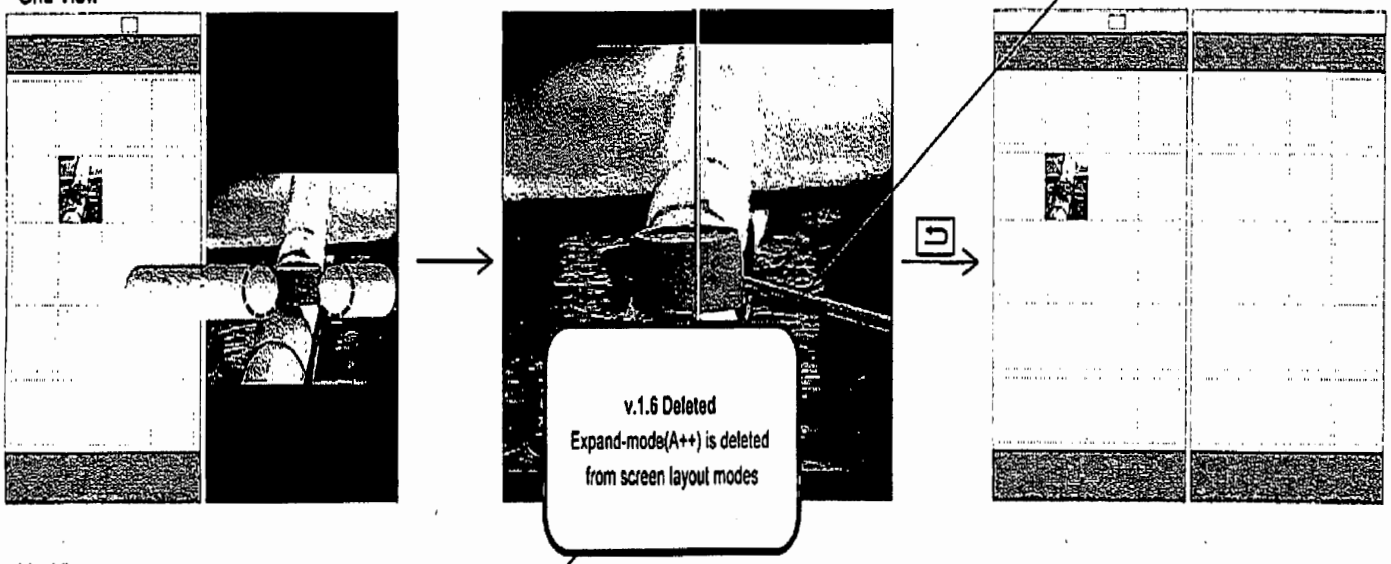
head.jpg

5. Gesture Mode Change

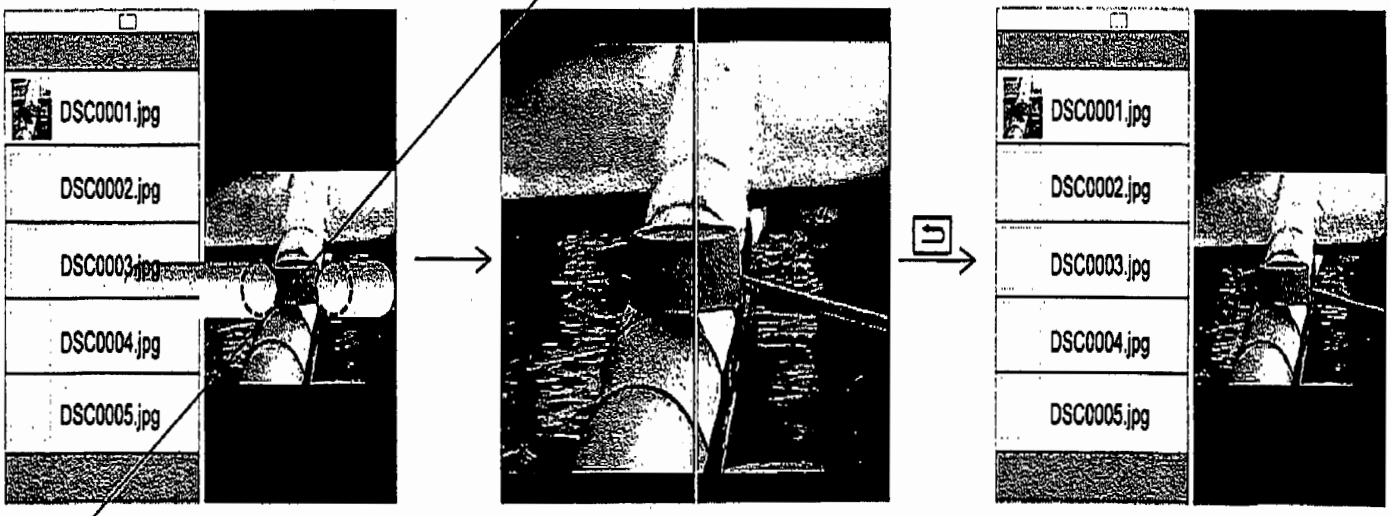
5.3 Basic Flow | Dual Zoom

- Previous depth supports Dual Zoom(A++) :
  When back button is pressed, previous depth is displayed at Expand-mode.
- Previous depth does not support Dual Zoom(A++):
  When back button is pressed, previous depth is displayed at previous layout mode

Grid View



List View



(c) 2010 SAMSUNG Electronics. All rights reserved.

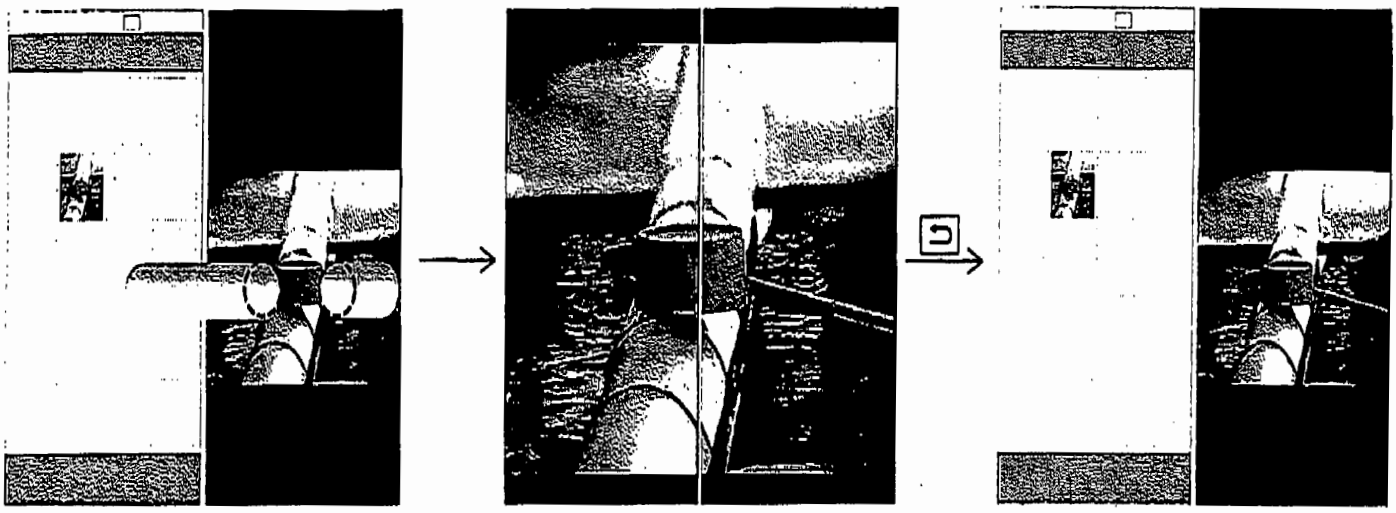
Copied from 13370939 on 05/11/2012

5.3 Basic Flow | Dual Zoom

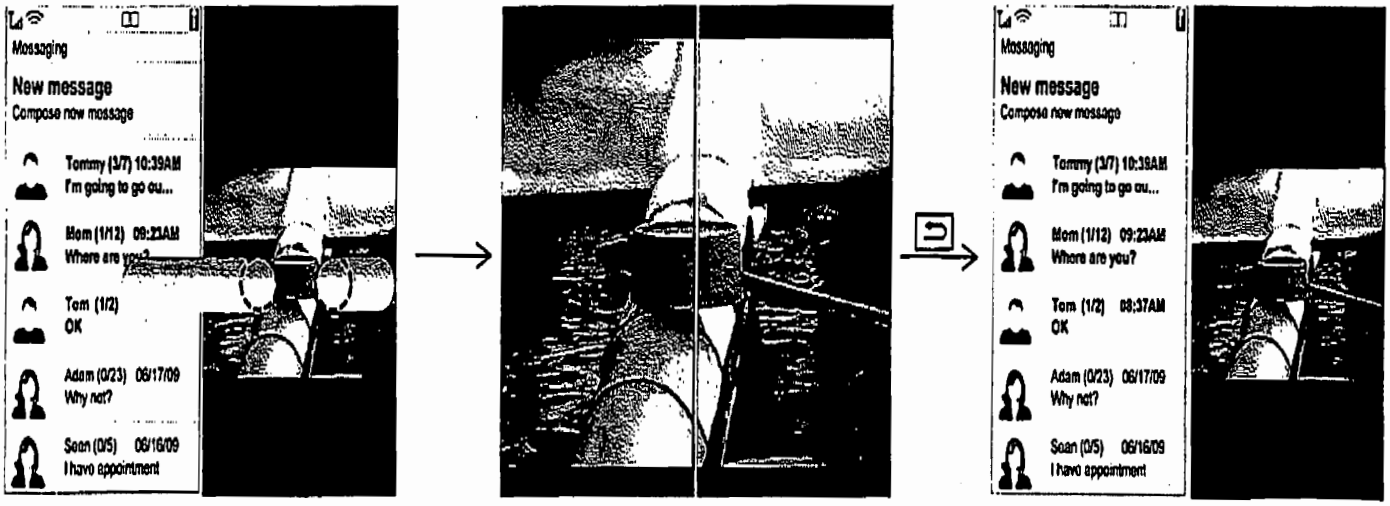
v.1.6 Updated
Back key interaction after Dual zoom is changed

• Press back key after Dual zoom :
When back button is pressed, previous depth is displayed at a previous layout mode.

• Expand-mode(A+)



• Split-mode(A/B)

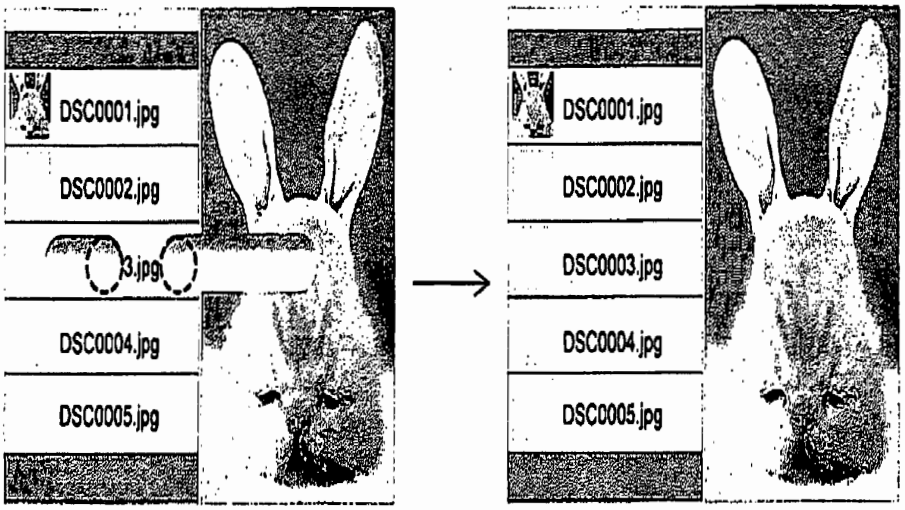


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

- Not support Dual zoom
- When the selected contents doesn't support D, screen isn't changed.

Screen isn't changed.



(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

Basic Key Interaction

© 2010 SAMSUNG Electronics. All rights reserved.

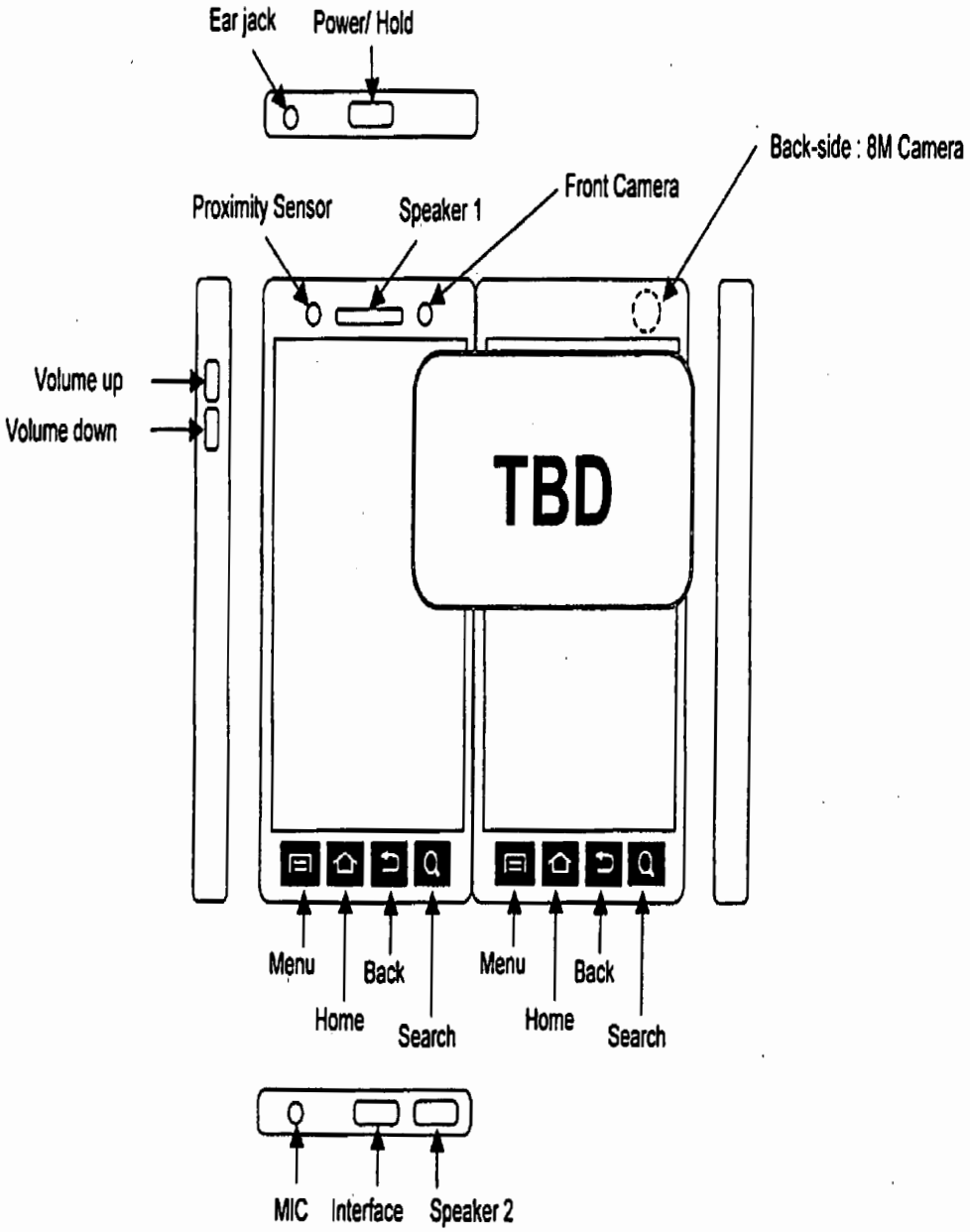
Copied from 13370939 on 05/11/2012

head.jpg

6. Basic Key Interaction

6.1 Hard key Layout & Function

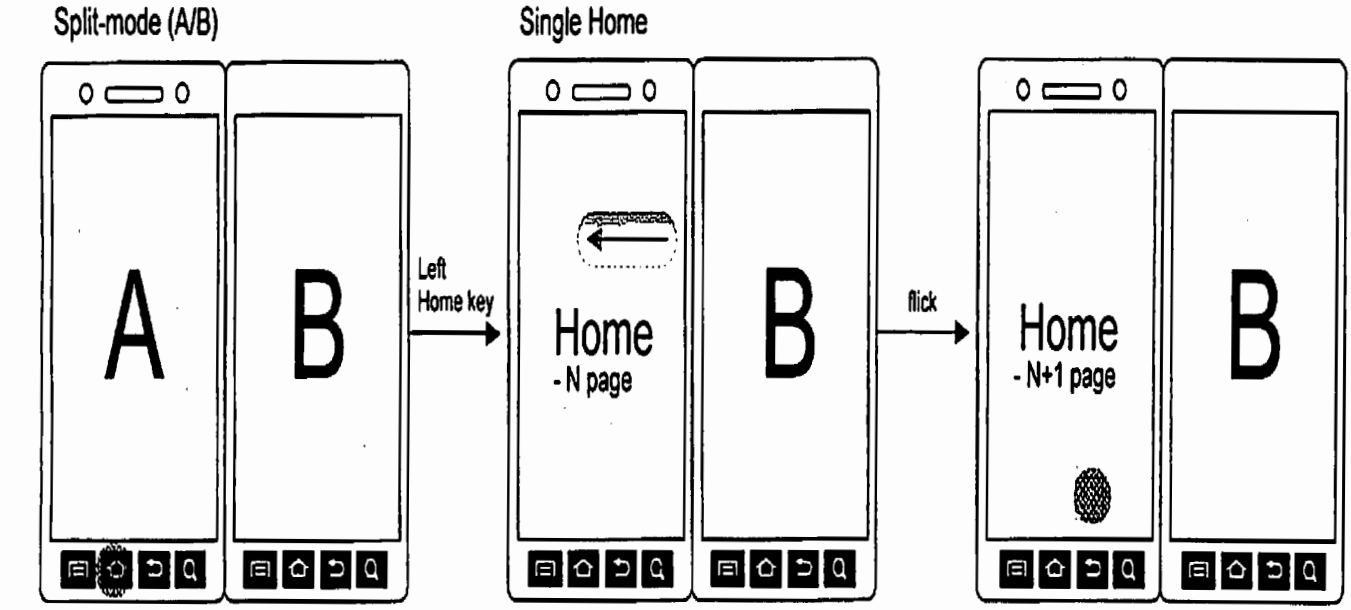
• The minimum required buttons for touch phone are described below.

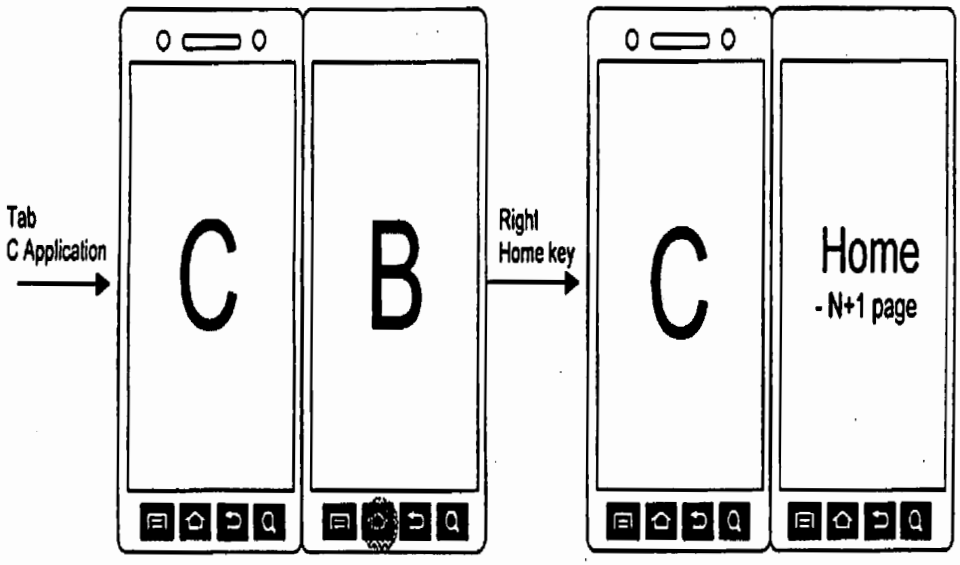


C 2010 SAMSUNG Electronics All rights reserved

Copied from 13370939 on 05/11/2012

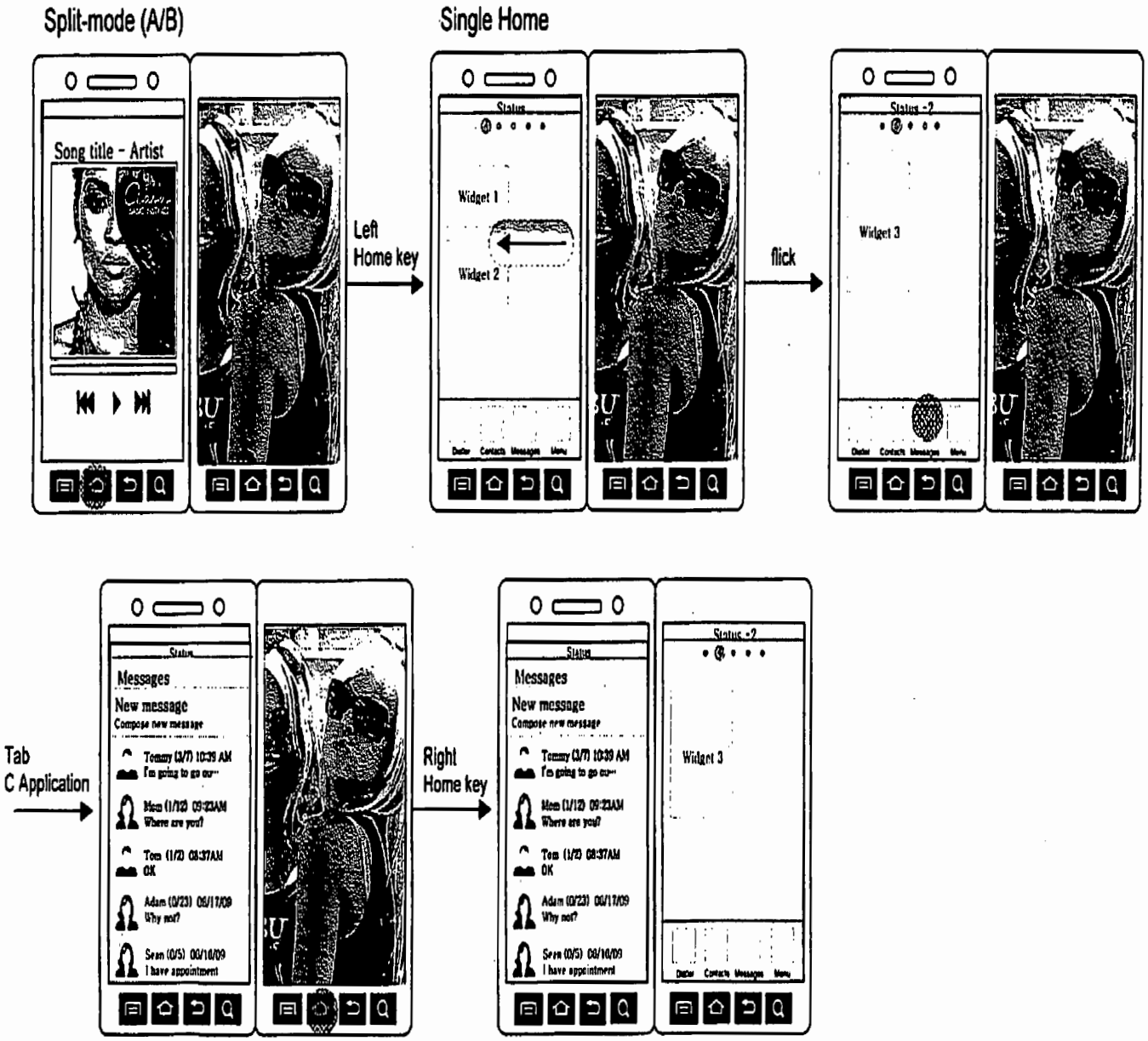
• Home key interaction on Split-mode (A/B) (1/2)
- on Split-mode (A/B), Home Key loads single home screen.





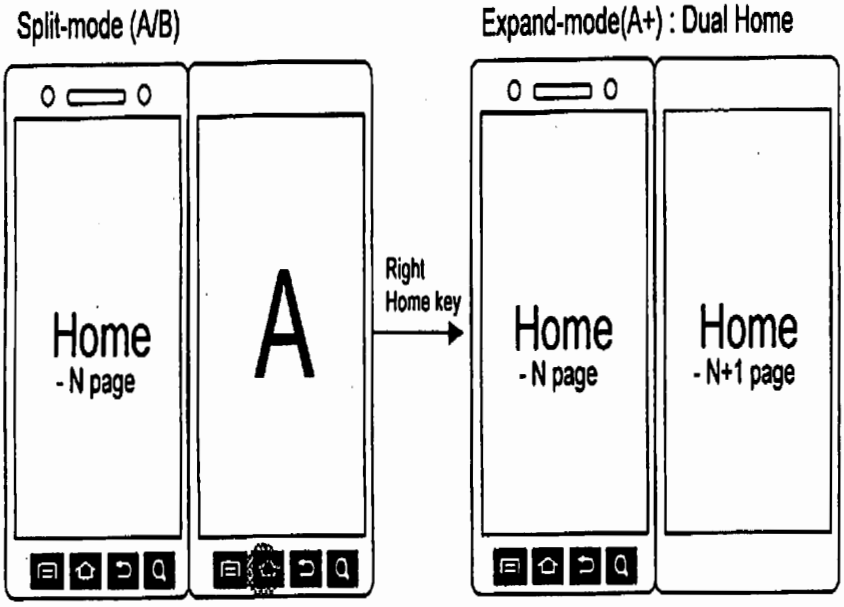
Copied from 13370939 on 05/11/2012

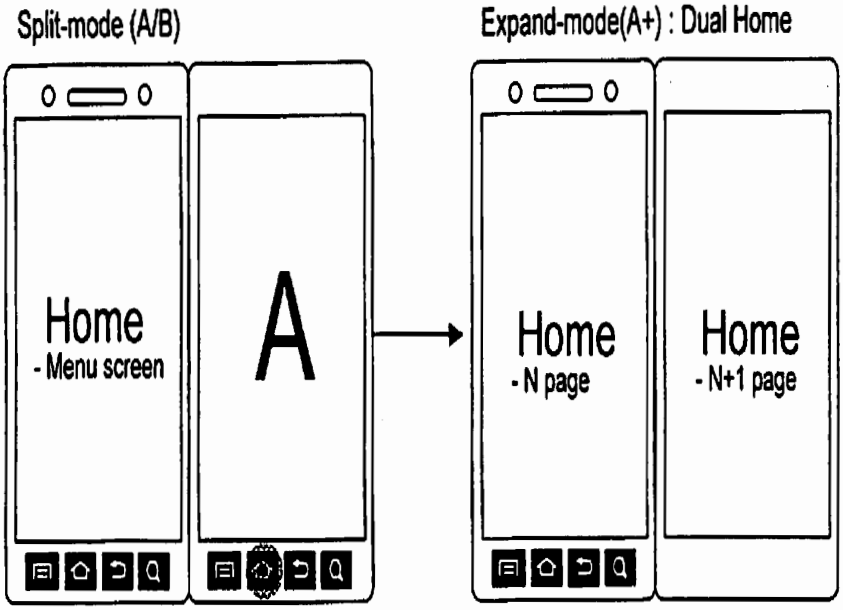
- Home key interaction on Split-mode (A/B) (1/2) | Example
  - on Split-mode (A/B), Home Key loads single home screen.



Copied from 13370939 on 05/11/2012

- Home key interaction on Split-mode (A/B) (2/2)
  - When one screen is home screen on Split-mode (A/B), other Home Key loads dual home screen.

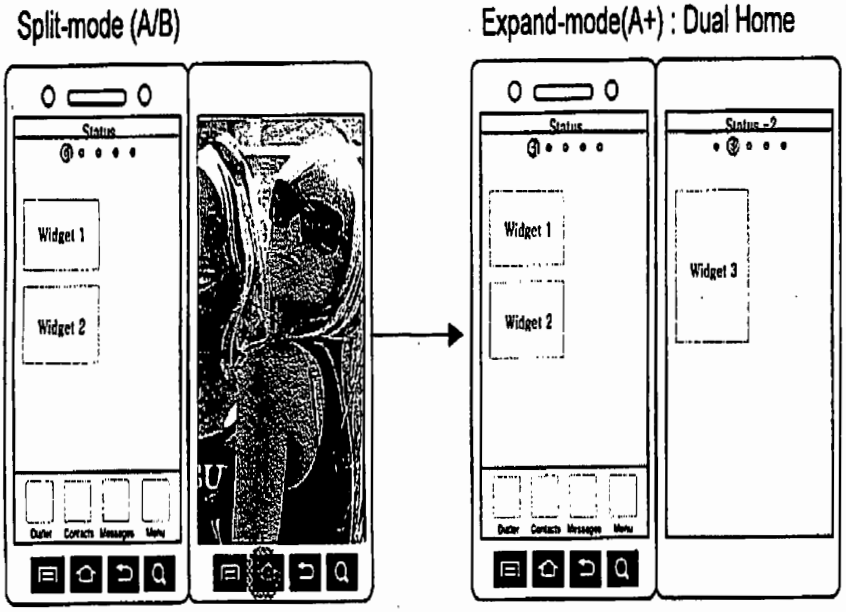


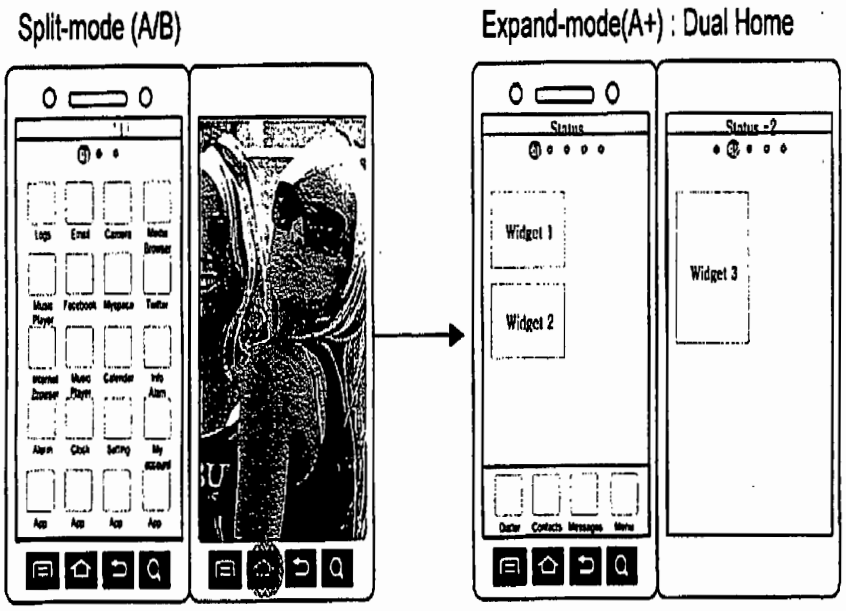


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

- Home key interaction on Split-mode (A/B) (2/2) | Example
  - When one screen is home screen on Split-mode (A/B), other Home Key loads dual home screen.

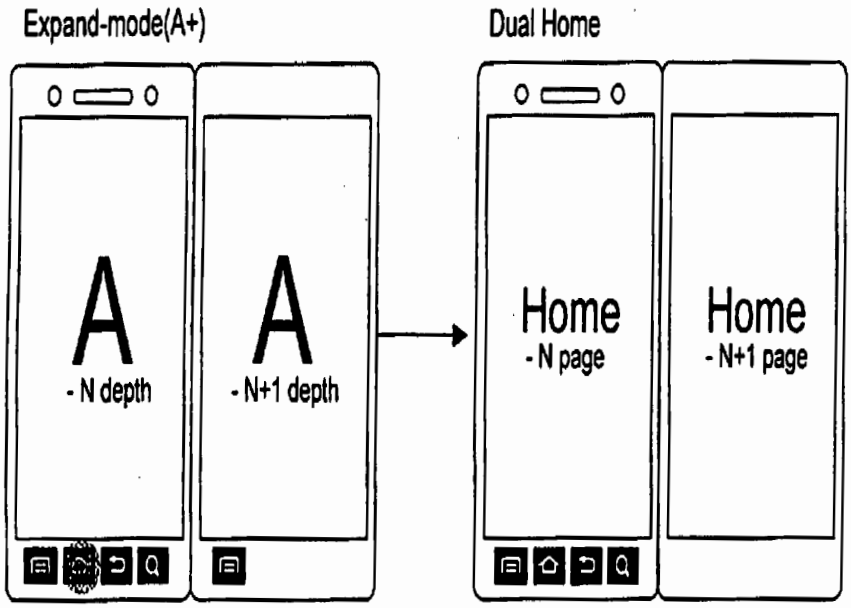




© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

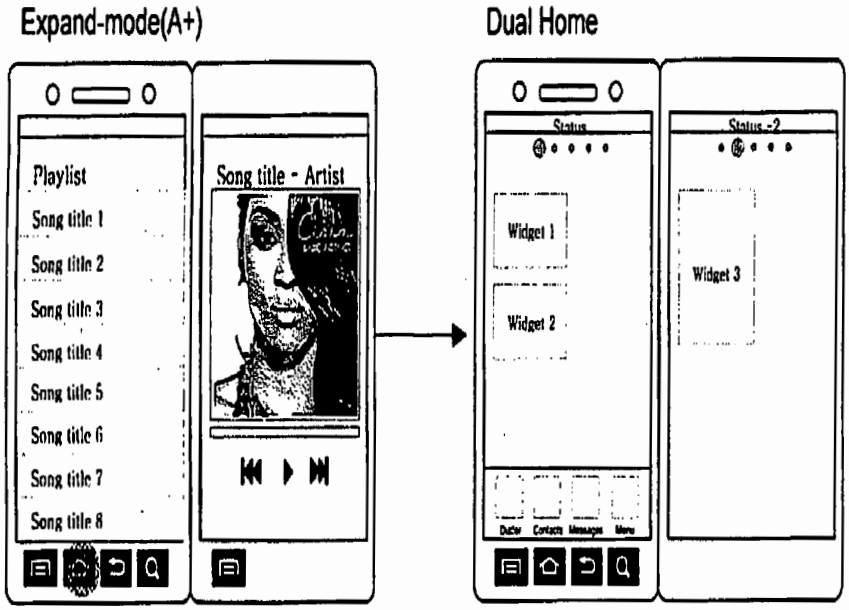
• Home key interaction on Expand-mode(A+) :
- Expand-mode(A+), Home Key loads dual home screen.



© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

• Home key interaction on Expand-mode(A+) | Example
- on Expand-mode(A+), Home Key loads dual home screen.

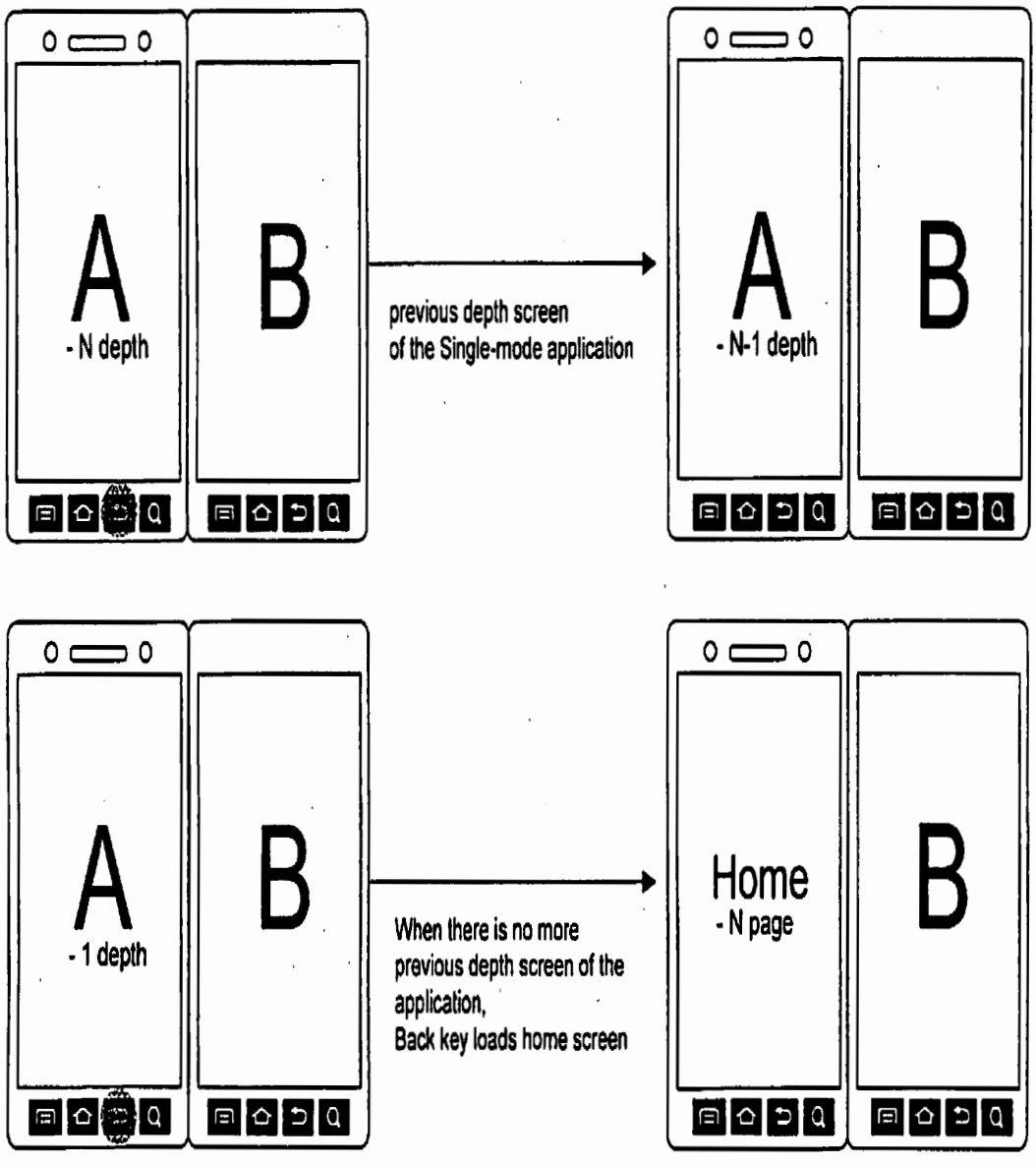


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Back key interaction on Split-mode (A/B)
- on Split-mode (A/B), Back Key loads previous depth screen of the single-mode application on the selected screen.

Split-mode (A/B)

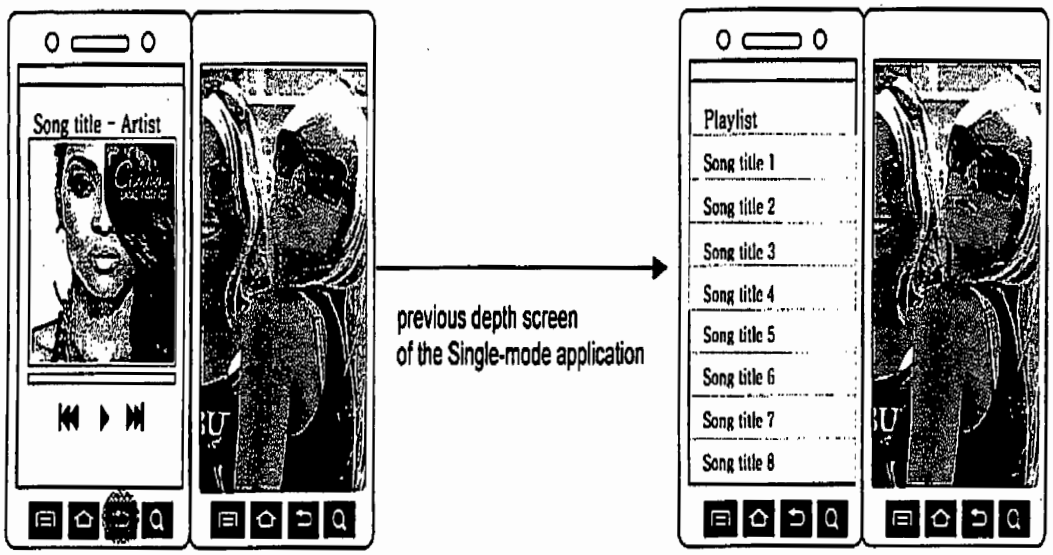


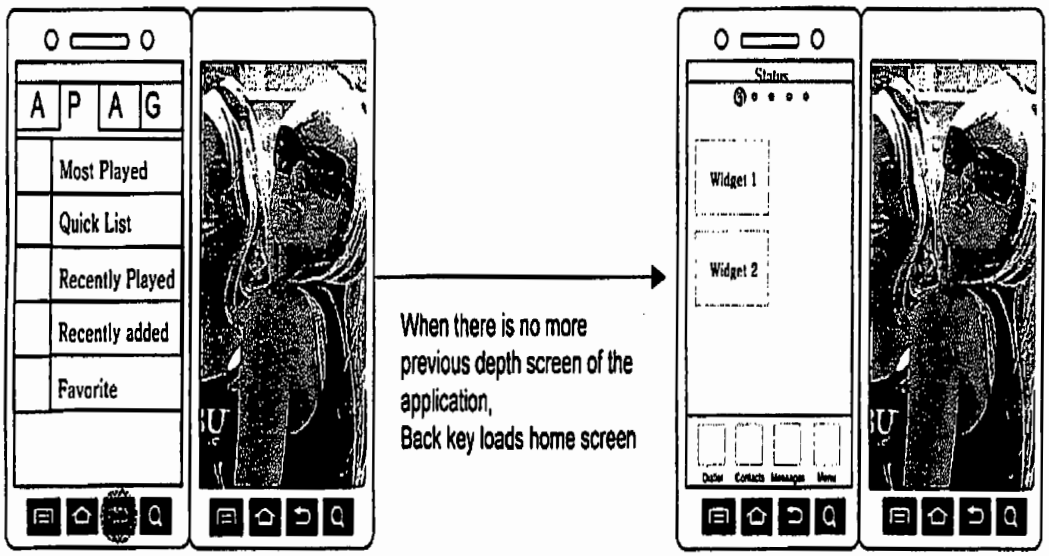
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Back key interaction on Split-mode (A/B) | Example
- on Split-mode (A/B), Back Key loads previous depth screen of the single-mode application on the selected screen.

Split-mode (A/B)

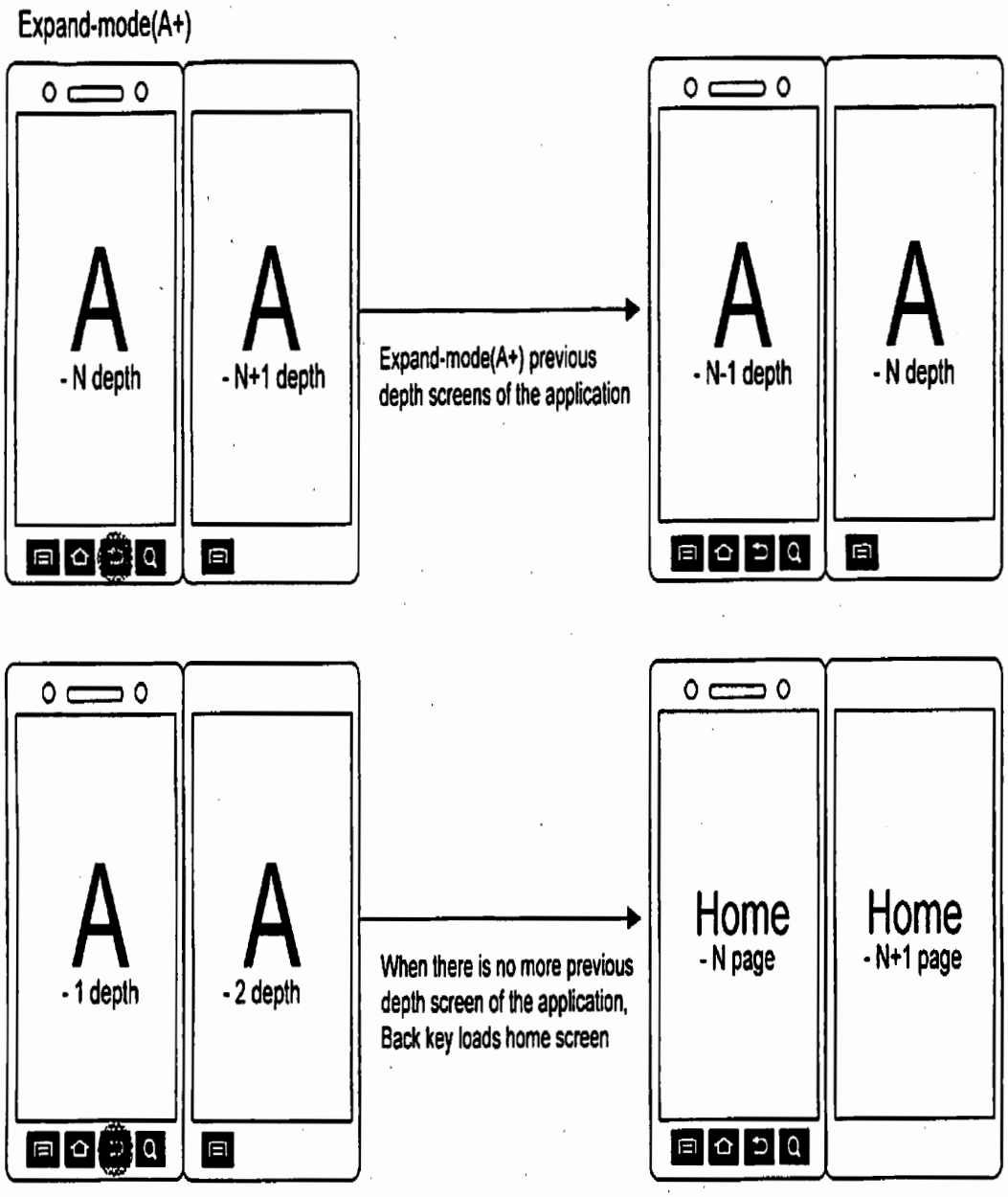




(C) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Back key interaction on Expand-mode(A+)
- on Expand-mode(A+), Back Key loads dual-mode last application.



(C) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

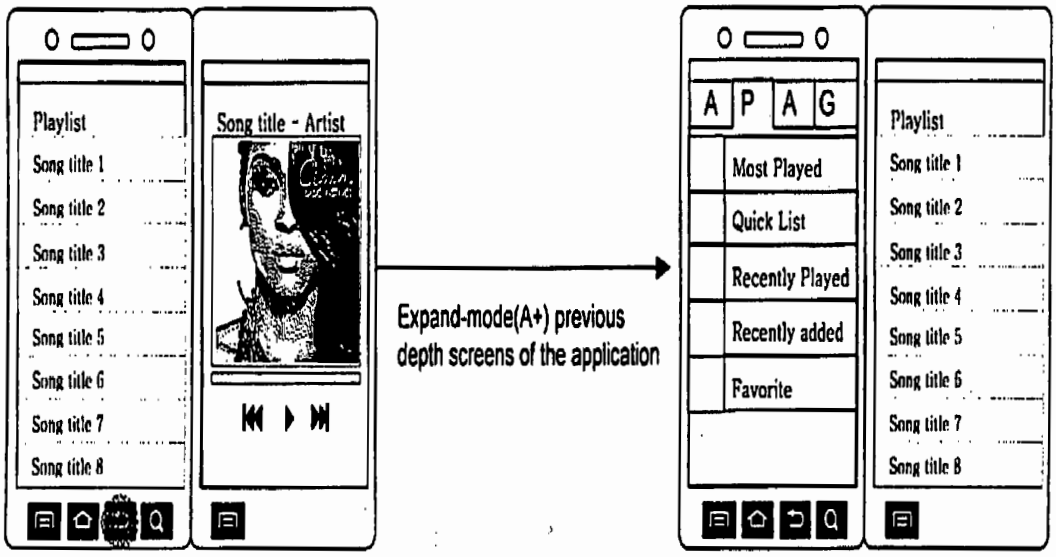
head.jpg

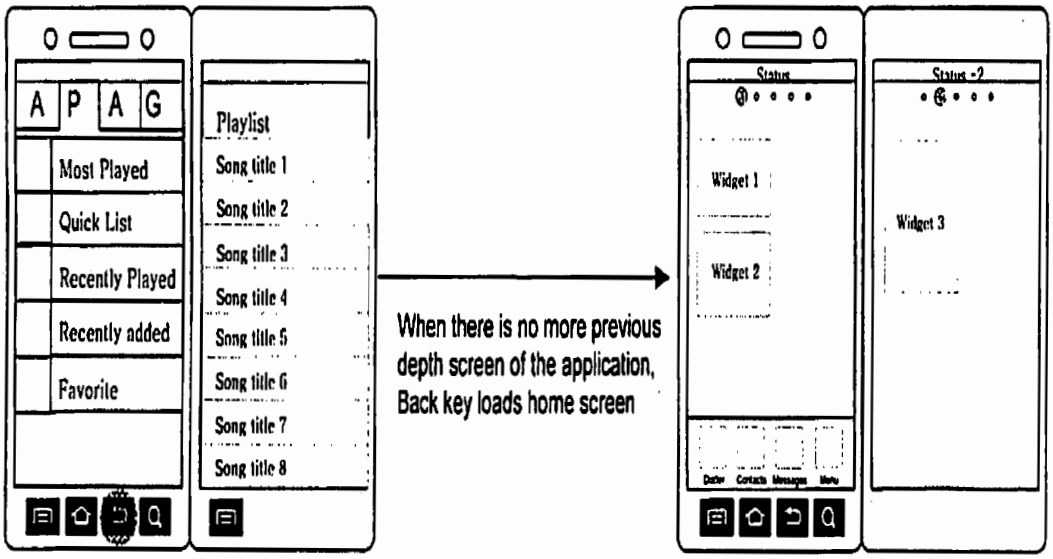
6. Basic Key Interaction

6.3 Back Key Interaction

- Back key interaction on Expand-mode(A+) | Example
  - on Expand-mode(A+), Back Key loads dual-mode last application.

Expand-mode(A+)



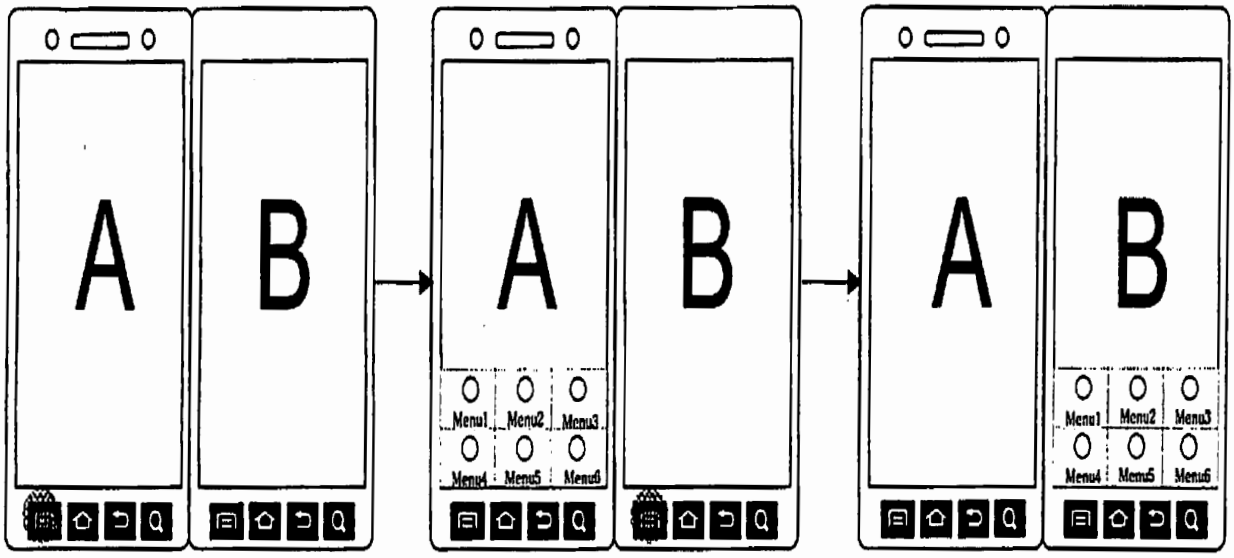


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Menu Key interaction on Split-mode (A/B)

• Split-mode (A/B) : Both of screens have two independent sub menus

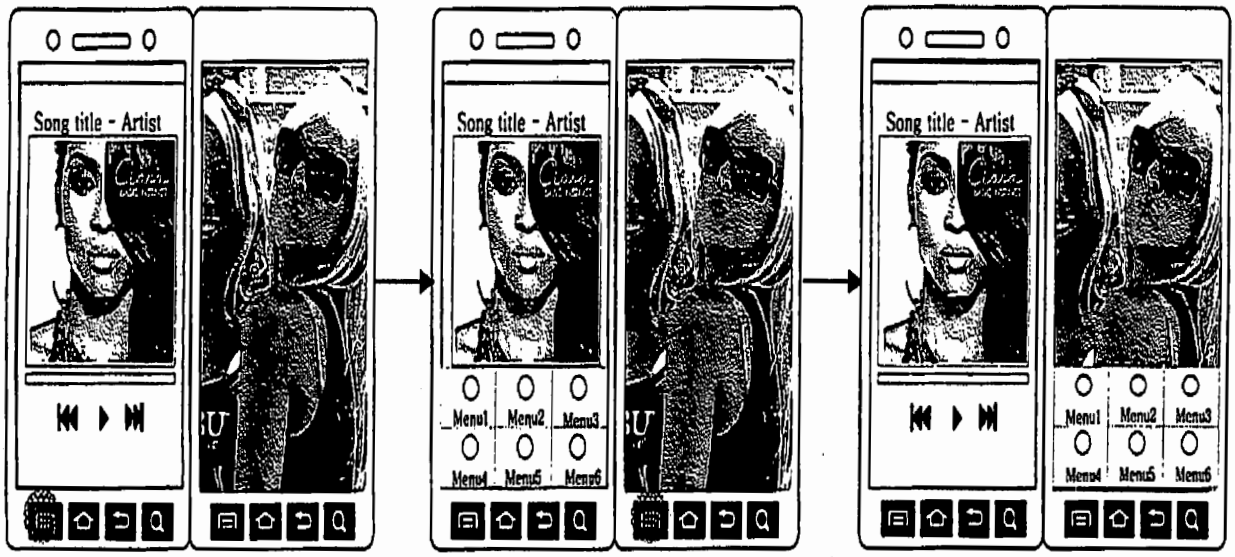


Both side of Menu keys are ON

Copied from 13370939 on 05/11/2012

• Menu Key interaction on Split-mode (A/B) | Example

• Split-mode (A/B) : Both of screens have two independent sub menus



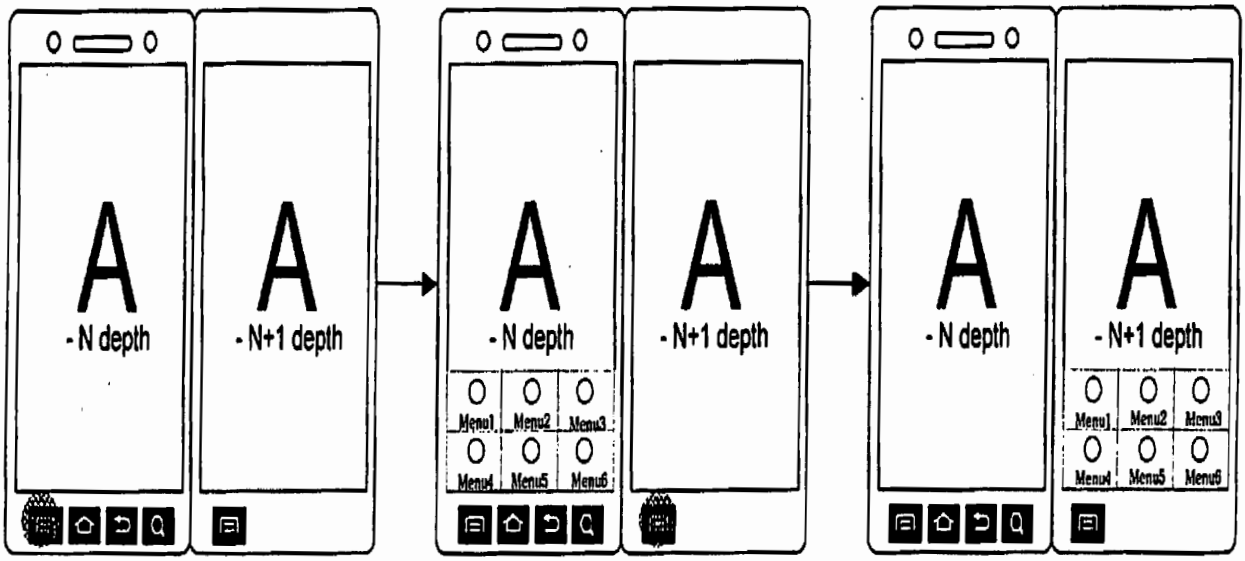
Both side of Menu keys are ON

©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

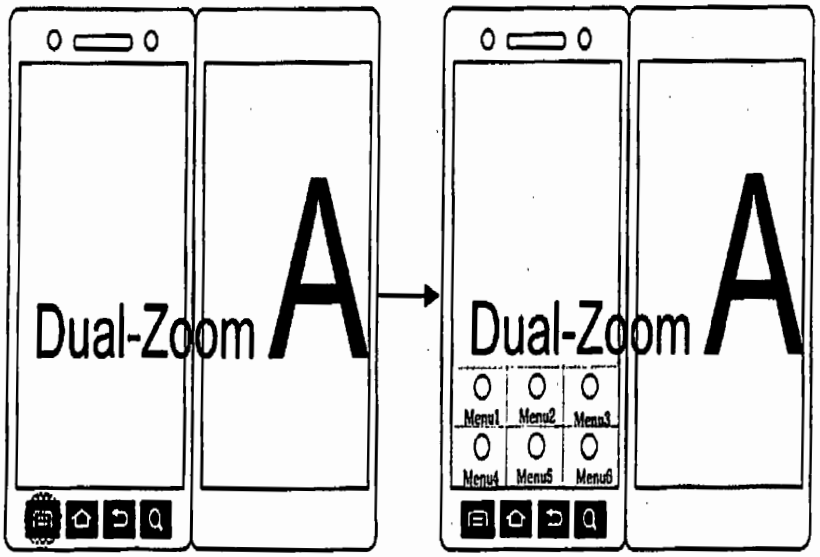
• Menu Key interaction on Expand-mode(A+) and Dual Zoom(A++)

• Expand-mode(A+) : Both of screens have two independent sub menus



Both side of Menu keys are ON

• Dual Zoom(A++) : Both of screens have just one sub menu

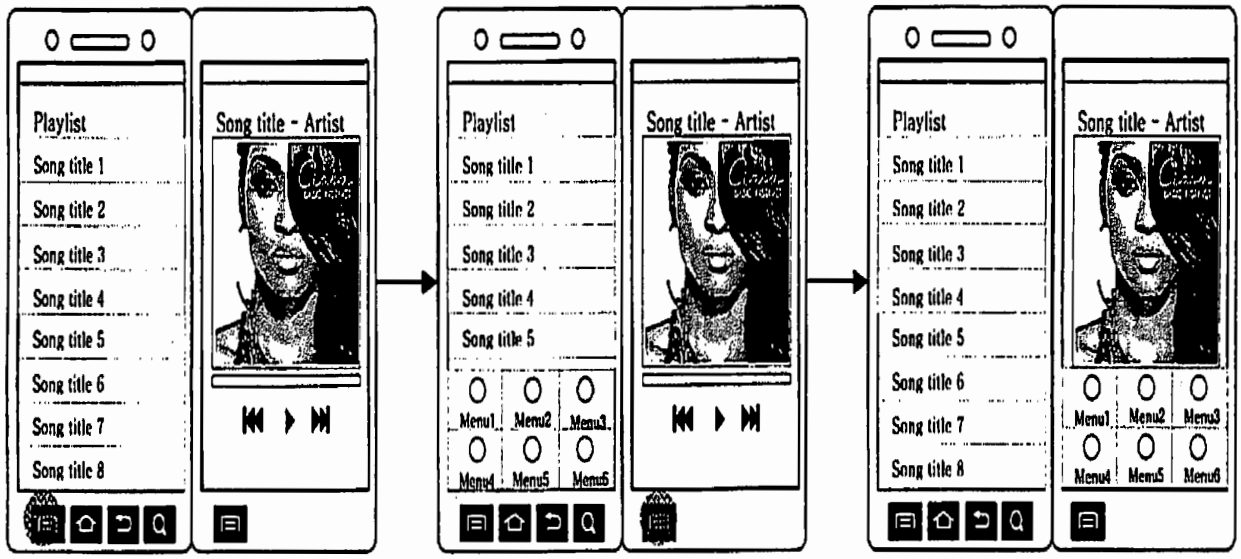


Only Left side of Menu key is ON

Copied from 13370939 on 05/11/2012

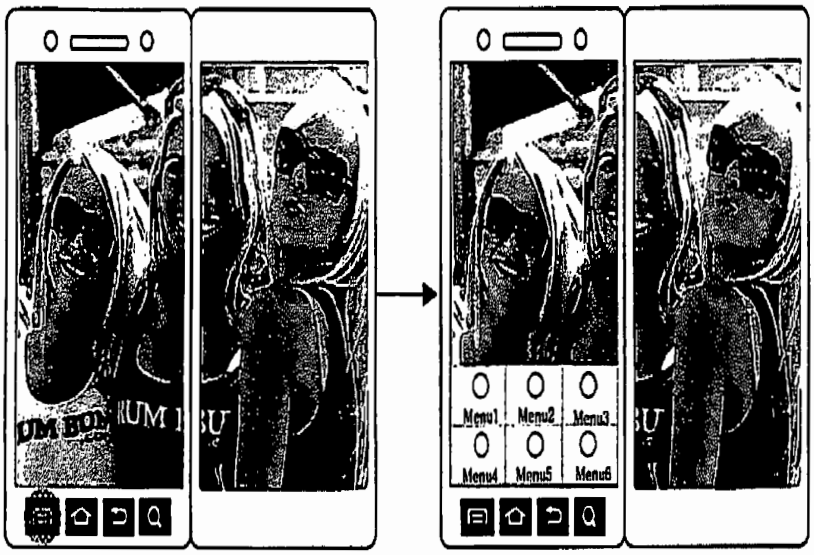
• Menu Key interaction on Expand-mode(A+) and Dual Zoom(A++) | Example

• Expand-mode(A+) : Both of screens have two independent sub menus



Both side of Menu keys are ON

• Dual Zoom(A++) : Both of screens have just one sub menu



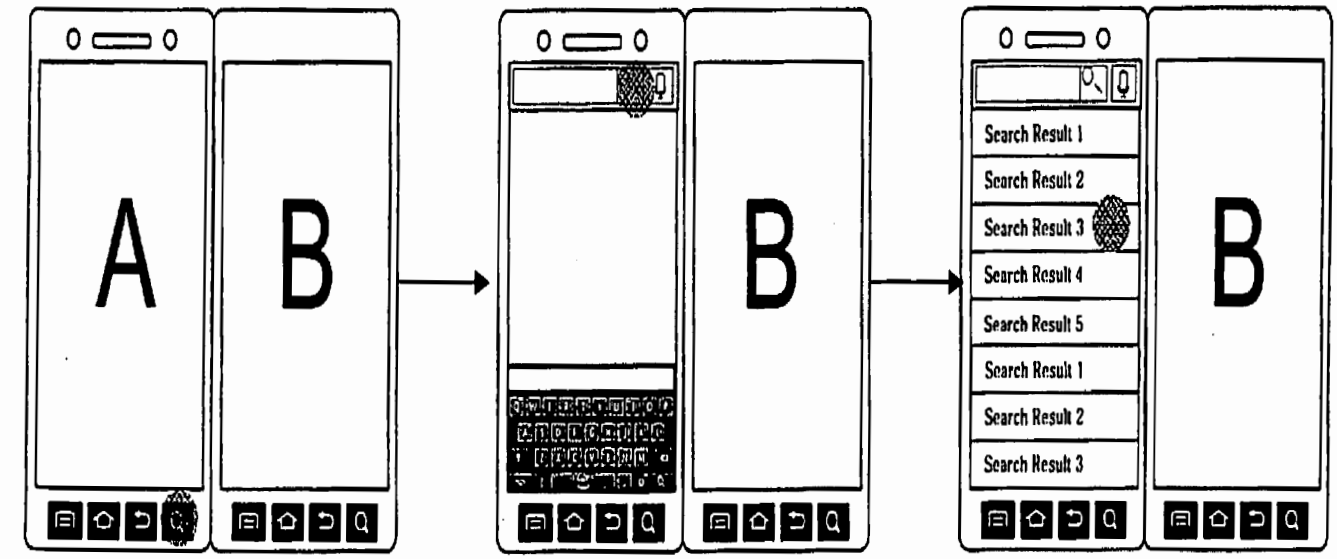
Only Left side of Menu key is ON

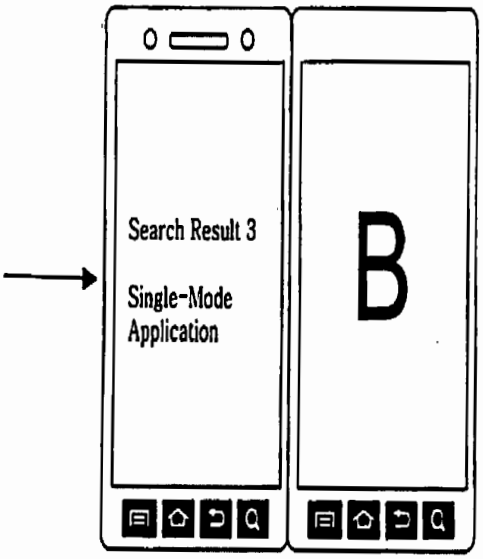
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Search key interaction on Split-mode (A/B)
- on Split-mode (A/B), Search Key loads single-mode search application on the selected screen.

Split-mode (A/B)



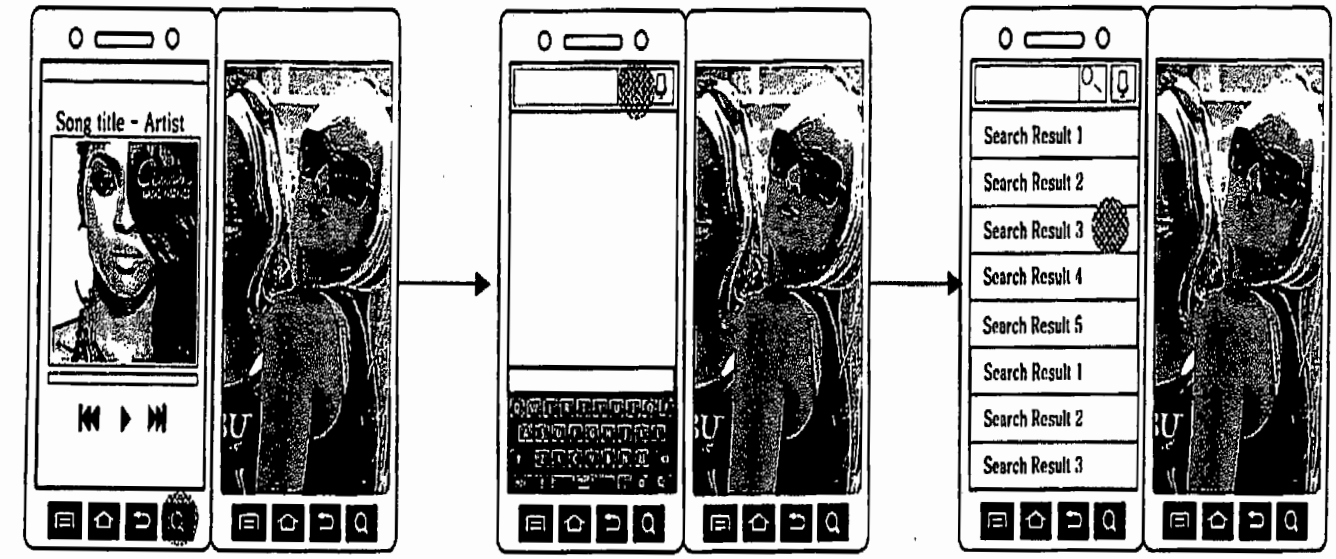


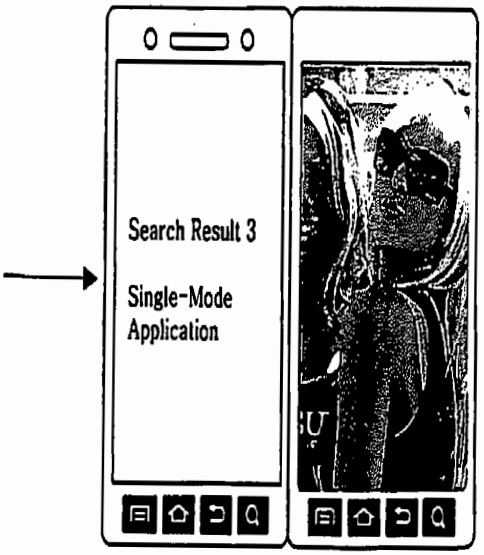
(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

- Search key interaction on Split-mode (A/B) | Example
  - on Split-mode (A/B), Search Key loads single-mode search application on the selected screen.

Split-mode (A/B)

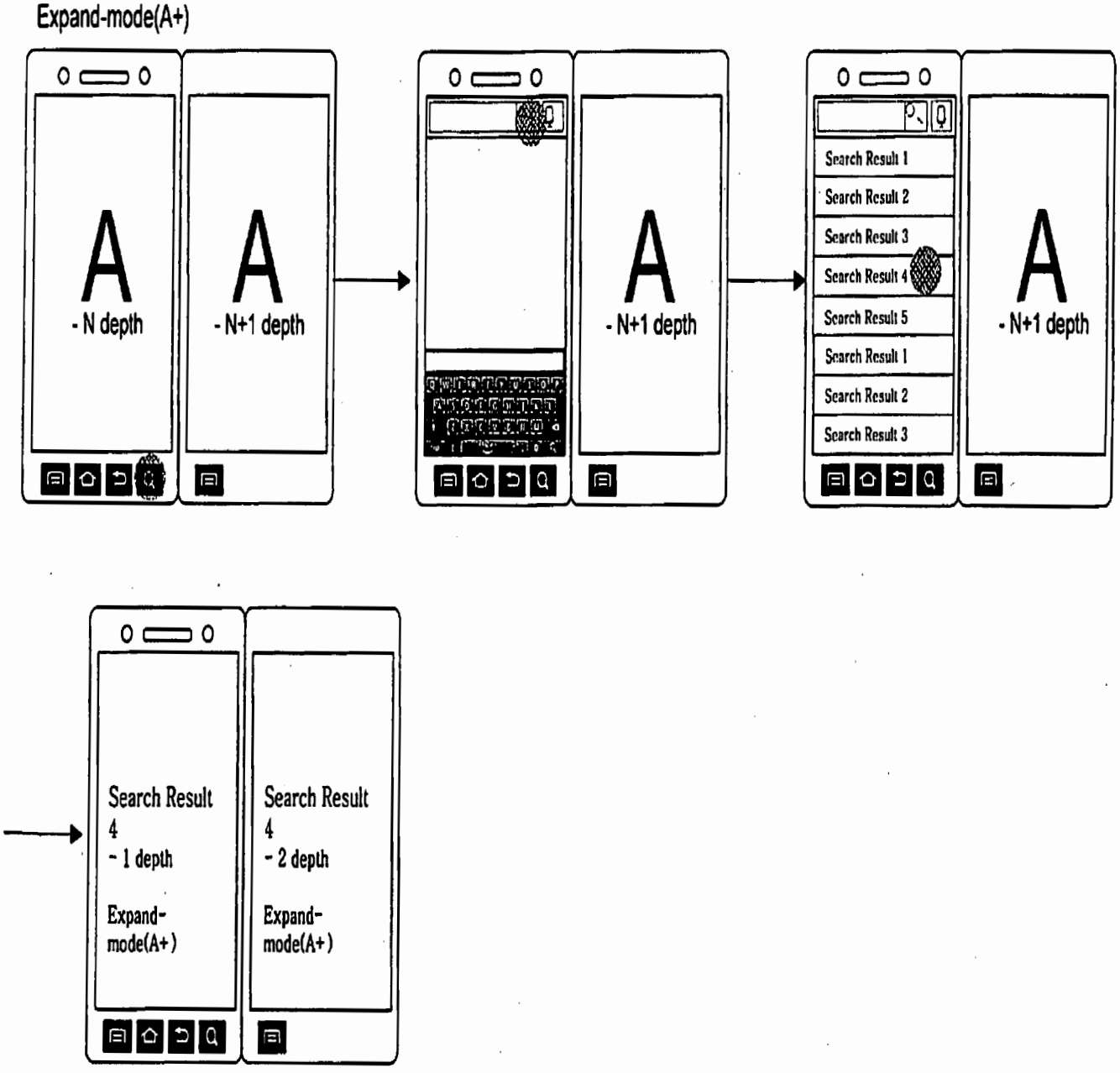




© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

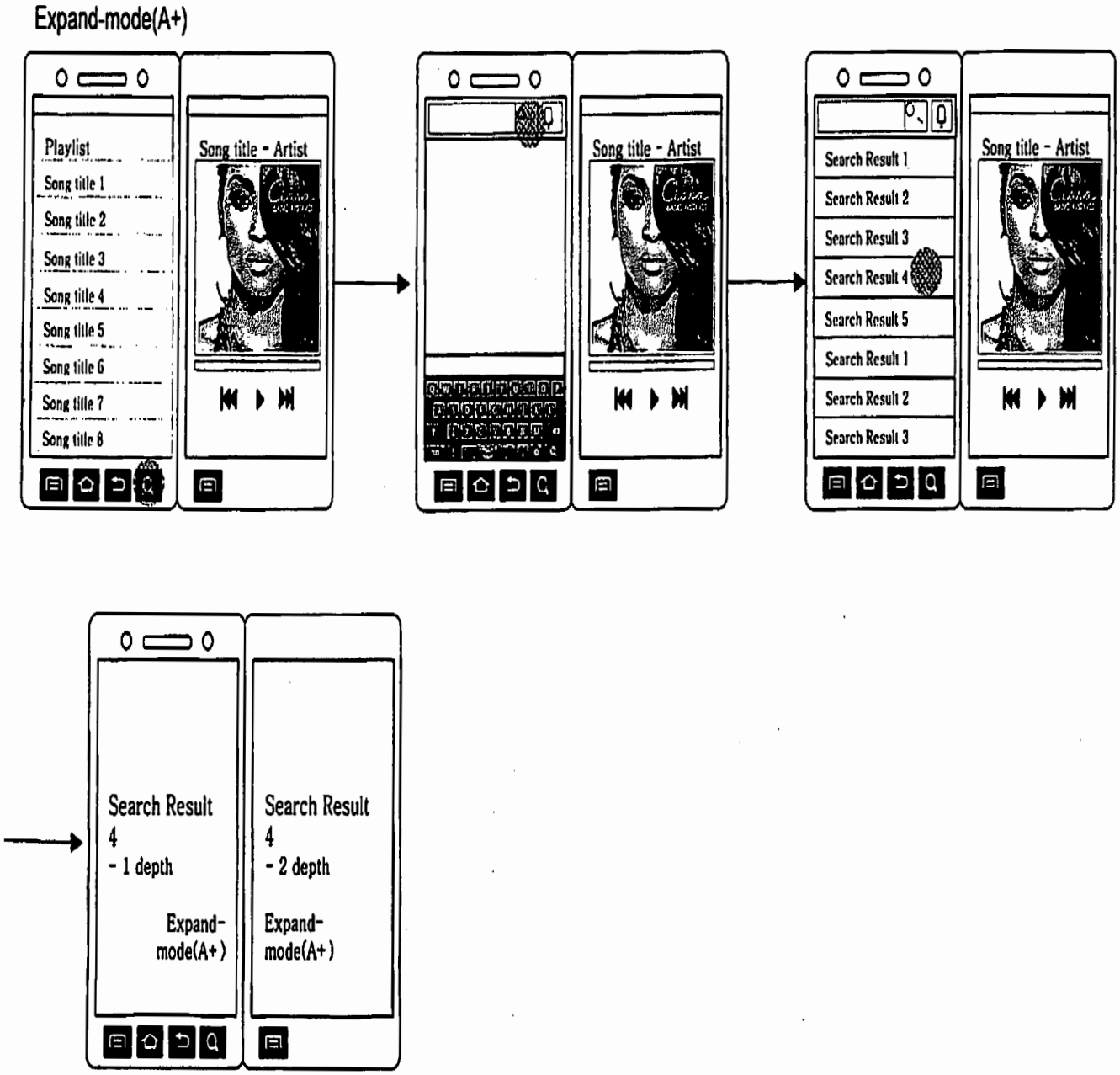
• Search key interaction on Expand-mode(A+)



(C) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

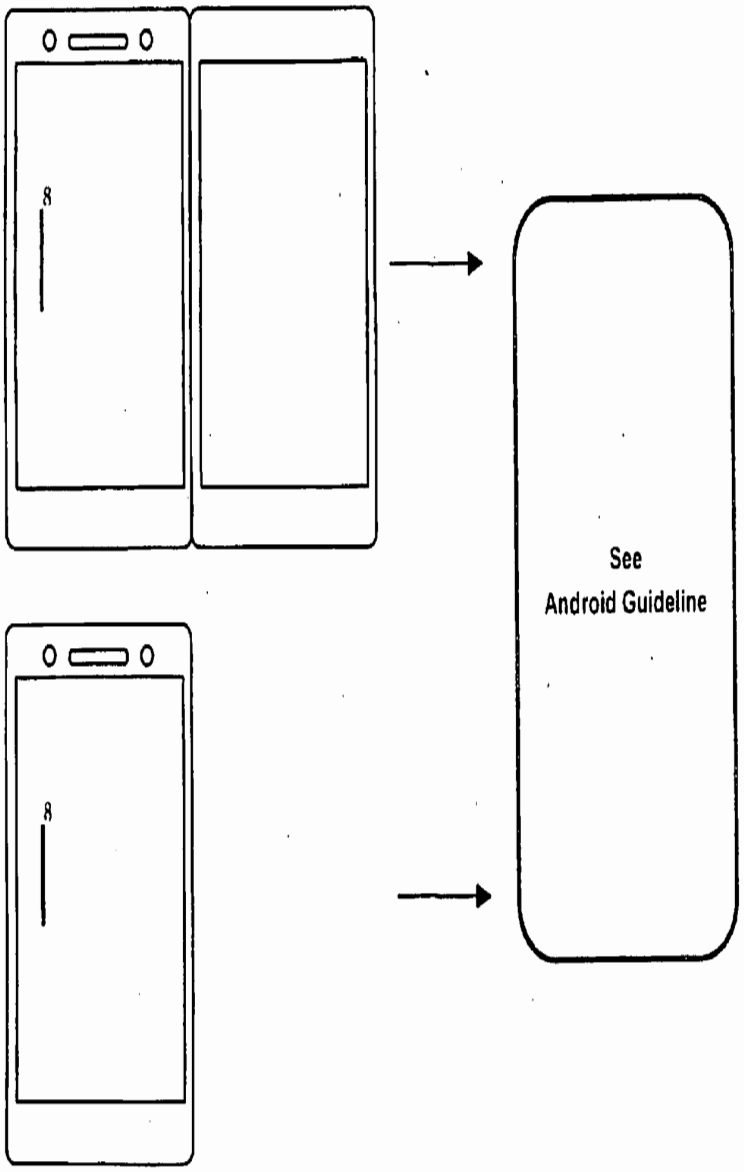
• Search key interaction on Expand-mode(A+) | Example



(C) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

- Volume key interaction on Dual display : Volume control slider appears on the screen which has the volume control button.
- Volume key interaction on Single display : Volume control slider appears on the main screen.



©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Screen Layout

© 2010 SAMSUNG Electronics All rights reserved. SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

7.1 Basic Screen Layout

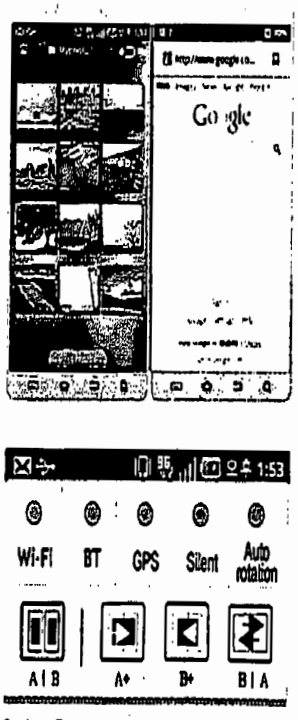
v.1.6 Updated
Screen Layout mode Updated

180º Dual Screen has 2 Screen Mode (Split, Expand)
Each Screen Mode can be exchanged by Quick Panel or Multi Touch Gesture. (See '6. Quick Panel' and '8.Gesture mode change.')

Split-mode(A/B) : 2 Apps
Two screens display another application.
This mode can support all type of App.
(like 3rd party App)
If Split-mode is switched to another mode, current App and the last App are displayed

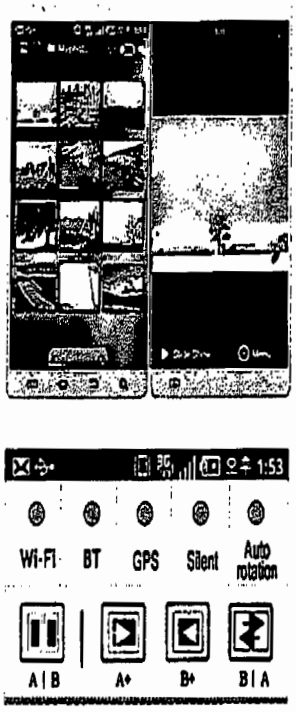
Expand-mode(A+) : 1 or 2 depth of 1 App
Two screens display one or two depth of same App or expanded single contents.
This mode only support the App that Dual-mode is implemented on.

2 Apps



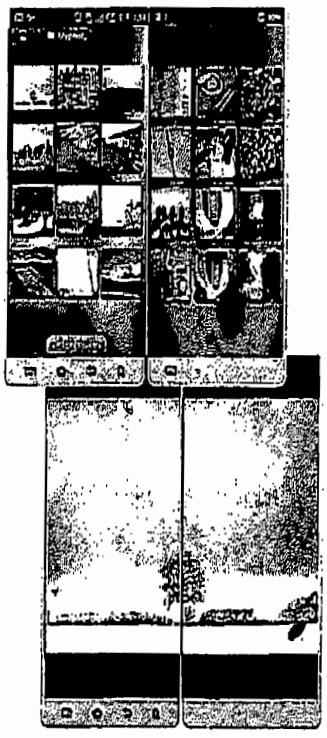
Quick Panel

2 depth of 1 App



Quick Panel

1 depth of 1 App



©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

7. Screen Layout

7.1 Basic Screen Layout

● Support mode

Application	Style	Split-mode(A/B)		Expand-mode(A+)		Expand Mode(A+ +)		기타
		Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	
Browser	List	O	O	O	O	X	O	
	Web Page	O	O	O	O	O	O	
Samsung Ebook	List	O	O	O	O	X	O	
	Bookshelf	O	O	O	O	O	O	
	Book view	O	O	O	O	O	O	
Messaging	List	O	O	O	O	X	O	
	Message history	O	O	O	O	X	O	
Camera	Live View	O	O			X	X	
	Gallery	O	O			O	O	
Memo	Memo Board	O	O			O	O	
	large Memo	O	O			X	O	
Video Player	List	O	O			X	O	
	Play View	O	O			O	X	
Contacts	List	O	O			X	O	
	Detail	O	O	O	O	X	O	
Calendar	Month View	O	O	O	O	Δ	Δ	
	Weeks view	O	O	O	O	Δ	Δ	
	Day	O	O	O	O	Δ	Δ	
Phone	List	O	O	O	O	X	O	
	Dial	O	O	O	O	X	X	
	Detail	O	O	O	O	X	O	
Gallery	Thumbnail Group	O	O	O	O	O	O	
	Thumbnail	O	O	O	O	O	O	
	Single Image	O	O	O	O	O	O	
Maps	Map View	O	O	O	O	O	O	
	List	O	O	O	O	X	O	

TBD

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

- Expand Mode details

Application	Application Type	View Mode (Portrait / Landscape / Portrait ↔ Landscape)	Launch app in 180 from screen A or B		S/W Feedback	UX Feedback
			Screen A	Screen B		
Home Screen		0/0/0	Home Screen Page N	Home Screen Page N+1		
Applications Screen		0/0/0	Application Screen Page N	Application Screen Page N+1		
Browser	Samsung Application	0/0/0	Web Page A	List with 3 Tap (Bookmarks, Mostvisited, History)		
			Web Page A	Multi-Windows		
Ebook	Samsung Application	0/0/0				
Messaging	Samsung Application	0/0/0	Conversations List View	Conversations Detail View		
			Empty Case	Previous displayed app		
Camera	Samsung Application	0/0/0	TBD	TBD		
Memo	Samsung Application	0/0/0		Detail View		
				Maintain previous app		
Video Player	Samsung Application	0/0/0		Empty Video Player		
				Maintain previous app		
Contacts	Samsung Application	0/0/0		Details View on 1st cotact		
			Tap - Groups			
			Tap - History			
			Tap - Activites			
			No Contact	Maintain previous app		
Phone	Samsung Application	0/0/0	Tap - Kaypad	Maintain previous app		
			Tap - Logs	Maintain previous app		
			Tap - Favorites	Maintain previous app		
Calendar	Samsung Application	0/0/0	Month View	Detail View		
			Week View	Detail View		
			Day View	Detail View		
			List View	Detail View		
			No event	Maintain previous app		
Gallery	Google Application	0/0/0	Group View	Thumbnail View		
			Thumbnail View	Detail View		
			Detail View N	Detail View N+1		
			No file	Maintain previous app		
Maps	Google Application	0/0/0				

(C) 2010 SAMSUNG Electronics. All rights reserved.

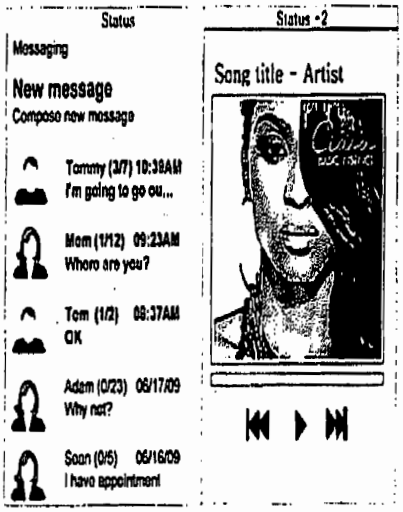
Copied from 13370939 on 05/11/2012

• Split-mode(A/B) : 2 applications
See the android basic interaction rules for single display phones.

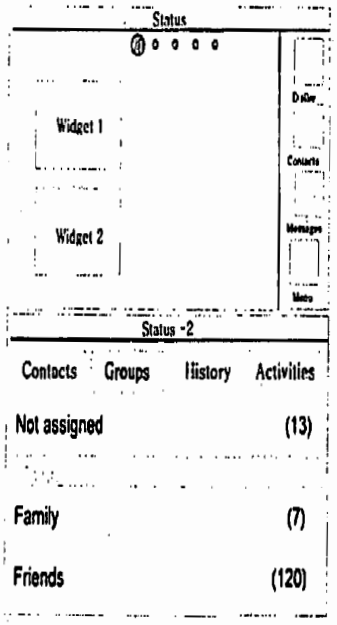
Home – Application



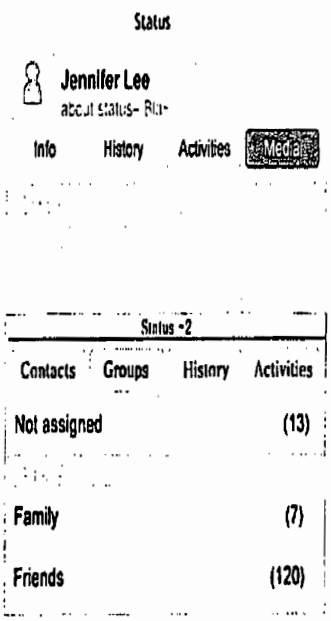
Application– Application



Home – Application



Application– Application



(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Expand-mode(A+) : 2 depth of one application

There are 5 dual mode usages and the usages are depend on the application characteristics. Two depth of same App. are usually displayed on expand mode.

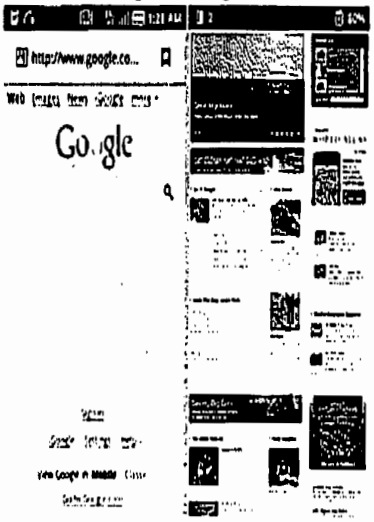
First Depth – Second Depth



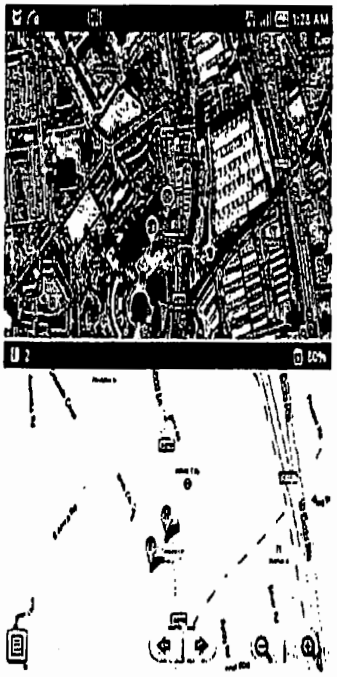
Input –Selection



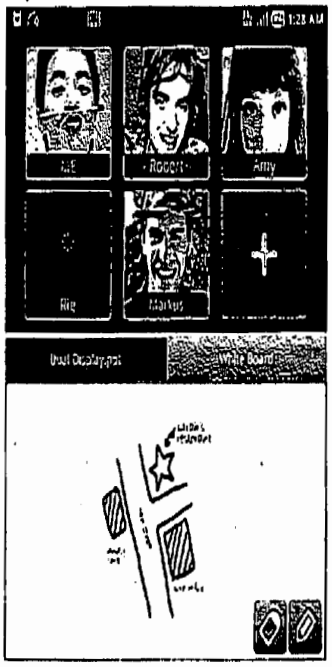
Page n – Page m



Dual View



Split Function

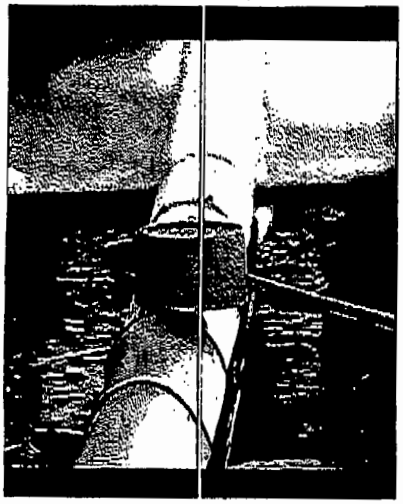


© 2010 SAMSUNG Electronics. All rights reserved.
SAMSUNG CONFIDENTIAL

Copied from 13370939 on 05/11/2012

• Expand-mode(A+) : 1 depth of one application
Two screen display single depth of one App or expanded single contents.

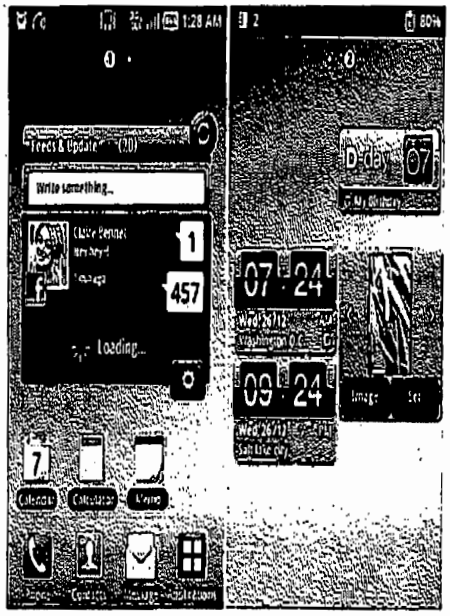
Zoom content



More contents



More pages

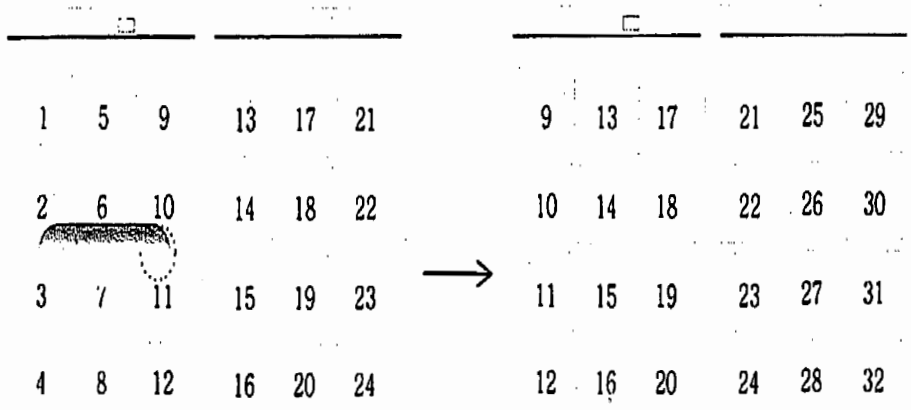


© 2010 SAMSUNG Electronics. All rights reserved.

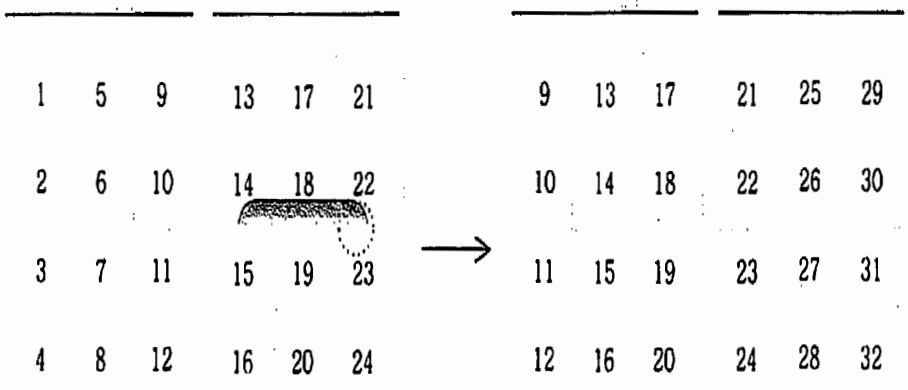
Copied from 13370939 on 05/11/2012

- When List or Grid is displayed over two screens, all items of the List or the Grid are scrolled together.
- When flick or sweep on one screen, all items of the List or the Grid are scrolled together as fast as the speed of touch gesture. (it follows the rule of flick and sweep interaction on the single screen.)

Flick or sweep Interaction on one screen



all items of the List or the Grid are scrolled together as fast as the speed of touch gesture.

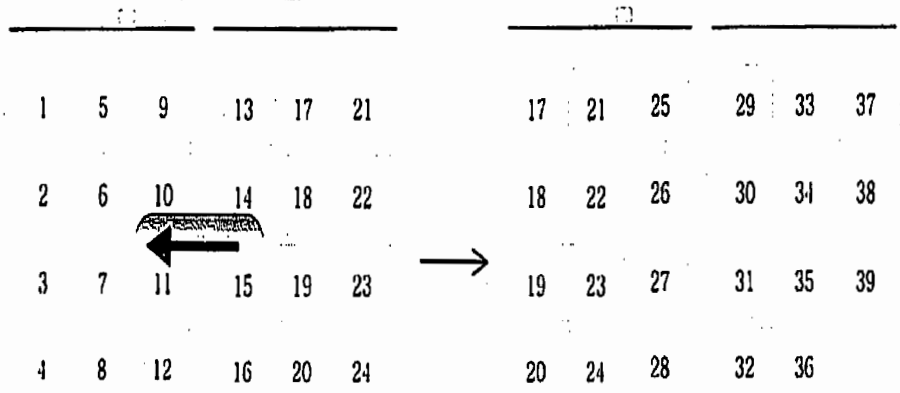


© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

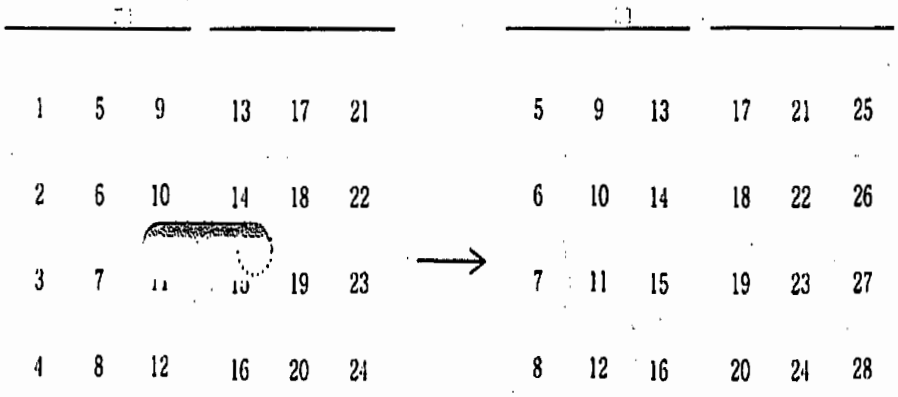
- When List or Grid is displayed over two screens, all items of the List or the Grid are scrolled together.
  - When flick over the hinge (over two screens), all items of the List or the Grid are scrolled to the last page at fast speed.
  - When sweep over the hinge (over two screens), all items of the List or the Grid are scrolled together as fast as the speed of touch gesture. (it follows the rule of flick and sweep interaction on the single screen.)

Power Scroll : Flick Interaction over the hinge



Power scrolled to the last page.

Sweep over the hinge



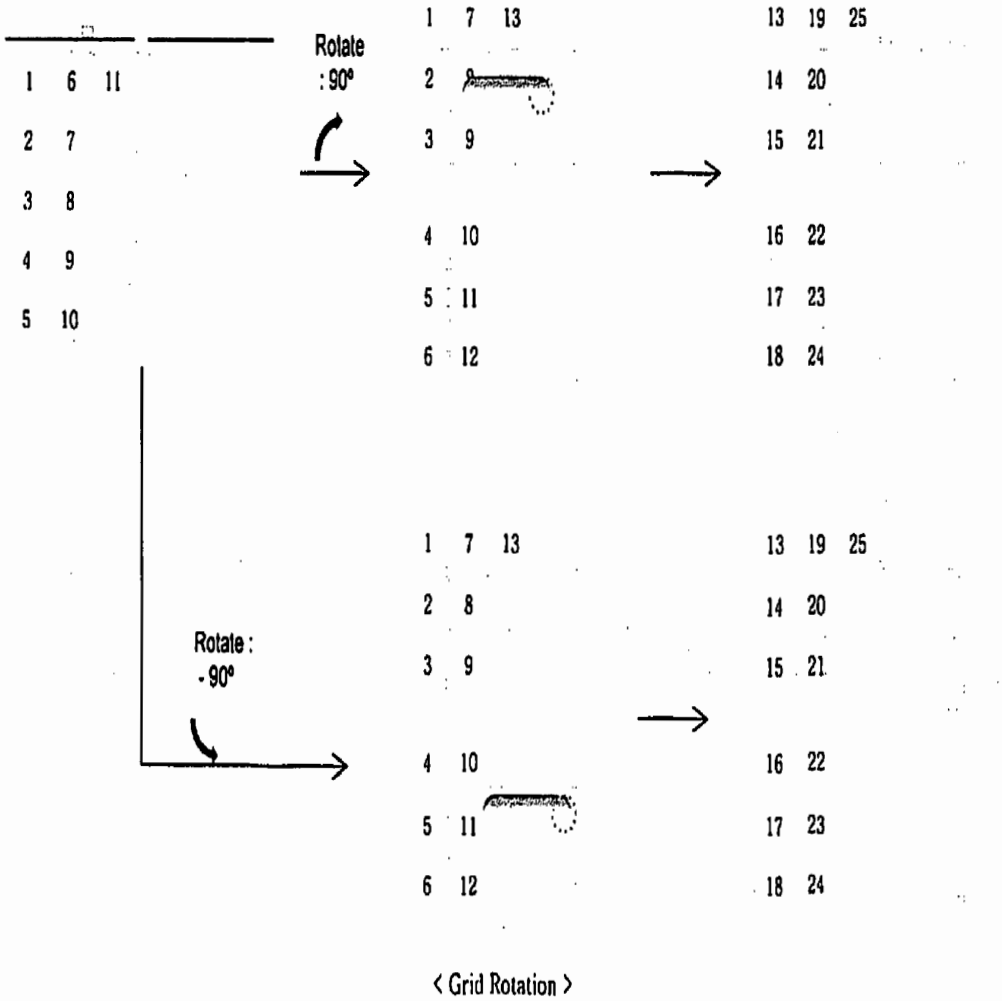
all items of the List or the Grid are scrolled together as fast as the speed of touch gesture.

< Flick and Sweep Interaction over the hinge>

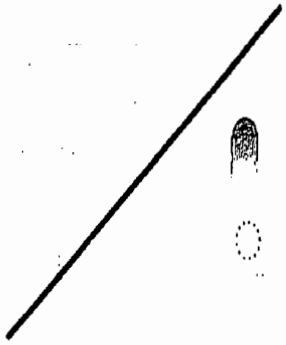
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• Grid Type
- When Grid is displayed over two screens, it is scrolled with horizontal direction.
- Each Item on the Grid is not displayed over two screens.
- When it is rotated with 90°, Items on the Grid are rotated and scrolled with horizontal direction.
- Horizontal Layout : Items on the Grid are scrolled with horizontal direction on both of the upper screen and the lower screen.
- Vertical Layout : Items on the Grid are not scrolled with vertical direction.
(If needed, Items on the Grid are scrolled with vertical direction in the horizontal layout)



< Grid Rotation >



Vertical Layout :
Items on the Grid are not scrolled with vertical direction.

< Grid : Unavailable Case >

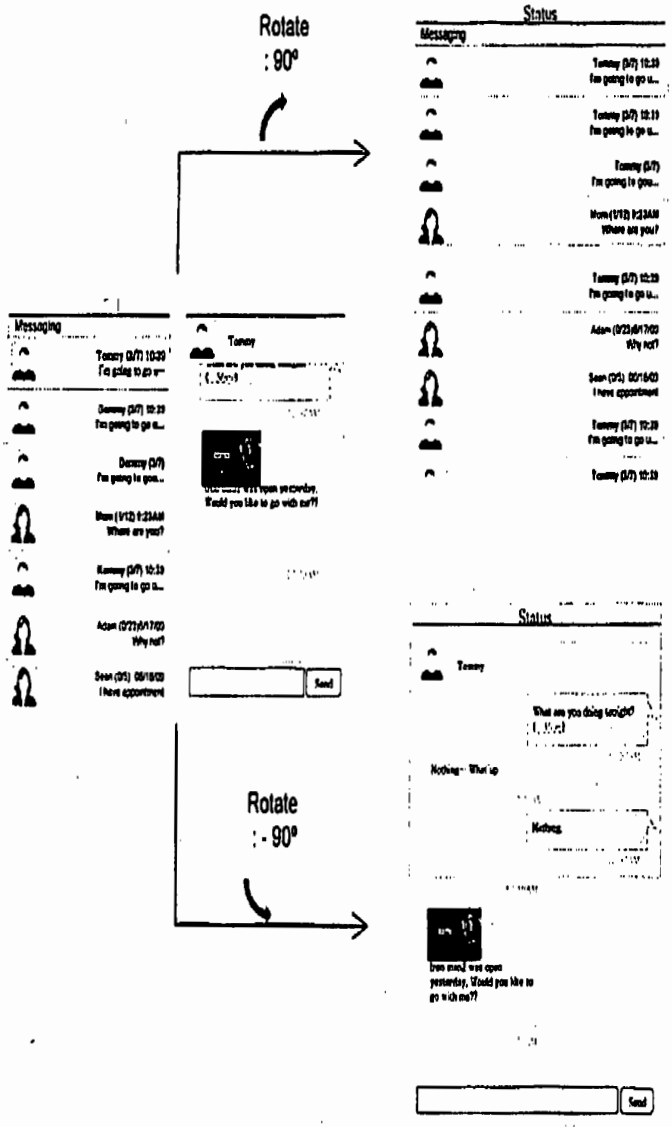
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

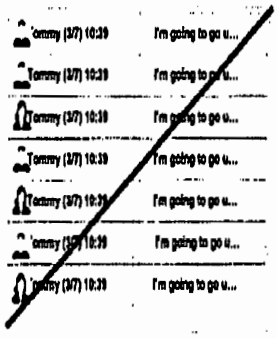
v.1.5 Updated
Message App Rotation Rule Updated

v.1.6 Updated
Message App Rotation Rule Updated

- List Type
- Vertical Layout : List is displayed on just one screen, and not displayed over two screens.
- Horizontal Layout : List could be displayed over two screens.
- Items in the list could not be expanded over two screens.



< Horizontal List Expand >



Vertical Layout :
Items in the list could not be expanded over two screens.



Vertical Layout :
List is displayed on just one screen, and not displayed over two screens.

< List : Unavailable Cases>

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

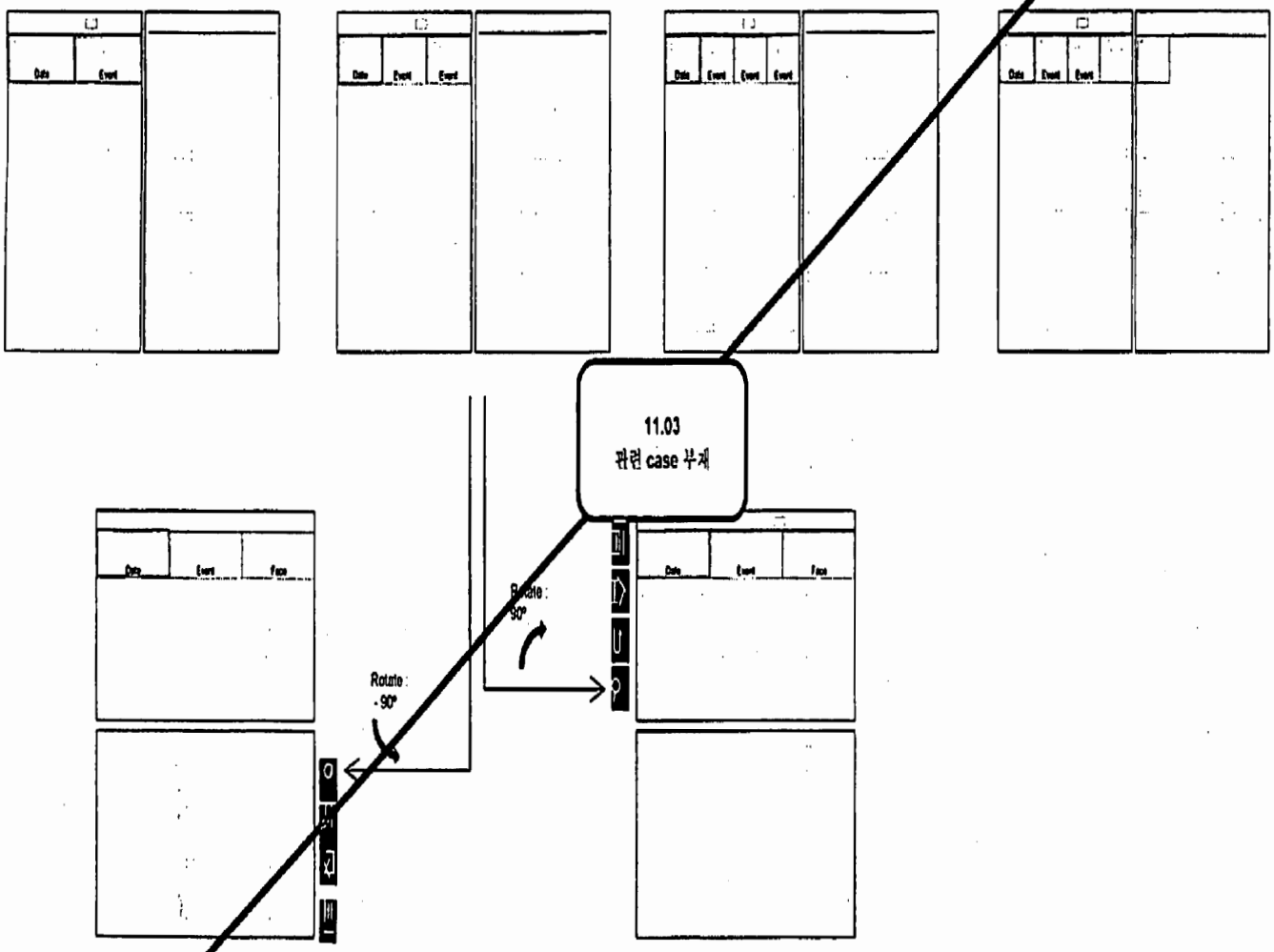
Copied from 13370939 on 05/11/2012

head.jpg

7. Screen Layout

7.2 Screen Navigation

1. Tab.은 한 스크린에 제시할 수 있는 최대 Tab의 개수까지는 한 스크린에 표시한다.
2. 최대 Tab.의 개수를 초과하면 오른쪽 스크린에 Tab.을 배치한다.
3. Tab.이 표시되어 있는 스크린의 반대쪽 스크린도, 같은 Tab.에 속해있음을 시각적으로 보여준다.



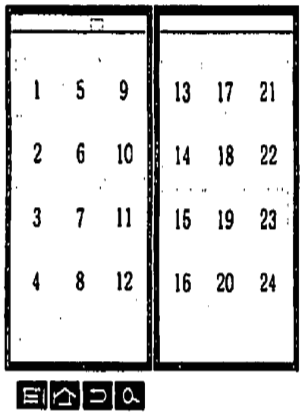
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

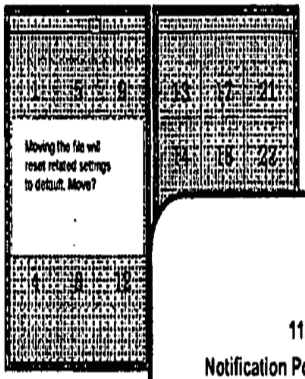
7.3 Pop-up & Contextual Pop-up

1. Pop-up 표시 시에는 두 화면이 Dim 처리하고 왼쪽/하단 화면에 Pop-up을 표시한다.
2. 영화와 같은 Play 중인 화면에 대해서는 Dim 처리하지 않고 해당 화면에 Pop-up을 표시하지 않는다.

- 세로



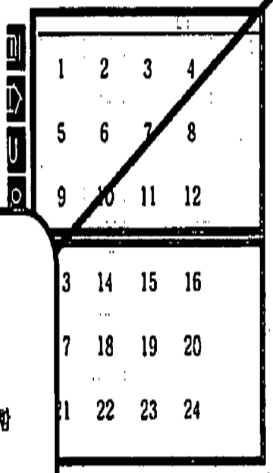
Notification Pop-up



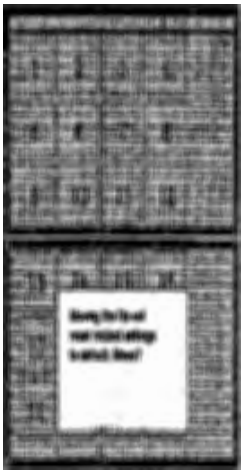
왼쪽화면에 pop-up 표시

11.03
Notification Pop-up은 터키로 표시되므로 기존 Single과 동일함

- 가로



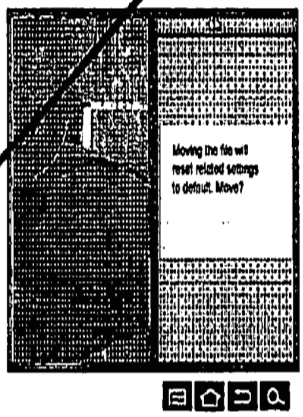
Notification Pop-up



하단 화면에 pop-up 표시



Notification Pop-up



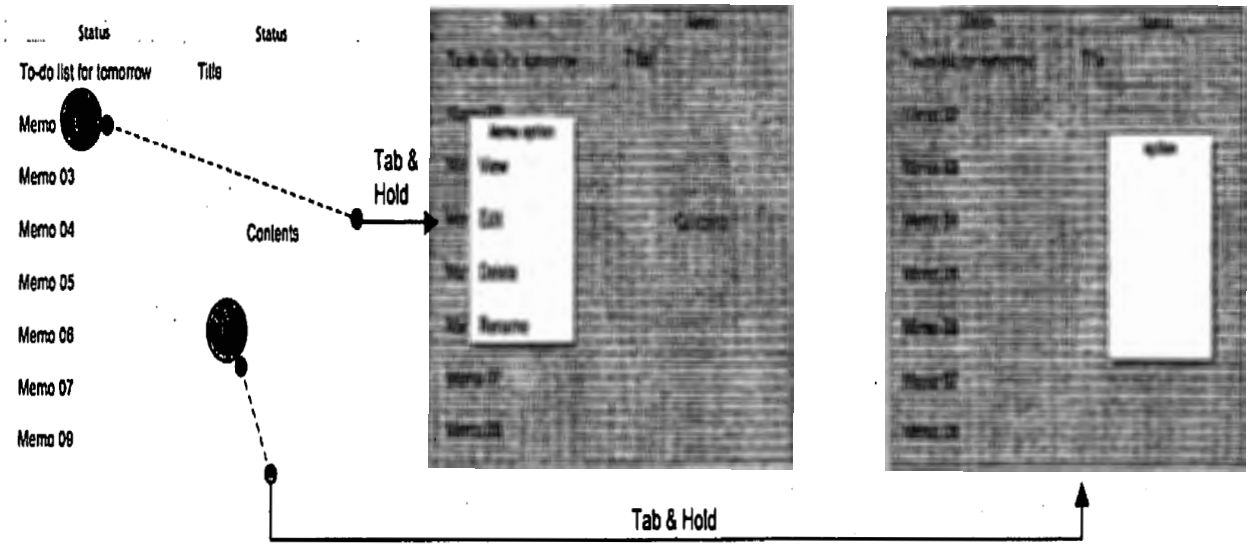
영화와 같은 Play 화면은 Play 화면에 Pop-up을 표시하지 않는다.

© 2010 SAMSUNG Electronics. All rights reserved.

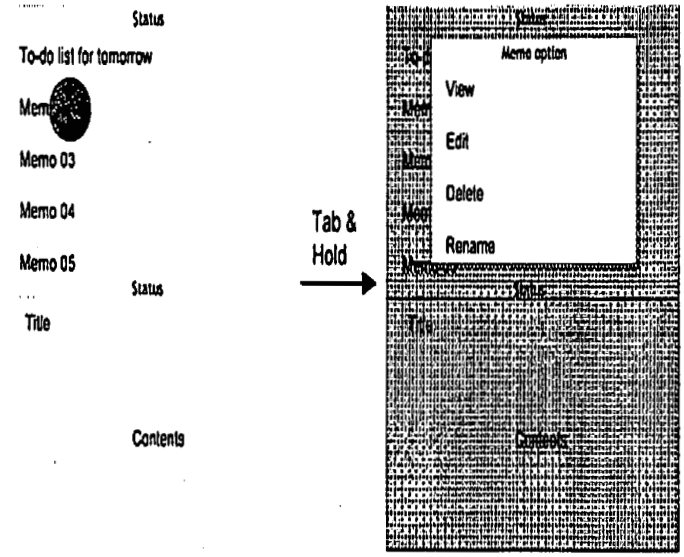
Copied from 13370939 on 05/11/2012

- Contextual Pop-up is opened in the center of the screen user tapped
  - Contextual Pop-up is not displayed over two screens.

Vertical



Horizontal



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Quick Panel

(c) 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

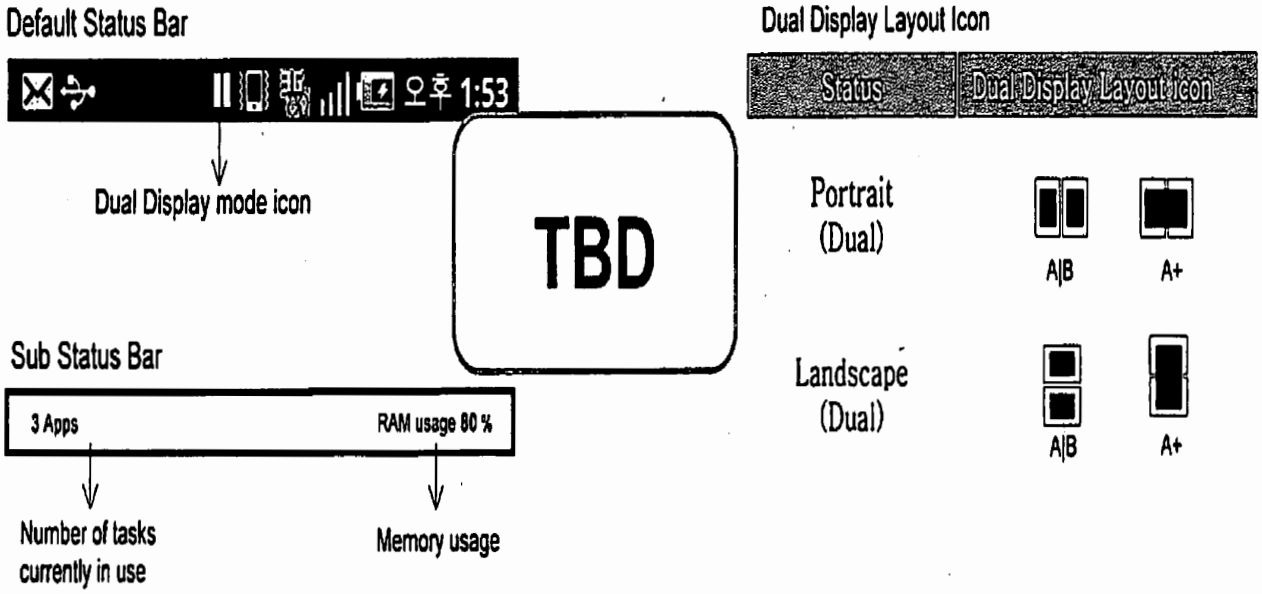
Copied from 13370939 on 05/11/2012

8.1 Status bar

v.1.5 Updated
Sub Status Bar Should be Changed

v.1.6 Updated
Screen Layout mode Updated

- Default Status Bar
  - Default working and the rule of icon are same as existing Android status bar.
  - Dual mode icon will be added to the right-align icons of status bar.
- Sub Status Bar
  -It is optional status bar that used only at the Dual Screen status.
  -It shows information about Task Status.

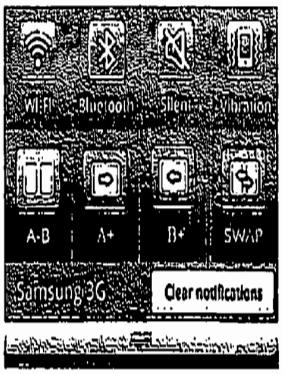


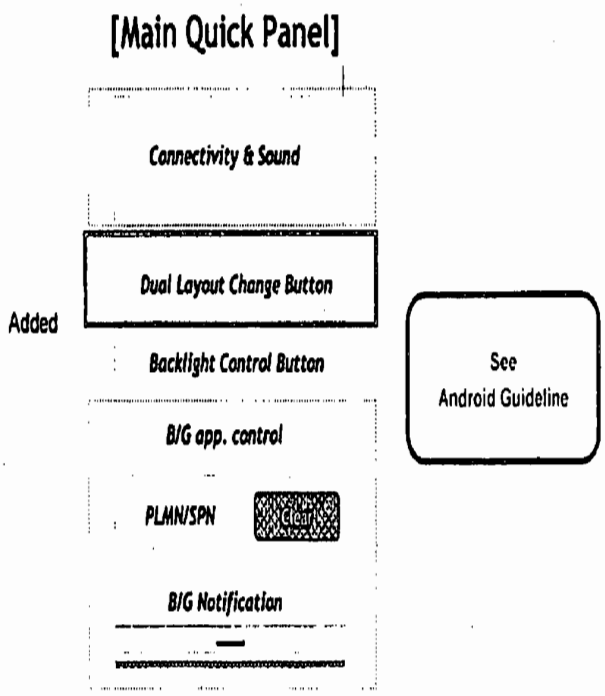
©2010 SAMSUNG Electronics. All rights reserved.

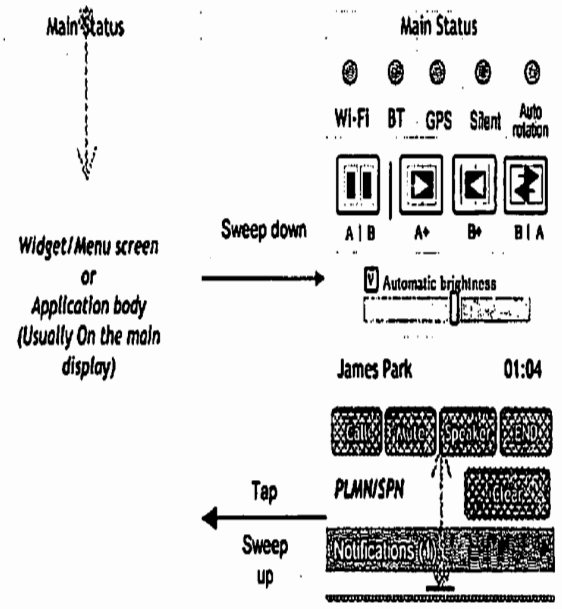
Copied from 13370939 on 05/11/2012

v.1.6 Updated
Dual Layout Change Buttons are Redesigned

- Default Quick Panel
  - -It provides Quick Panel of Android Phone default functions. (Connectivity & Sound)
  - -It provides 'Dual Screen Layout Change' under the 'Connectivity and Sound' line.



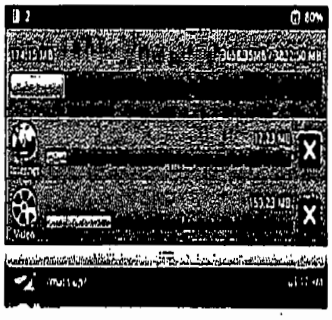




Copied from 13370939 on 05/11/2012

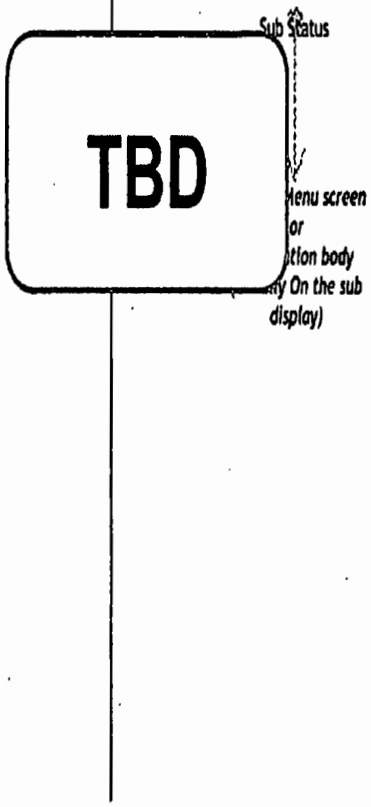
v.1.5 Updated
Sub Quick Panel Should be Changed

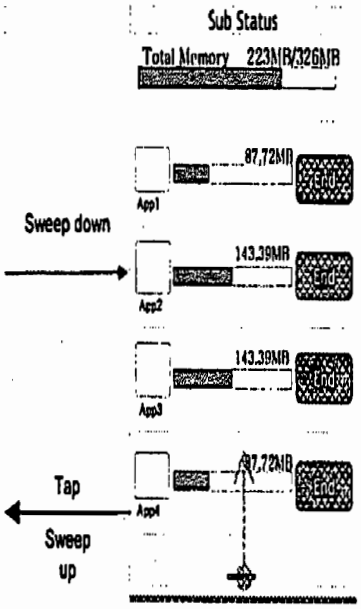
- Sub Quick Panel
  - -It is only used optional status bar.
  - -It shows using application memory and the list of running task.
  - -It provides the simple off button for running task.



[Sub Quick Panel]







© 2010 SAMSUNG Electronics. All rights reserved.

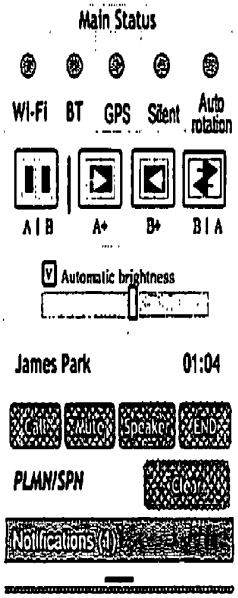
Copied from 13370939 on 05/11/2012

8.3 Definition of Main Quick Panel

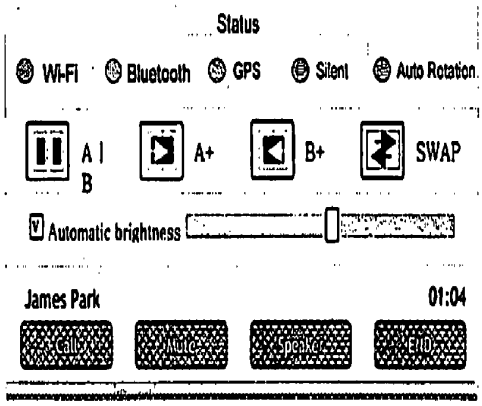
v.1.6 Updated
Dual Layout Change Buttons are Redesigned

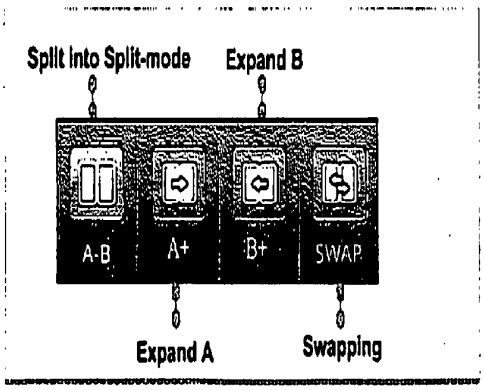
- Layout Change Button (180 degrees)
  - -It provides the button which can change 4 Layout modes. (A|B, A+, B+, SWAP)
  - -It distinguish between support and not.

[Portrait mode]



[Landscape mode]





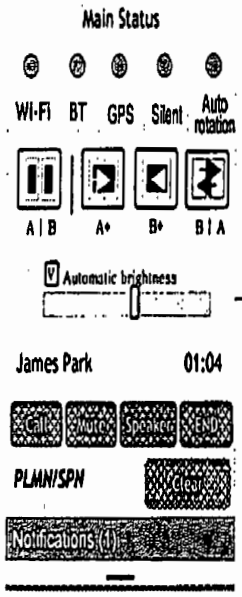
	Status	Description
	Support	Running application supports this mode so that user can select it.
	Not support	Running application doesn't support this mode so that user can not select it.

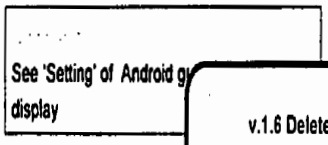
©2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

8.3 Definition of Main Quick Panel

- Brightness Control Button
  - Working is same as the existing Brightness controller of Android UI.
  - If user adjust brightness, it applies to both screen.





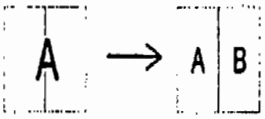
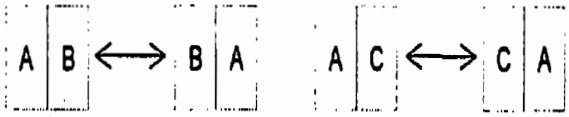
v.1.6 Deleted
Follows Android default UI
for Brightness control

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

8.4 Mode Change

v.1.6 Updated
Dual Layout Change Buttons are Redesigned

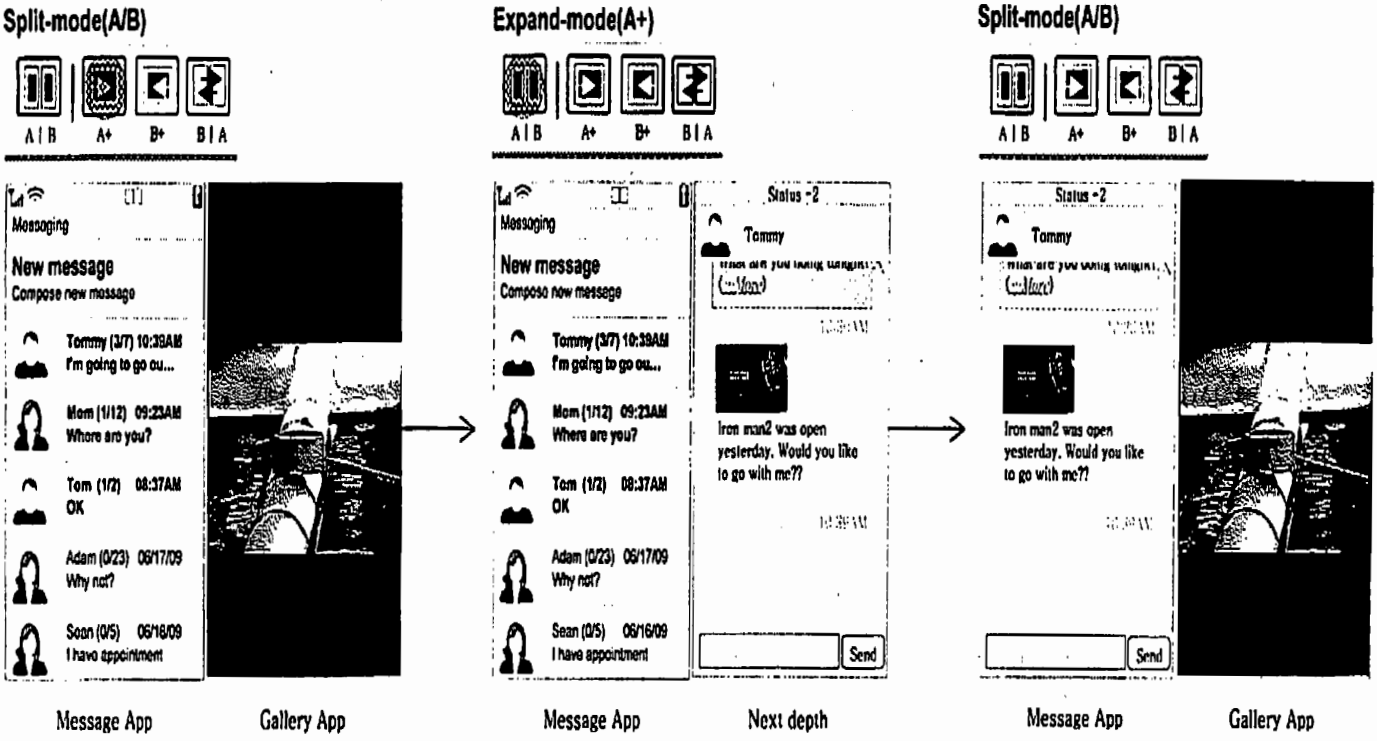
Type		Description	Use cases
Split-mode(A/B)		Select this button, Expand-mode(A+) can be changed to Split-mode(A/B) Horizontal Mode has same rule	
Expand A		Select this button, user can expand the application on the left screen over two screens. Horizontal Mode has same rule If the left App can't support Expand-mode, this button is disable.	
Expand B		Select this button, user can expand the application on the right screen over two screens. Horizontal Mode has same rule If the right App can't support Expand-mode, this button is disable.	
Swapping		Select this button, screens are exchanged. This button is disable except Split-mode. Horizontal Mode has same rule	

A : Application Support Expand-Mode
B : Application Support Expand-Mode
C : Application only support Split-Mode

(C) 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

- Split-mode(A/B) ← → Expand-mode(A+)
- User can change mode using view mode button of quick panel.
- View mode is dependent on current view mode and displayed App.



A B A A B

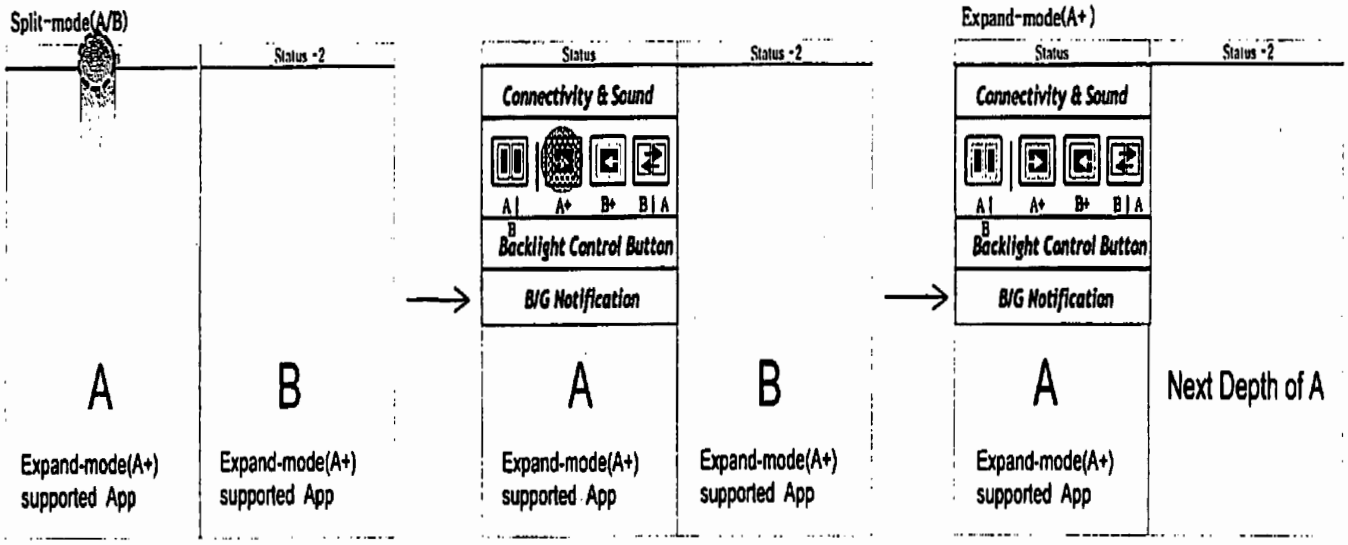
Not available Available

©2010 SAMSUNG Electronics. All rights reserved.

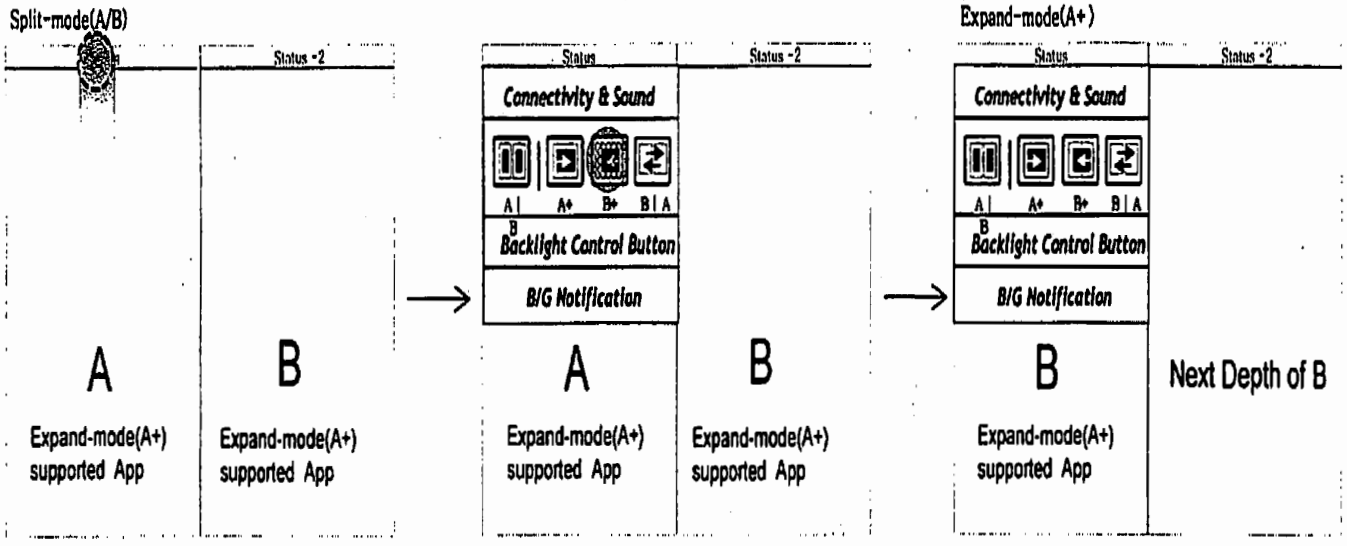
Copied from 13370939 on 05/11/2012

● Split-mode(A/B) → Expand-mode(A+)
- When Expand-mode button is pressed at Split-mode, App in default side is displayed in two screen.

• Expand A



• Expand B



© 2010 SAMSUNG Electronics All rights reserved.

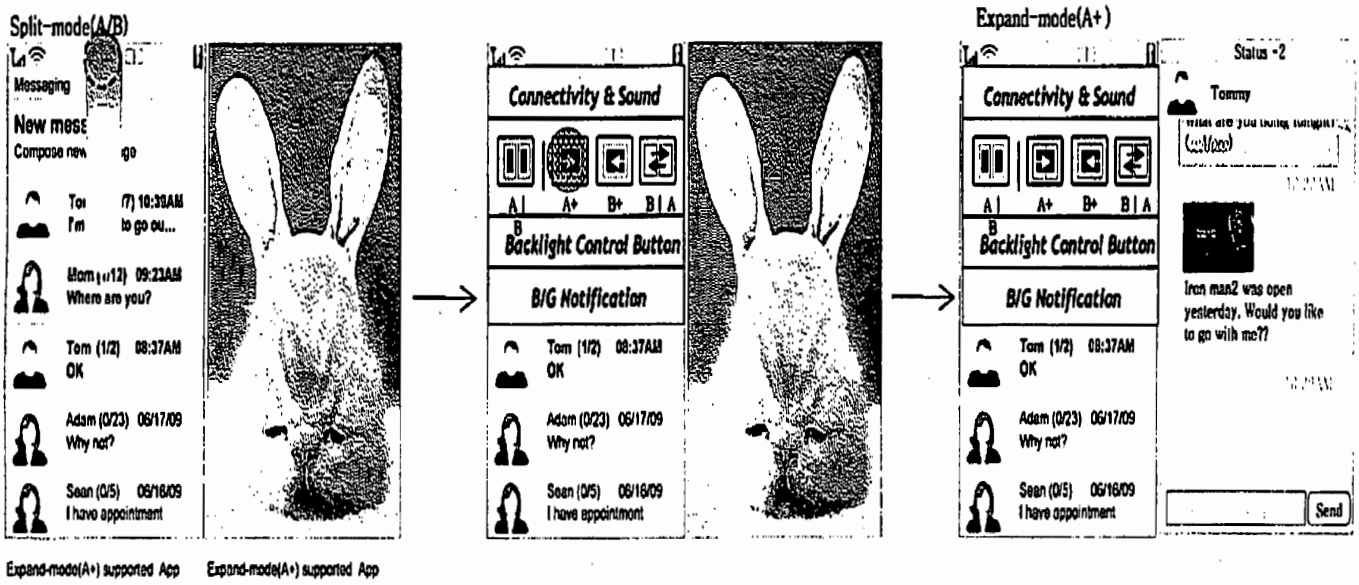
Copied from 13370939 on 05/11/2012

v.1.6 Updated
Dual Layout Change Buttons are Redesigned

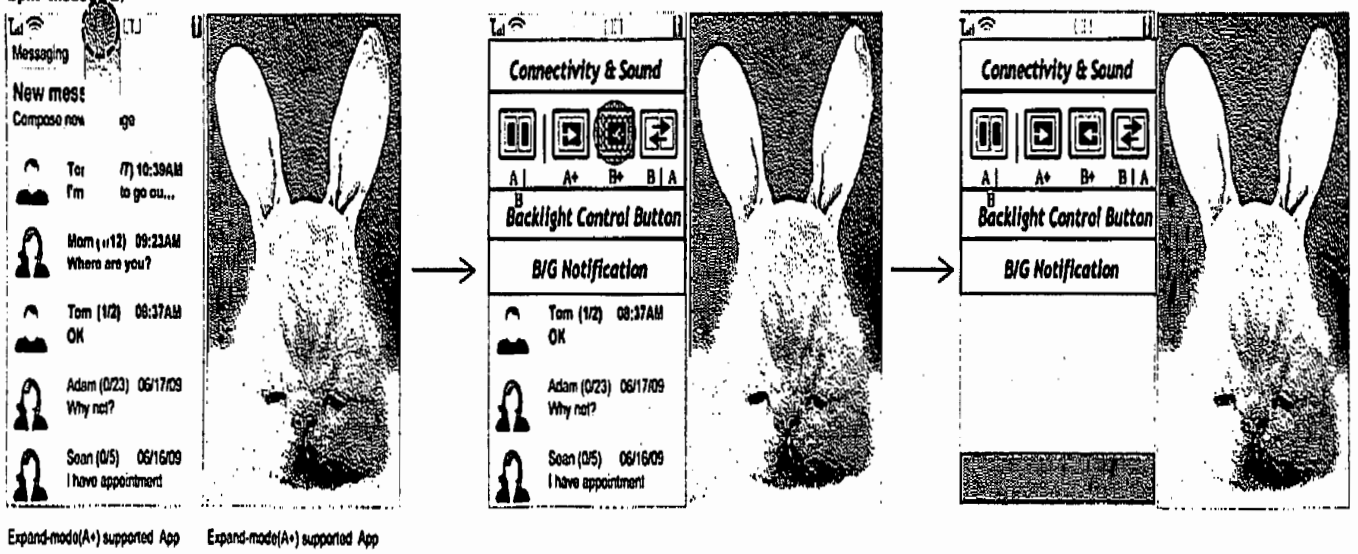
Comment
Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

• Split-mode(A/B) → Expand-mode(A+) | Example

• Expand A



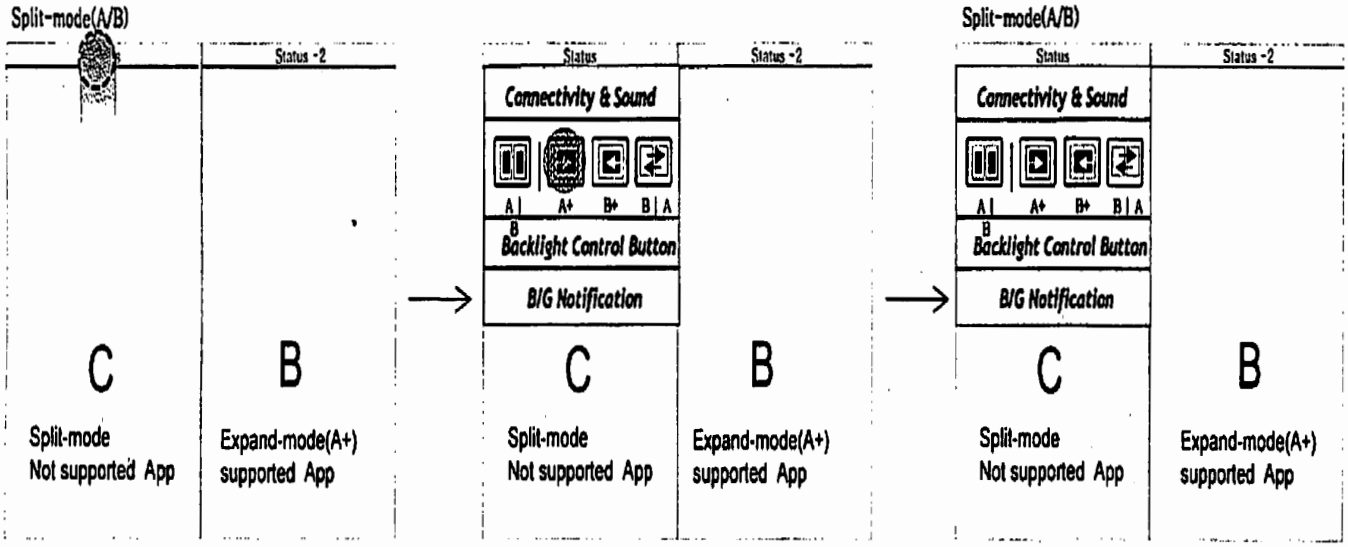
• Expand B



© 2010 SAMSUNG Electronics. All rights reserved.

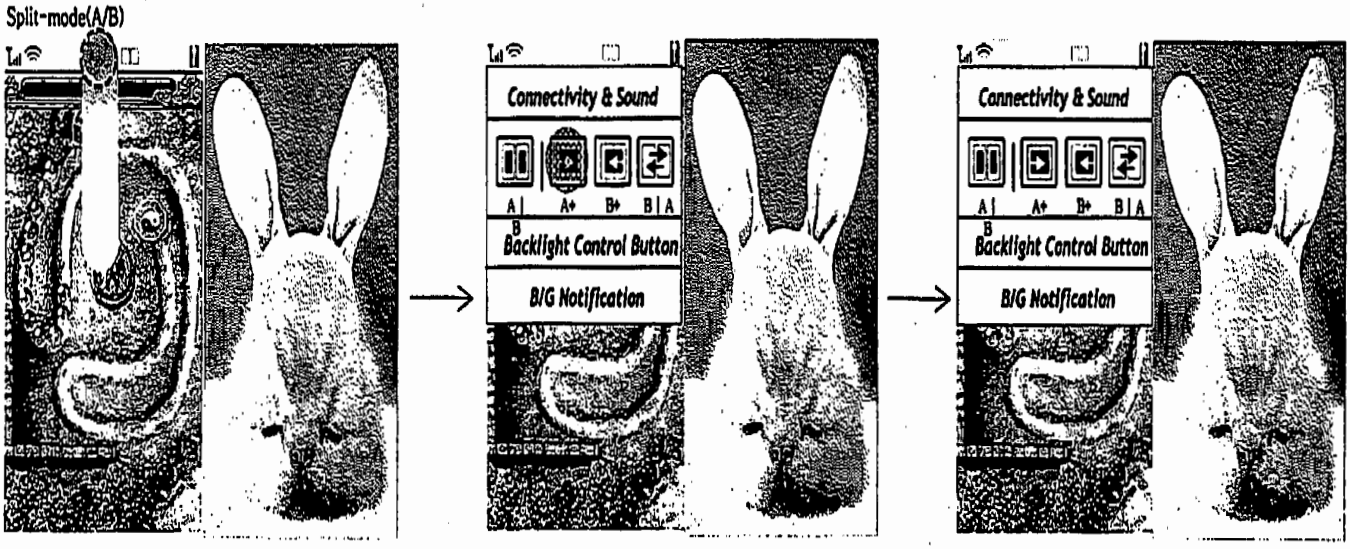
Copied from 13370939 on 05/11/2012

● Split-mode(A/B) → Expand-mode(A+)
- When the App in default screen does not support Expand-mode, screens are not changed.



Split Mode Not supported App

● Split-mode(A/B) → Expand-mode(A+) | Example



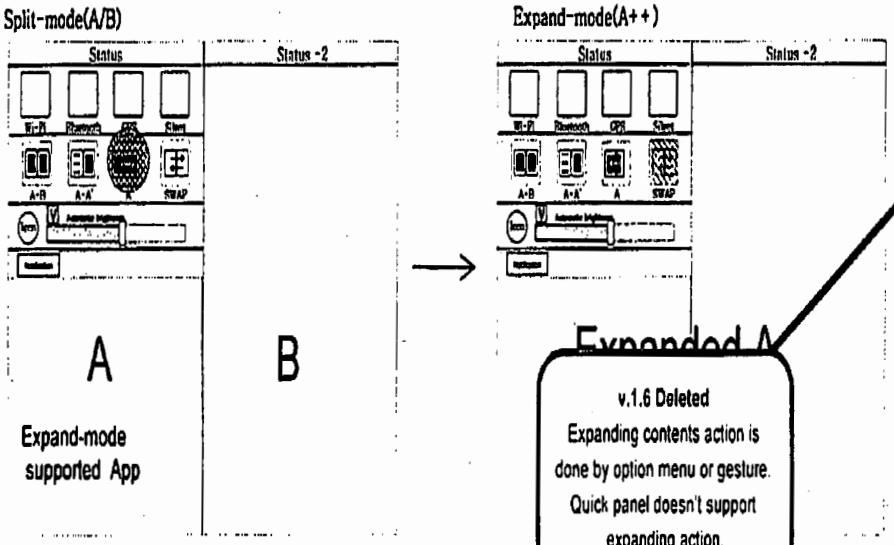
Split Mode Not supported App

© 2010 SAMSUNG Electronics All rights reserved.

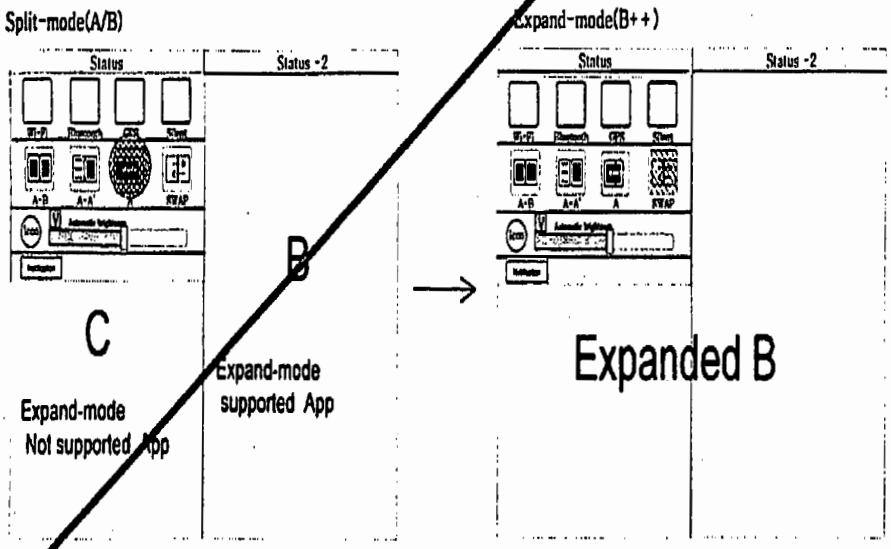
Copied from 13370939 on 05/11/2012

• Split-mode(A/B) → Expand-mode(A/A')
- When Expand-mode button is pressed at Split-mode, App screen in default side is expanded in two screen.
- When the App in default screen does not support Expand-mode, Another App screen is expanded in two screen.

• Default screen support Expand mode



• Default screen does not support Expand mode



Copied from 13370939 on 05/11/2012

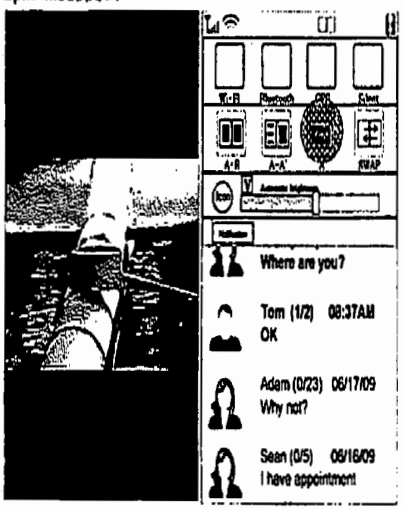
8.4 Mode Change

Comment
Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

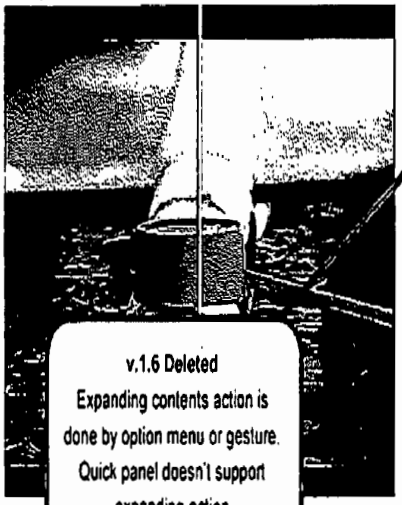
• Split-mode(A/B) → Expand-mode(A/A') | Example

• Default screen support Expand mode

Split-mode(A/B)



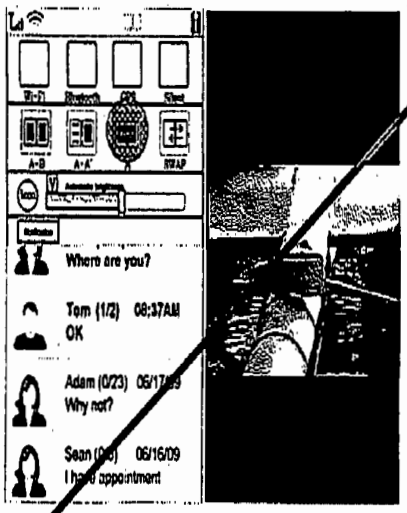
Expand-mode(A++)



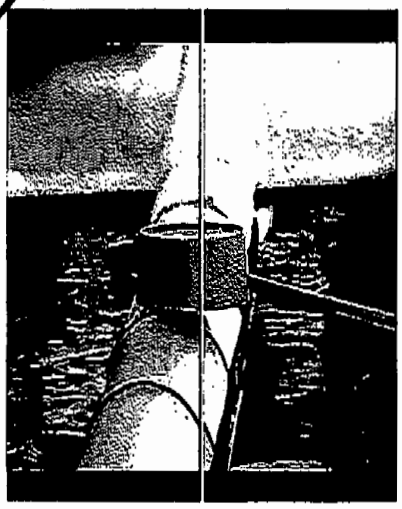
v.1.6 Deleted
Expanding contents action is done by option menu or gesture. Quick panel doesn't support expanding action.

• Default screen does not support Expand mode

Split-mode(A/B)



Expand-mode(B++)



(C) 2010 SAMSUNG Electronics. All rights reserved.

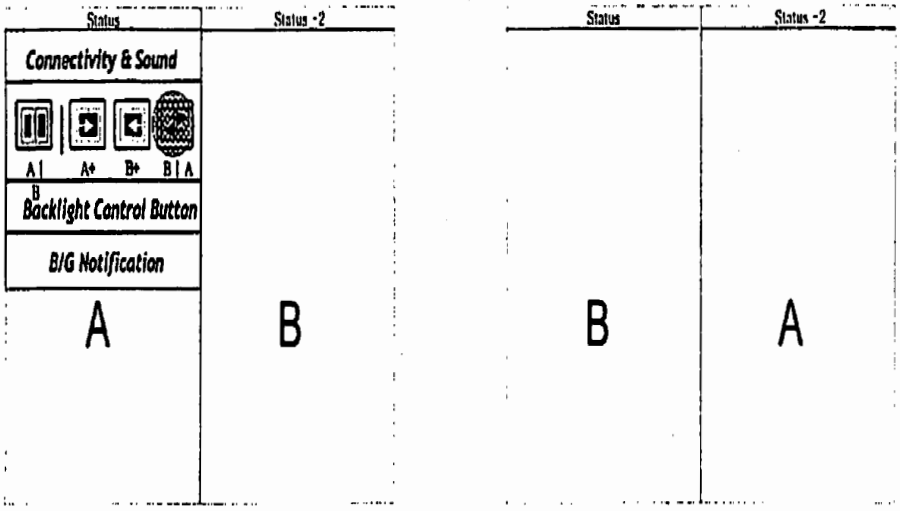
Copied from 13370939 on 05/11/2012

8.4 Mode Change

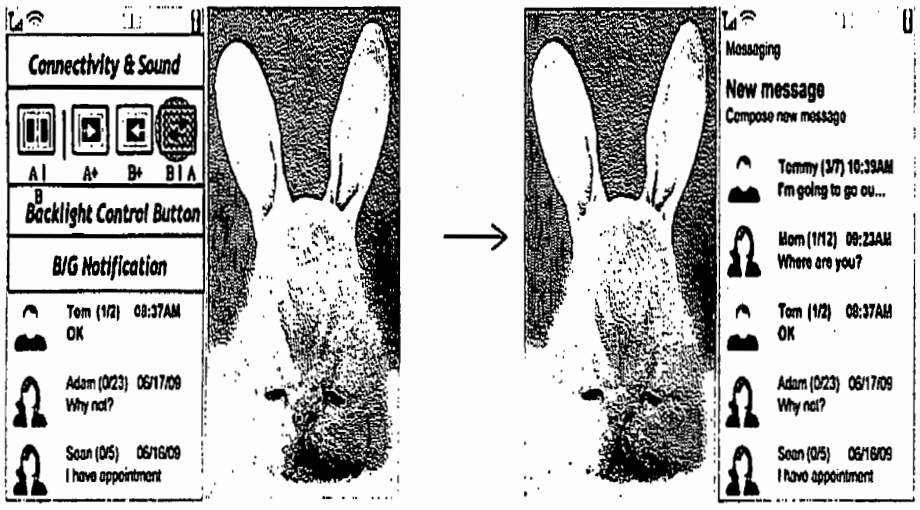
v.1.6 Updated
Dual Layout Change Buttons are Redesigned

Comment
Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

• Split-mode(A/B) → Split-mode(B/A) : Swap



• Split-mode(A/B) → Split-mode(B/A) | Example



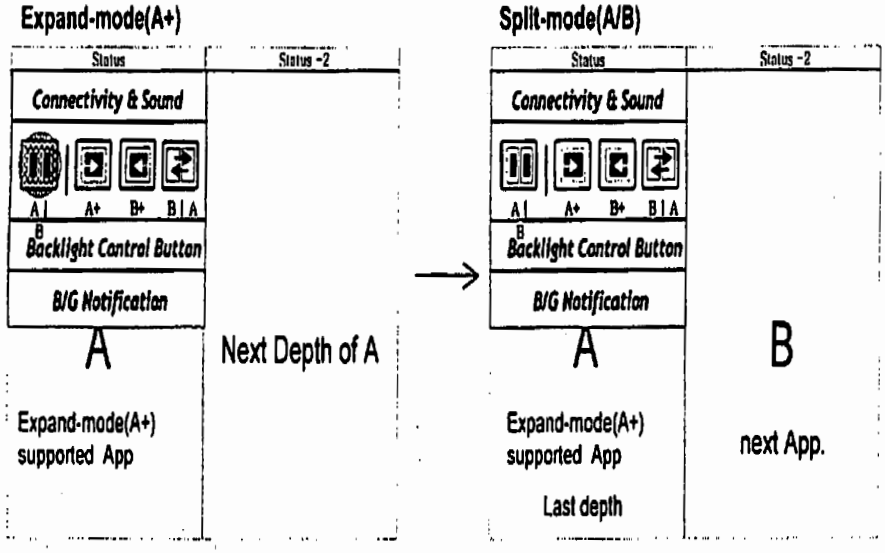
© 2010 SAMSUNG Electronics All rights reserved

Copied from 13370939 on 05/11/2012

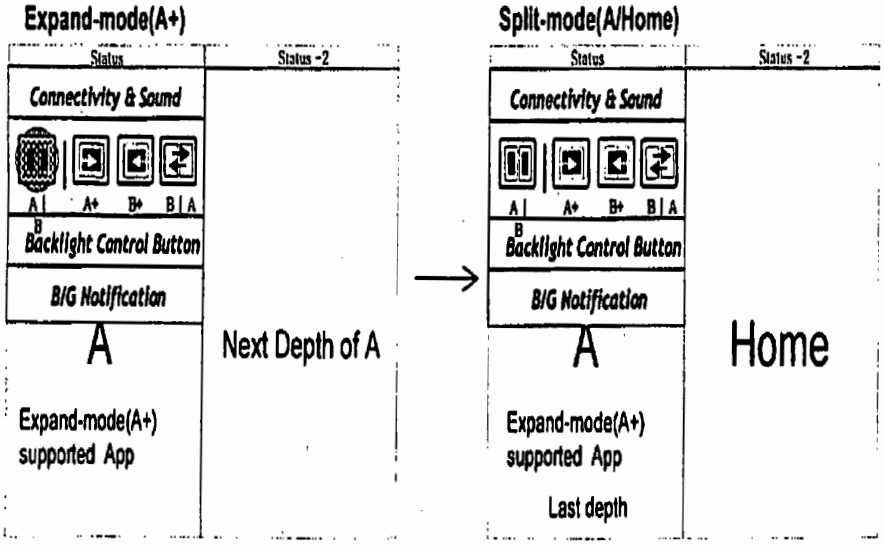
• Expand-mode(A+) → Split-mode(A/B)

- When Split-mode button is pressed at Dual-mode, screen in default side displays last depth of current app, another screen displays next App at task manger.
- If progress task is only one, then Home screen is displayed.

• Case : Multi-tasking



• Case : Single-tasking

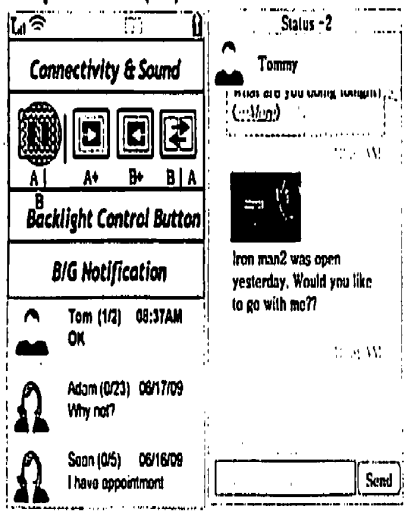


Copied from 13370939 on 05/11/2012

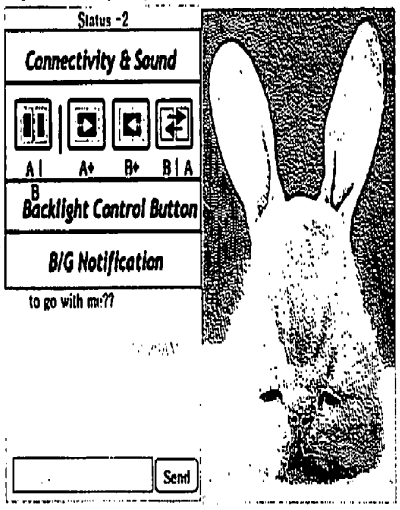
• Expand-mode(A+) → Split-mode(A/B) | Example

• Case : Multi-tasking

Expand-mode(A+)

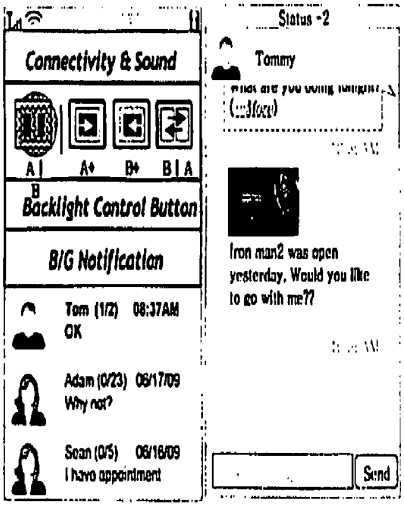


Split-mode(A/B)

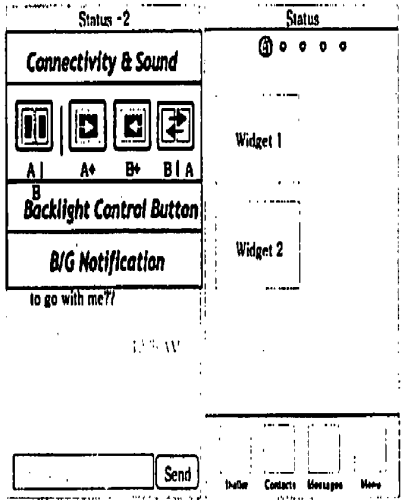


• Case : Single-tasking

Expand-mode(A+)



Split-mode(A/Home)

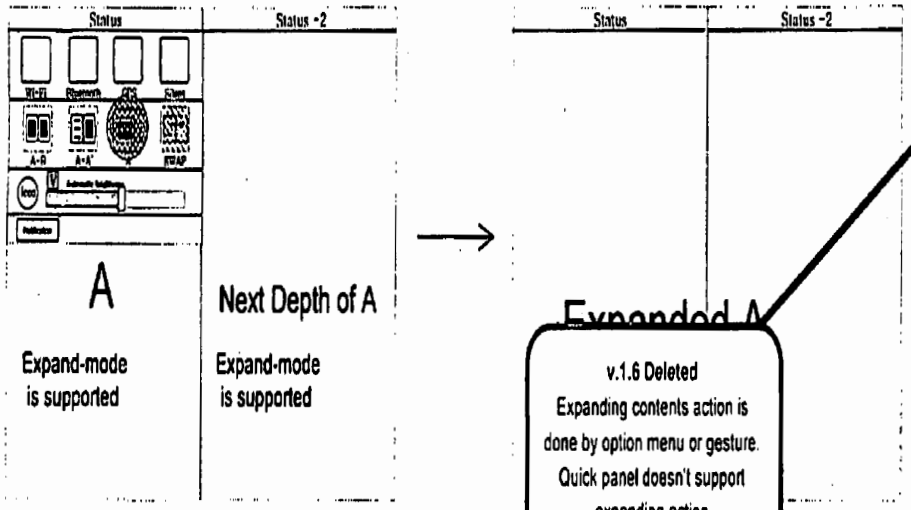


Copied from 13370939 on 05/11/2012

8.4 Mode Change

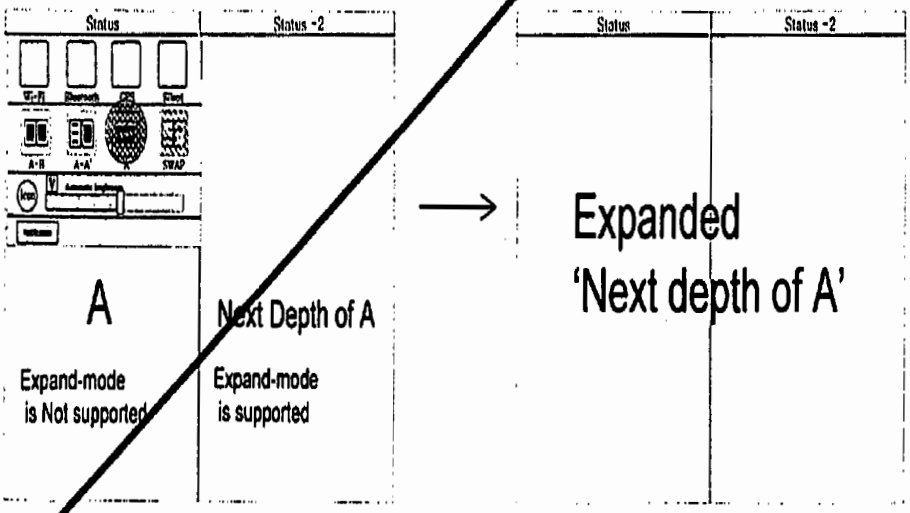
• Expand-mode(A+) → Expand-mode(A++)
- When Expand-mode button is pressed at Split-mode, App screen in default screen is expanded in two screen.
- If screen in default side does not support Expand-mode, then another screen is expanded in two screen.

• Support Expand-mode



Expand-mode(A++)
Default side is left side.

• Not support Expand-mode



© 2010 SAMSUNG Electronics. All rights reserved.

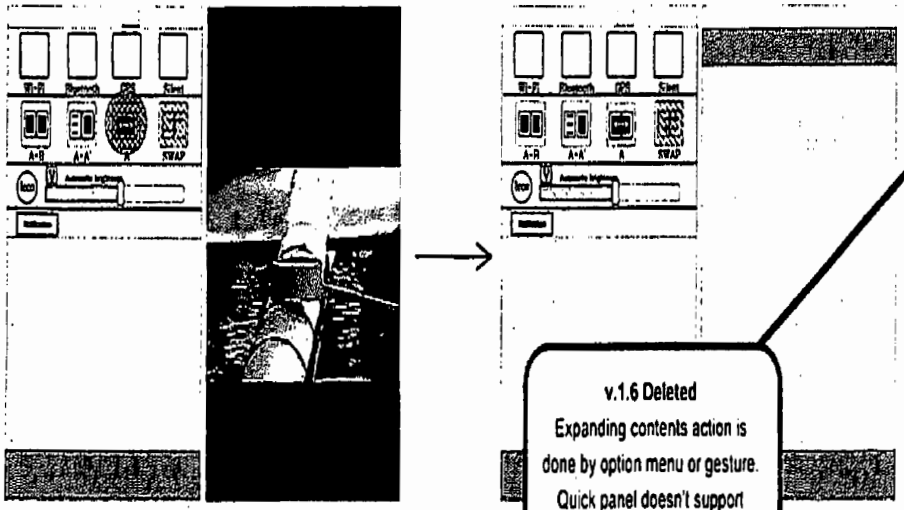
Copied from 13370939 on 05/11/2012

8.4 Mode Change

Comment
Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

• Expand-mode(A+) → Expand-mode(A++) | Example

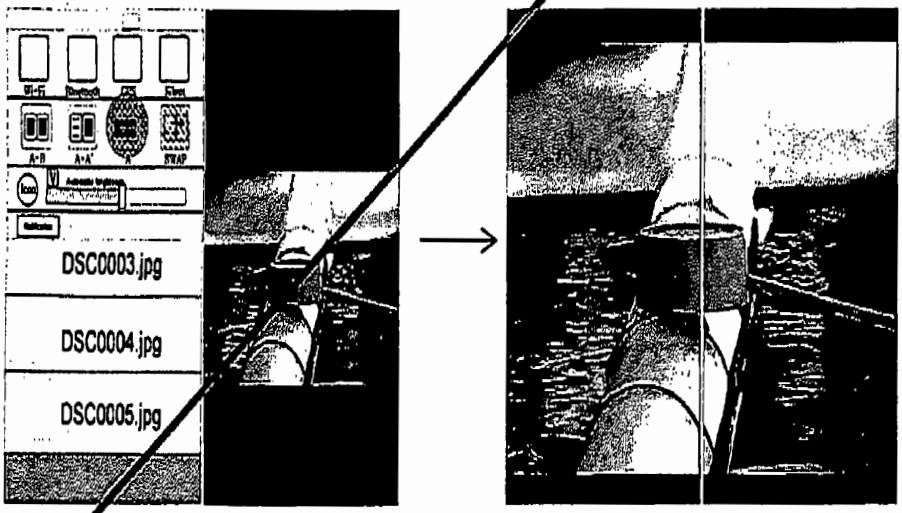
• Support Expand-mode



Expand-mode(A++)
Default side is left side.

v.1.6 Deleted
Expanding contents action is done by option menu or gesture. Quick panel doesn't support expanding action.

• Not support Expand-mode



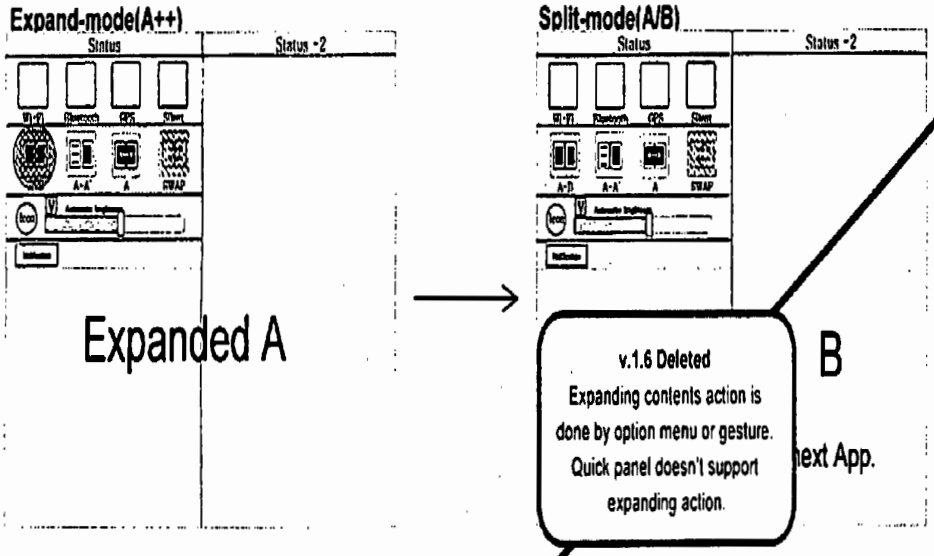
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

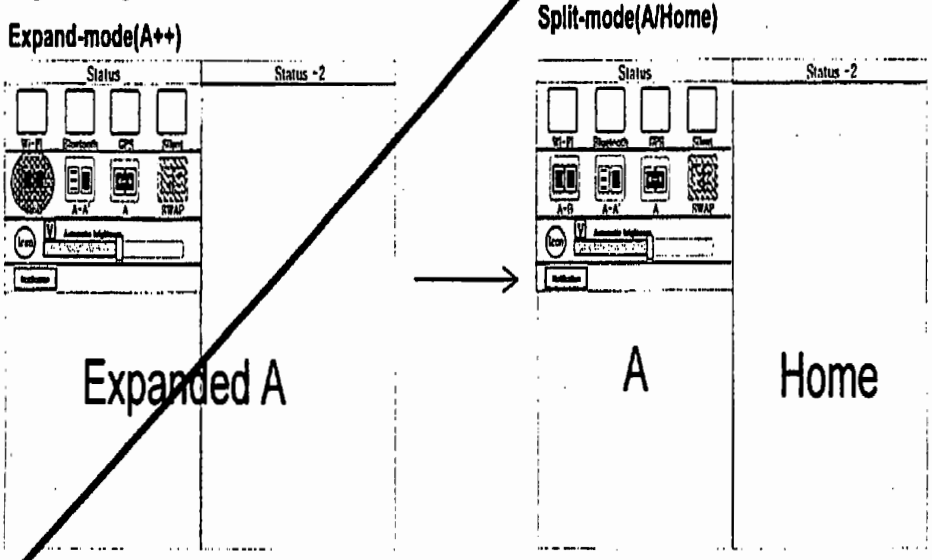
• Expand-mode(A++) → Split-mode(A/B)

- When Split-mode button is pressed at Expand-mode, screen in default side is displayed current app, another screen is displayed next App at task manger.
- If progress task is only one, then home screen is displayed.

•Multi-tasking



•Single-tasking



2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

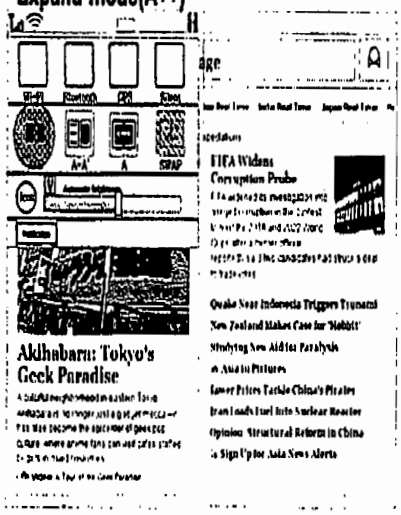
8.4 Mode Change

Comment
Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

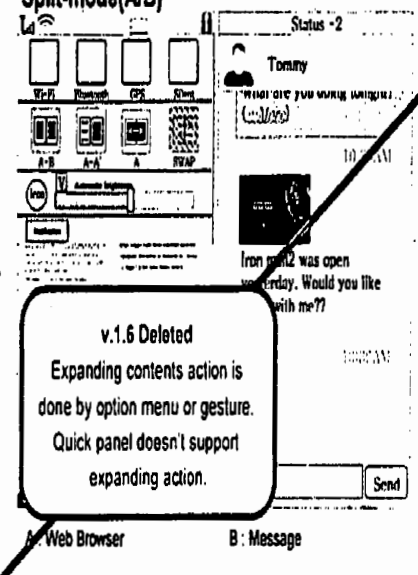
• Expand-mode(A++) → Split-mode(A/B) | Example

•Multi-tasking

Expand-mode(A++)



Split-mode(A/B)

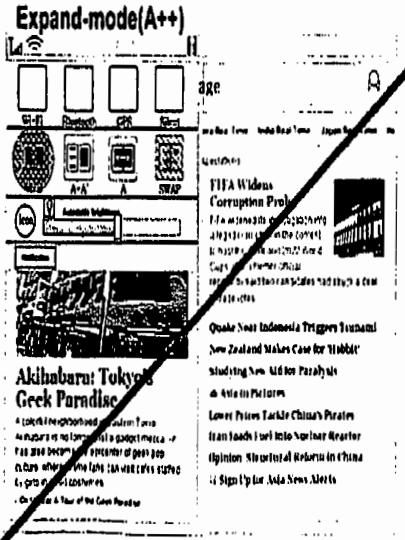


v.1.6 Deleted
Expanding contents action is done by option menu or gesture.
Quick panel doesn't support expanding action.

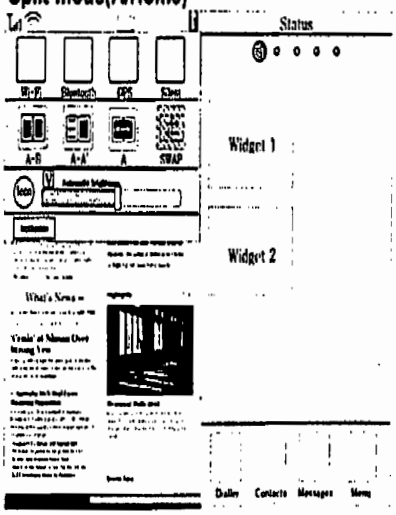
A : Web Browser B : Message

•Single-tasking

Expand-mode(A++)



Split-mode(A/Home)



(C) 2010 SAMSUNG Electronics. All rights reserved.

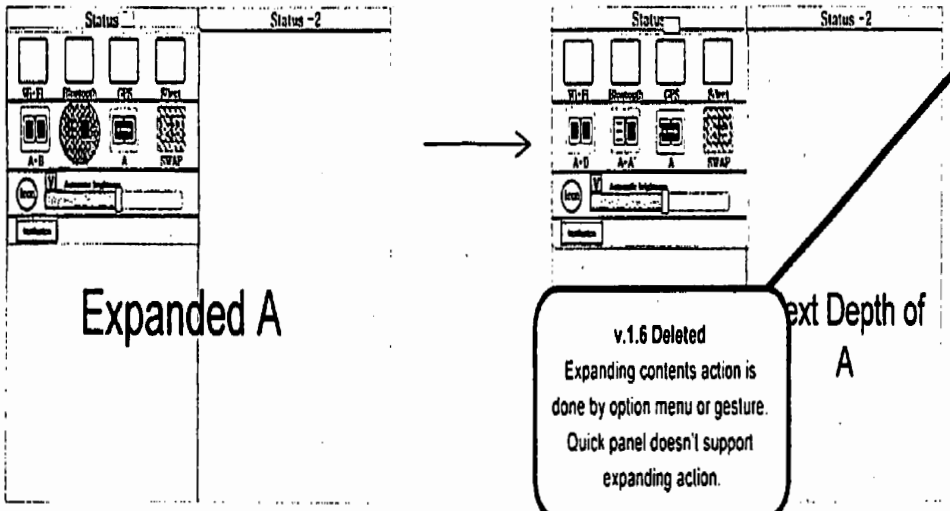
Copied from 13370939 on 05/11/2012

8.4 Mode Change

•Expand-mode(A++) → Expand-mode(A+)

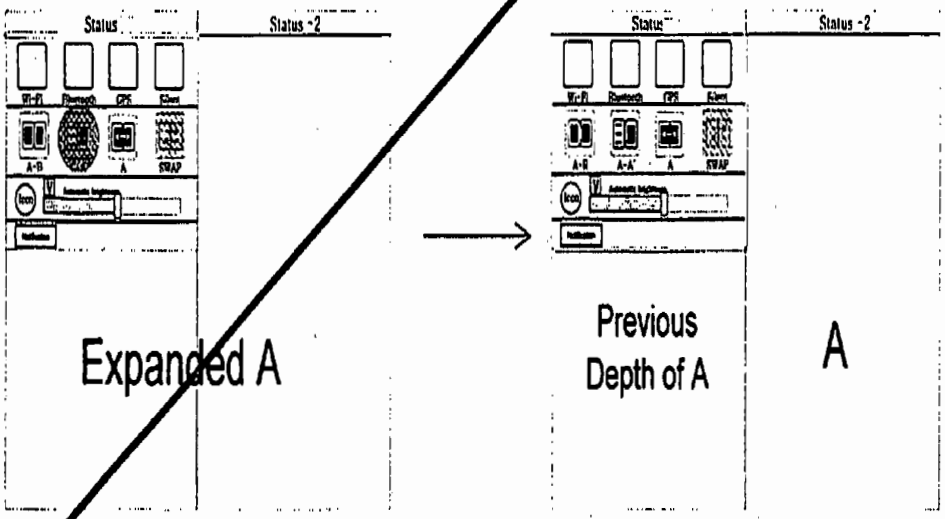
- When Split-mode button is pressed at Expand-mode, App in default side is displayed current screen and another screen is displayed sub-depth.
- If current screen is last depth, previous depth is displayed left side and current screen is displayed right side.

• support sub-depth



v.1.6 Deleted
Expanding contents action is done by option menu or gesture. Quick panel doesn't support expanding action.

•Last-depth



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

8. Quick Panel

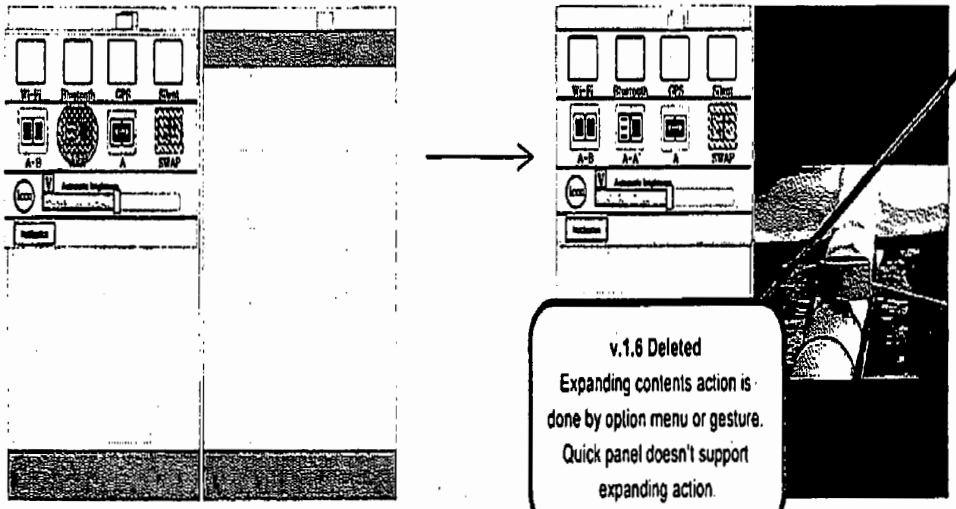
8.4 Mode Change

Comment

Flow image for explain in each case. Quick Panel in Full screen view follow the general quick panel rule.

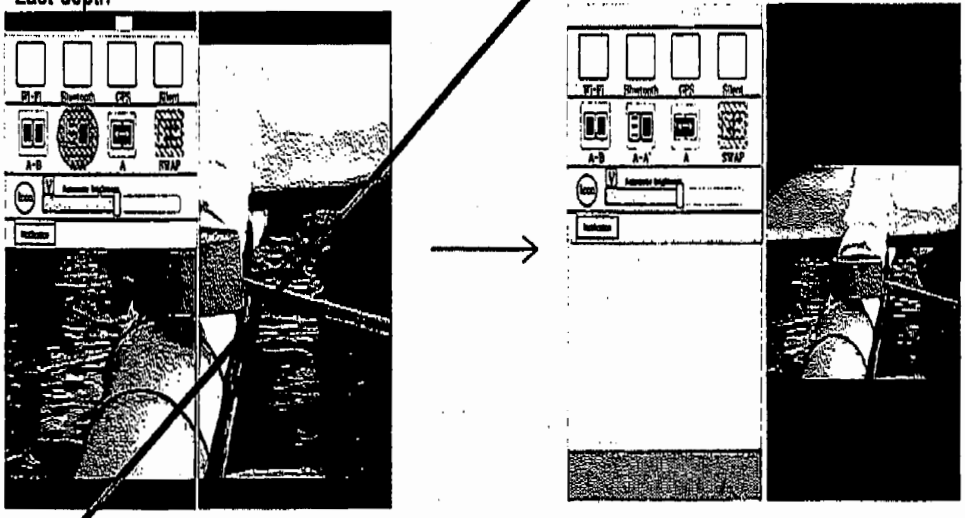
•Expand-mode(A++) → Expand-mode(A+) | Example

• support sub-depth



v.1.6 Deleted
Expanding contents action is done by option menu or gesture. Quick panel doesn't support expanding action.

•Last-depth



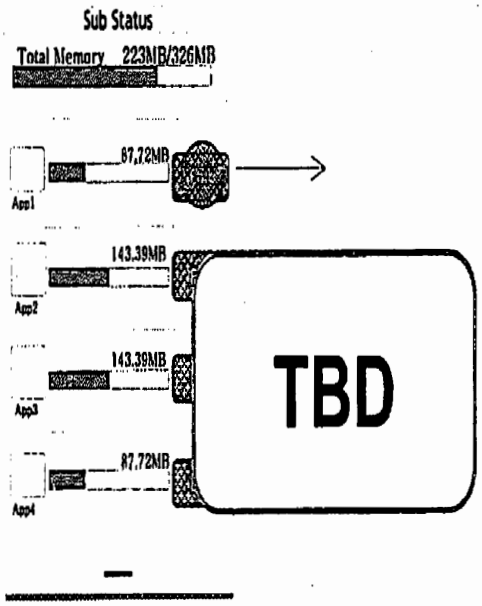
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

8.5 Definition of 2nd Quick Panel

v.1.5 Updated
Sub Quick Panel Should be Changed

Comment
See 'Task Manager' guideline

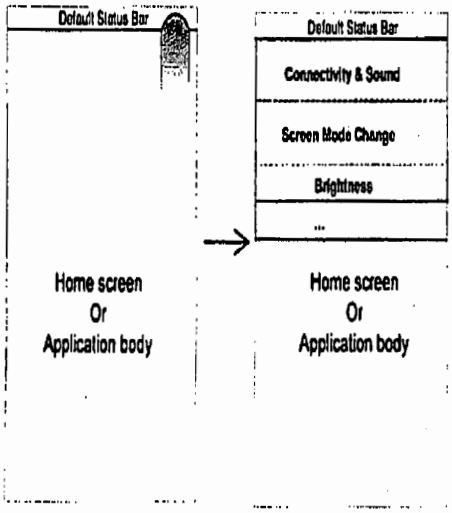


© 2010 SAMSUNG Electronics. All rights reserved.

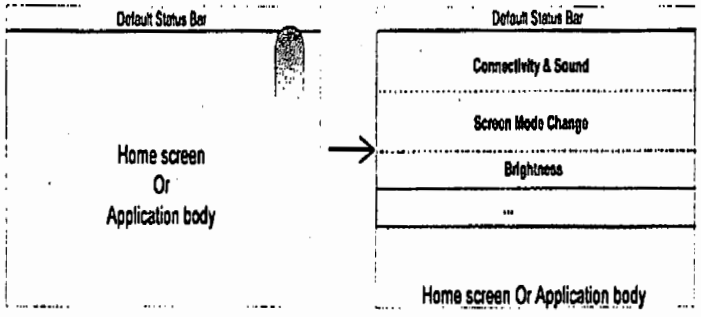
Copied from 13370939 on 05/11/2012

- For Single Screen(Folded), Default Status Bar and Default Quick Panel are always shown.
- Default working is same as existing Android UI.

[One Screen(Folded) : Portrait mode]



[Landscape mode]

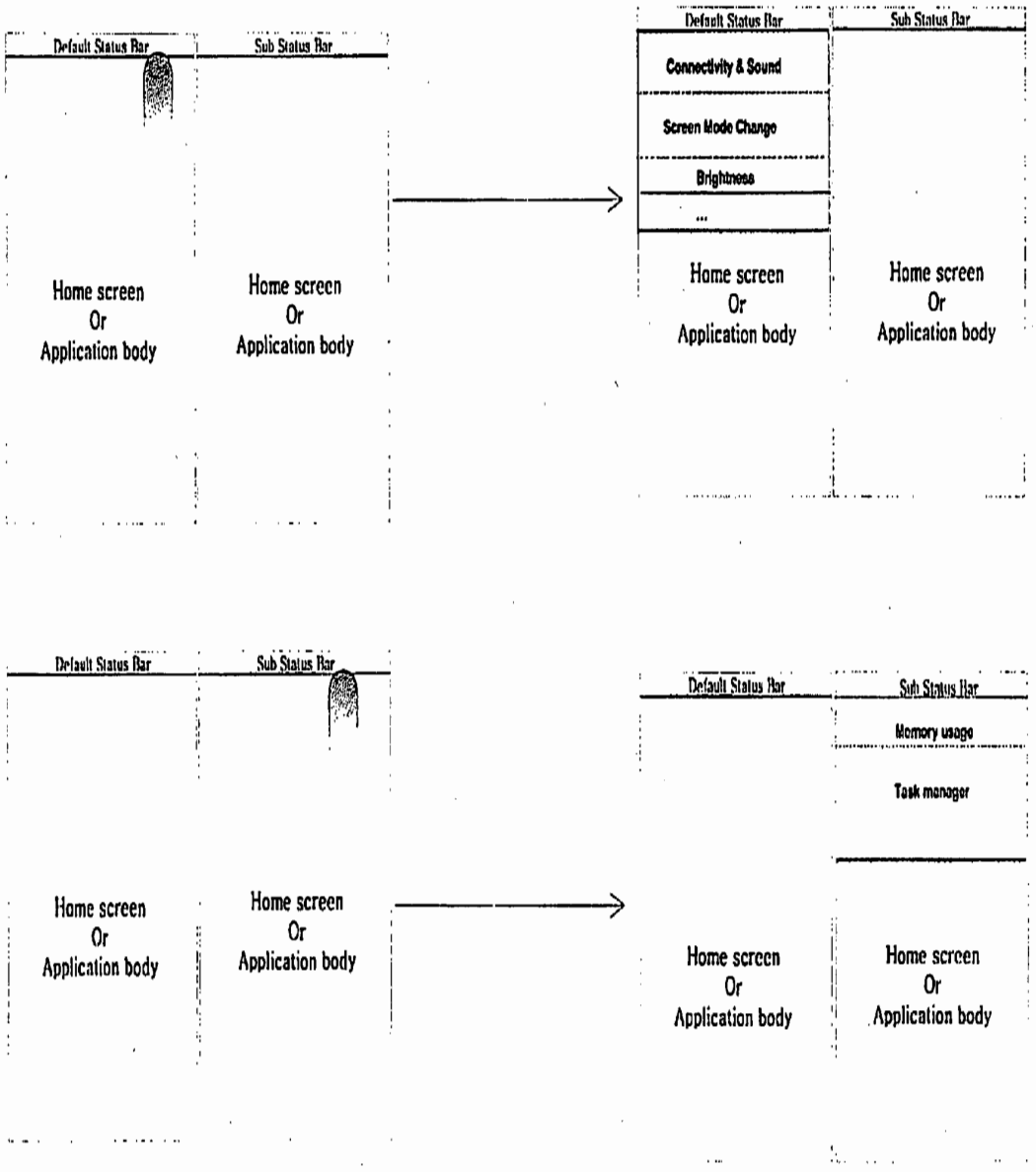


(c) 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

8.6 Basic Flow

- When each task-bar appears in both screen in the portrait Dual Screen, default status bar is shown at left screen and sub status bar is shown at right screen.

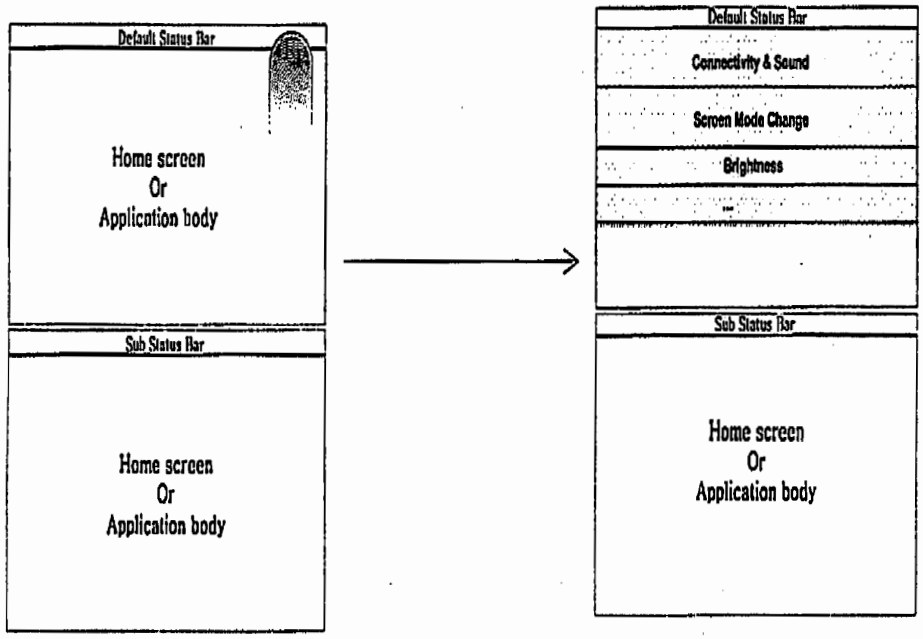


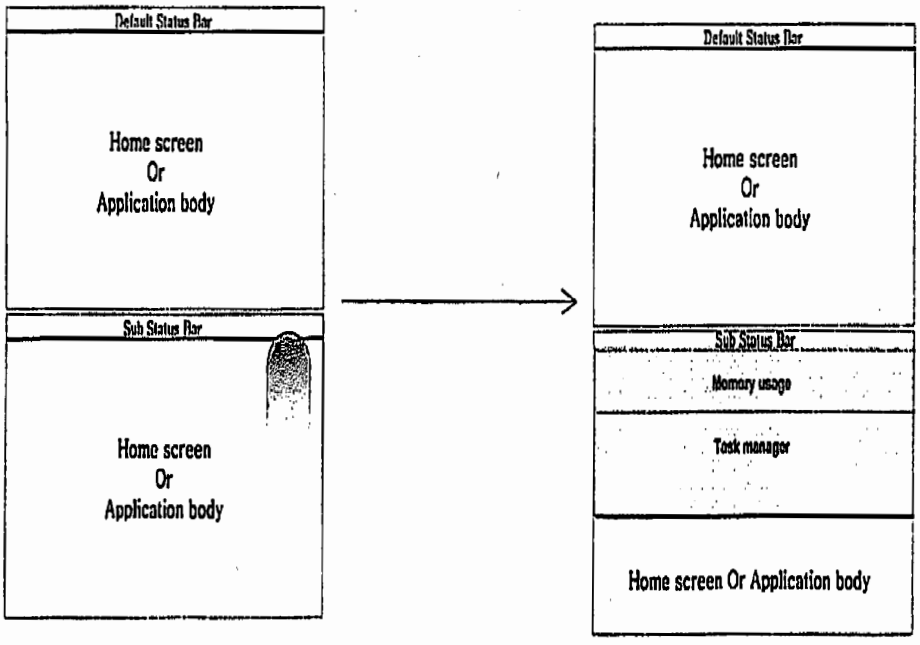
© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

8.6 Basic Flow

- When each task-bar appears in both screen in the landscape Dual Screen, default status bar is shown at upper screen and sub status bar is shown at lower screen.

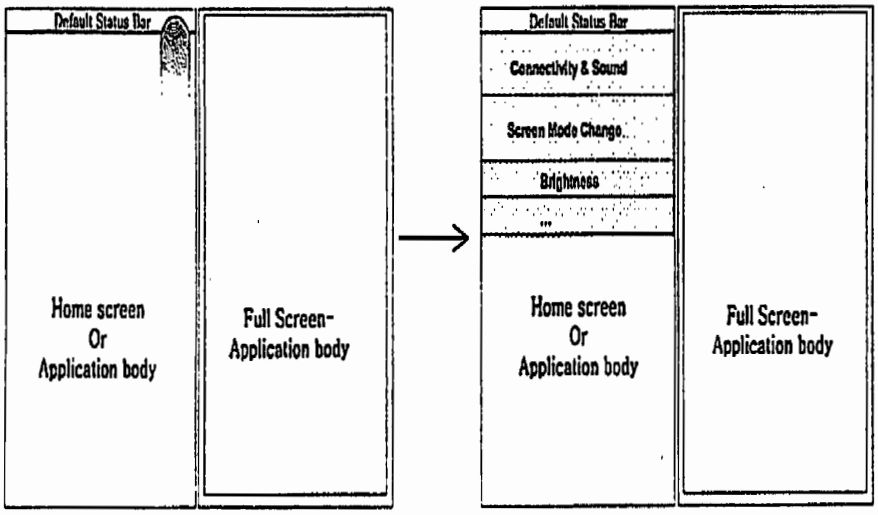


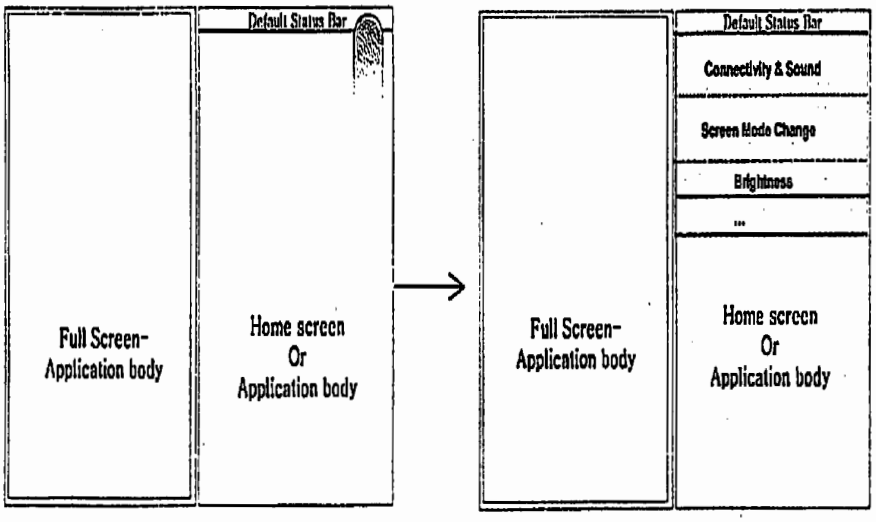


(c)2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

• If only one screen has the status bar area, always Default Status Bar is shown.



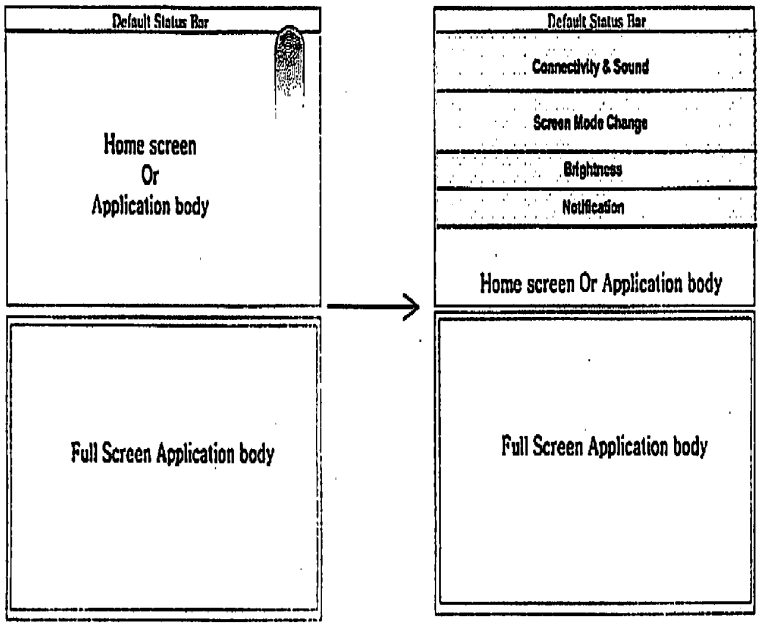


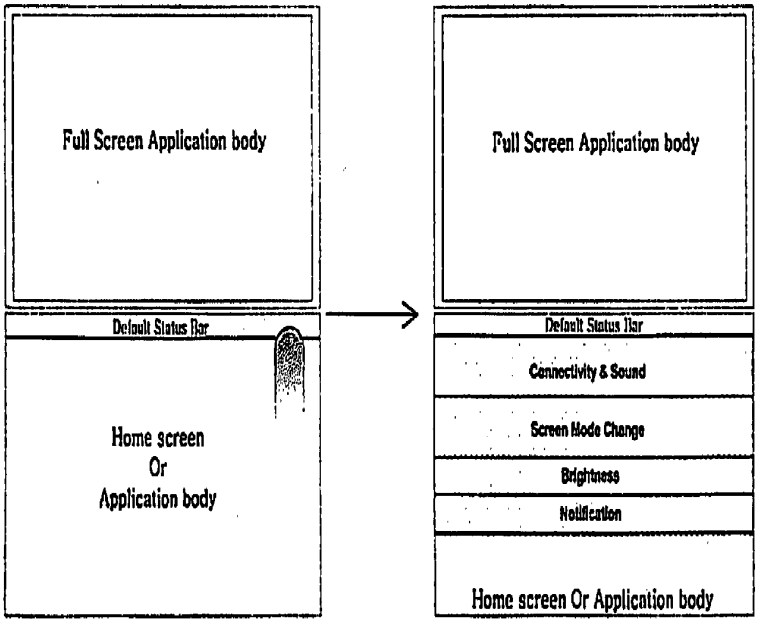
(c) 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

8.6 Basic Flow

- If only one screen has the status bar area, always Default Status Bar is shown.





Copied from 13370939 on 05/11/2012

Copied from 133709339 on 05/11/2012

head.jpg

8.6 Basic Flow

•Default status bar is shown at expanded mode.

[Expanded Mode]

(c) 2010 SAMSUNG Electronics. All rights reserved.

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Unlock

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

9.1 Definition of Unlock (Hold Key Interaction)



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

9.2 0° / 60° / 180° Unlock Basic Flow

TBD

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

The graphic is for illustrative purposes only and may not represent the actual implementation.

Basic Interaction between 2 Screens

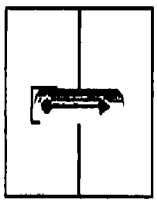
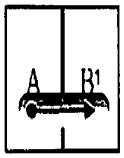
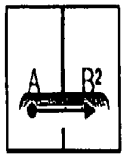
© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

10.1 Definition of Interaction

v.1.5 Updated
Object Flick gesture deleted

Type		Description	Use cases
Object Drag & Drop		- User select content and drag and drop in other screen. - 200~300ms	  

- move of contents is dependent on App and screen layout.

A : User can select contents.
B : User can use another App contents in this App. (email, Message, Memo, etc)
- B^1 : There are many contents play route. (Contact List, Message List, etc)
- B^2 : There is only one play route (New Message Input, Memo Input, etc)

C : User can not use another App contents in this App (Game, Web browser, etc)

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

10.1 Definition of Interaction

• **Contents type & data**

	Type	Included Data	Icon Style
Image	Local Image (Full View List)	Image Date (Geo Tag Info) (Social Tag)	Photo Thumbnail
	Image on the Web	Image (Date) (Geo Tag Info) Web-link	Photo Thumbnail
	Contact Image	Image Date (Geo Tag Info) (Social Tag)	Photo Thumbnail
Music	Local Song with Cover Art (Including Now Playing)	Song File, Music Info(ID3Tag), Cover Image	Cover Thumbnail + 1 Song Icon
	Song in Web	Music Info(ID3Tag), Cover Image, Web-link	Cover Thumbnail + 1 Song Icon
	Local Album	Song Files, Music Info(ID3Tag), Cover Image	Cover Thumbnail + Songs Icon
Movie	Local Movie (Full View List)	Movie File, Screen Shot Image	Screen Shot
	Movie in Web (Full View List)	Web Link, Screen Shot Image	t + YouTube Icon
	Created Movie (Full View List)	Movie File, Screen Shot Image, D	t Camcorder Icon
Text	Selected Text	Text	
Link Text	URL Text (Except Service URL Text)	Web Link, Text	Browser Icon)
	Service URL	Web Link, Text	Web Icon (Browser Icon)
	Contact Information Text (Exist Contact)	Copied Contact Data(=Text) Contact Image	Contact Thumbnail + Comm. Icon
	Contact Information Text (Non Exist Contact)	Copied Contact Data(=Text) Default Contact Image	Default Thumbnail + Comm. Icon
	Image Link Text	Image Date (Geo) (Social Tag) Text	Photo Thumbnail + Service Icon
	Movie Link Text	Screen Shot Image Text	Screen Shot + Service Icon
	Music Link Text	Cover Image Music Info(ID3Tag) Text	Cover Thumbnail + 1 Song Icon
Contact	Contact	All Contact Data, Contact Image	Contact Thumbnail
	Specific Contact	Contact Data, Contact Image	Contact Thumbnail + Comm. Icon
Calendar	Schedule	Schedule Info.	Calendar Thumbnail + Date
Map	Map Screen	Web-Link, Pin on the map (Screenshot Image)	Map Thumbnail
App.	Menu	App. Shortcut, Downloadable Link	App. Shortcut

TBD

© 2010 SAMSUNG Electronics All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

10.1 Definition of Interaction

• Application actions according to the contents type which is sent by 'drag and drop' or 'select and flick'

		Hom e	Appli catio ns	Browser		Ebook		Messaging			Cam era	Memo			Video Player		Contacts					Phone			Calender						Gallery			Maps		
		Page	Page	Page	Book mark	Shelf	Page N	List	Detail	New Mess	Cam era	List	Detail	New Mem o	List	Play	List	Grou ps	Histo ry	Activi ties	New Cont act	Keyp ad	Logs	Favor ites	Mont h	Week	Day	List	Detail	New Event	Grou p	Thum bnail	Detail	Map	Sear ch	Path
Image	Local Image (Full View, List)																																			
	Image on the Web																																			
	Contact Image																																			
Music	Local Song with Cover Art (Including Now Playing)																																			
	Song in Web																																			
	Local Album																																			
Movie	Local Movie (Full View, List)																																			
	Movie in Web (Full View, List)																																			
	Created Movie (Full View, List)																																			
Text	Selected Text																																			
Link Text	URL Text (Except, Service URL Text)																																			
	Service URL																																			
	Contact Information Text (Exist Contact)																																			
	Contact Information Text (Non Exist Contact)																																			
	Image Link Text																																			
	Movie Link Text																																			
	Music Link Text																																			
Contact	Contact																																			
	Specific Contact																																			
Calendar	Schedule																																			
Map	Map Screen																																			
App.	Menu																																			

TBD

© 2010 SAMSUNG Electronics. All rights reserved. SAMSUNG CONFIDENTIAL

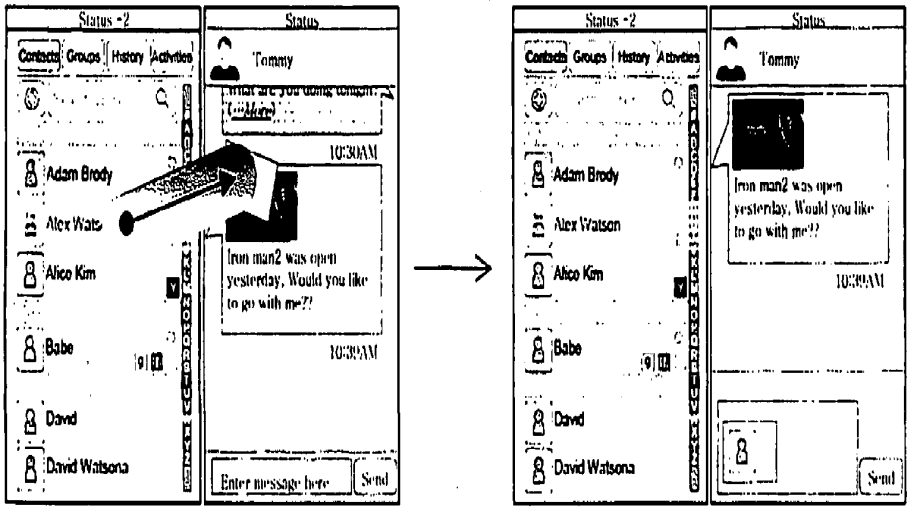
Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

10.2 Basic Flow

- **Select content and Drag & Drop to any position of another App.**
- If target already selected, user can Drag & Drop content to any position of another App.

Drag & Drop to nonspecific position



© 2010 SAMSUNG Electronics All rights reserved

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

Text Input

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

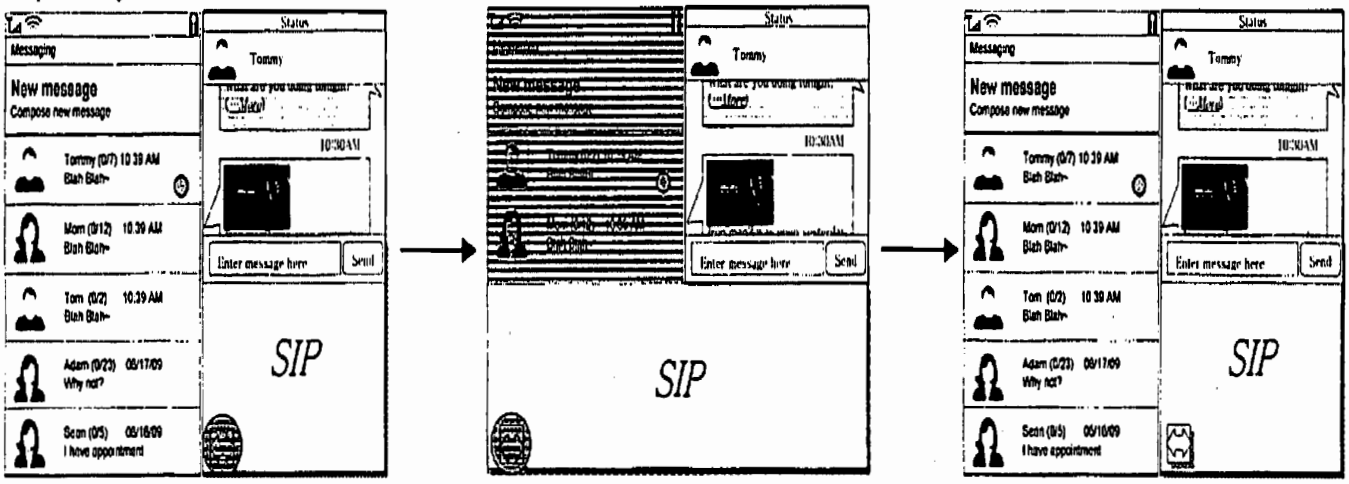
The graphic is for illustrative purposes only and may not represent the actual implementation.

11.1 Virtual Keyboard Layout

v.1.5 Updated
Gesture for expanding SIP is deleted.
SIP is expanded only by Expand Button on the SIP

- SIP Expand Button
- SIP could be displayed with Single Screen Mode or Expand Mode.
- SIP is expanded or minimized by additional button on the SIP.

Expanded by additional button on the SIP



© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

Copied from 13370939 on 05/11/2012

head.jpg

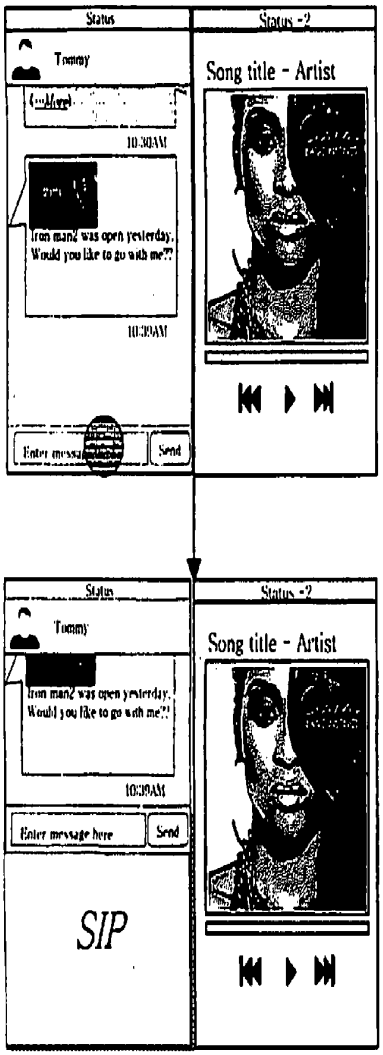
11. Text Input

The graphic is for illustrative purposes only and may not represent the actual implementation.

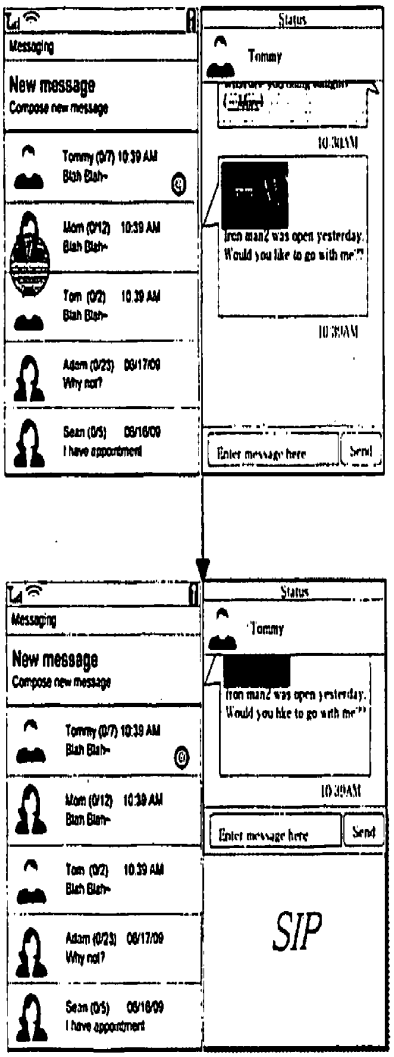
11.2 Basic Flow

- SIP – Vertical : QWERTY keypad is displayed on the selected screen.
- When the layout is expand-mode, QWERTY keypad is expanded to fit with two screens.

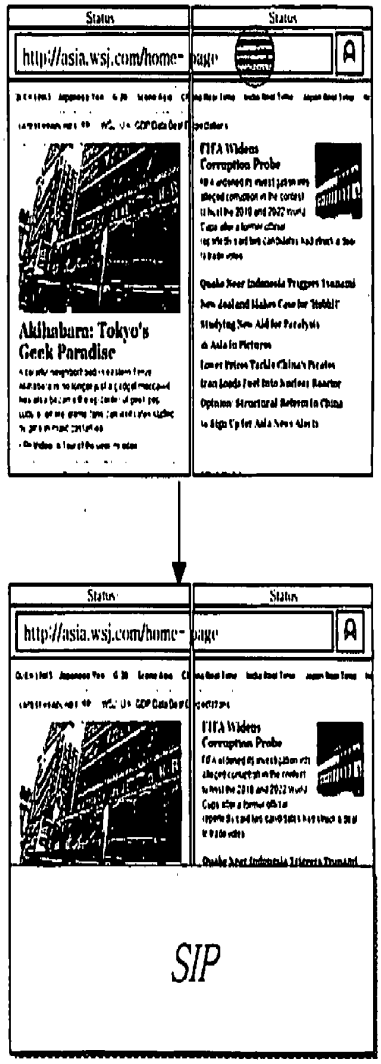
Split-mode



Split-Mode



Expand-Mode



When the layout is expand-mode, QWERTY keypad is expanded to fit with two screens.

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

head.jpg

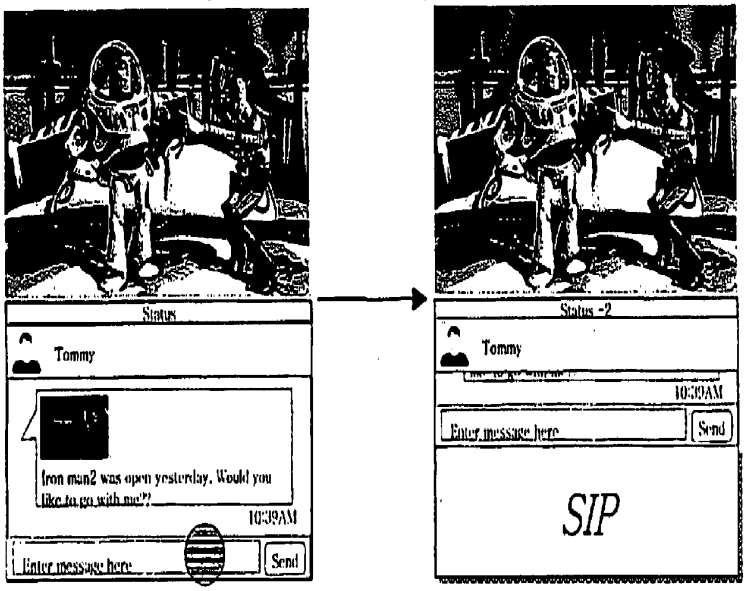
11. Text Input

The graphic is for illustrative purposes only and may not represent the actual implementation.

11.2 Basic Flow

- SIP – Horizontal : QWERTY keypad is always displayed on the lower screen.
- When user start to input texts on the upper screen, two screens are automatically swapped to display QWERTY keypad on the lower screen.

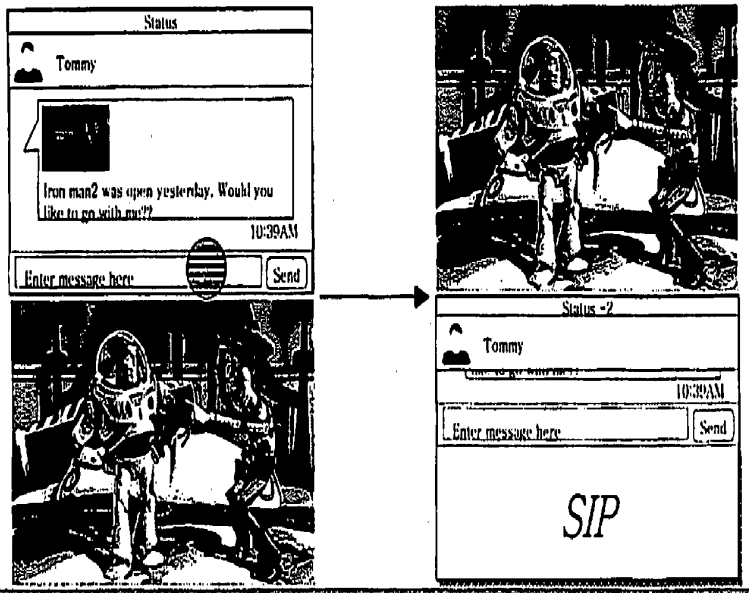
When user start to input texts on the lower screen



11/03
QWERTY가 필요한 화면이 아래로 내려가도록 두 스크린을 자동 swap.

Display QWERTY keypad on the lower screen.

When user start to input texts on the upper screen



Automatically swap two screens
to display QWERTY keypad on the lower screen.

©2010 SAMSUNG Electronics. All rights reserved.

The graphic is for illustrative purposes only and may not represent the actual implementation.

Interruption

© 2010 SAMSUNG Electronics All rights reserved

Copied from 13370939 on 05/11/2012

12.1 New Notification

TBD

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

The graphic is for illustrative purposes only and may not represent the actual implementation.

TBD

© 2010 SAMSUNG Electronics. All rights reserved.

Copied from 13370939 on 05/11/2012

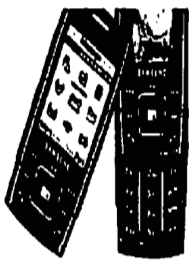
Dual Display UX
Interaction Concept

Copied from 13370939 on 05/11/2012

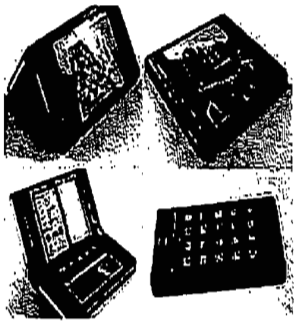
Approach direction | Expansion of Interaction according to Displa

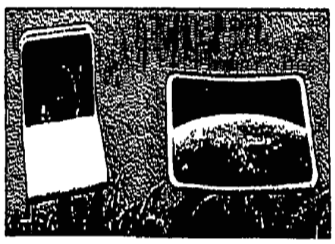
Development of interaction according to display innovation

	Division of input/output regions	Input + output region	Expansion of display construction	
Enhancement range	• Small screen for viewing • Provide Quick Info. through an auxiliary display	• Expand display by combination of a viewing region and an input region	• Maximally use a limited area by application of dual screens	• Expand to a foldable Display to use a display as one region • Provide a large screen using a small area with a flexible display
Feature of UI	• Division of a screen to an input region • Interaction through selection of focus	• Combination of input/output regions • Gesture interaction in a plane space	• Spatialization of display construction • Interaction in a 3D space	• Flexible and spatial interaction







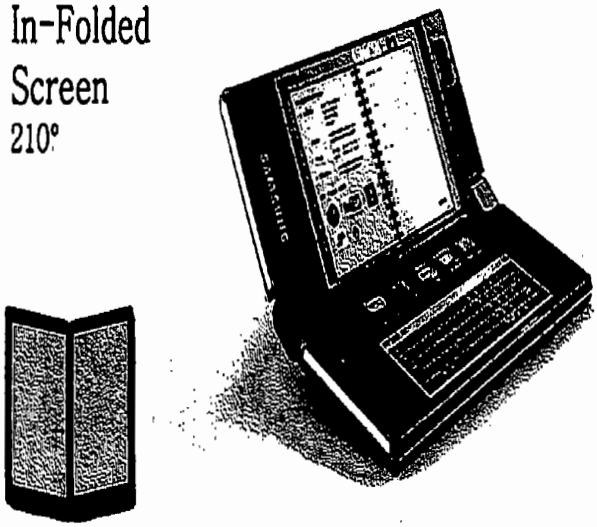


Copied from 13370939 on 05/11/2012

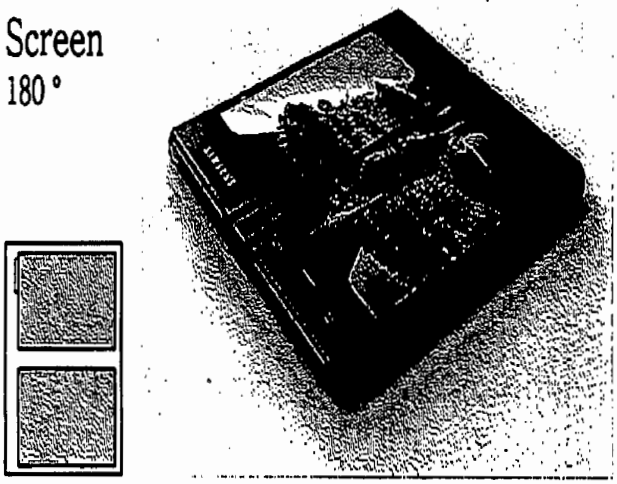
01 Transformable / Adaptive Form factor

Change to an appropriate form factor through changing an angle of a device depending on occasio to provide interaction in various modes, such as Quick Mode, Standing Mode, and Expand Mode

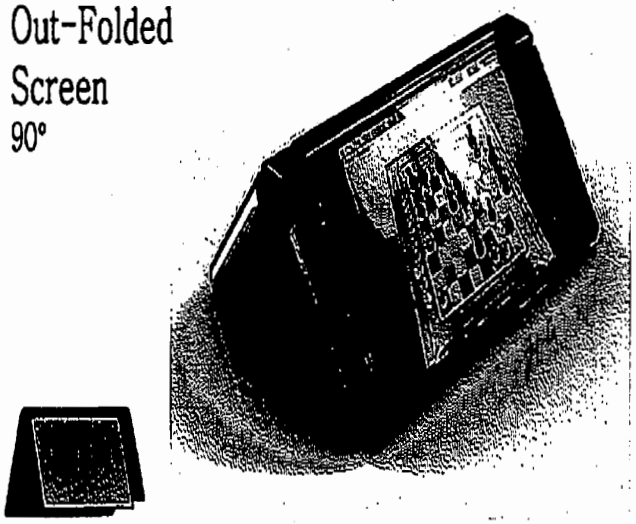
In-Folded Screen
210°



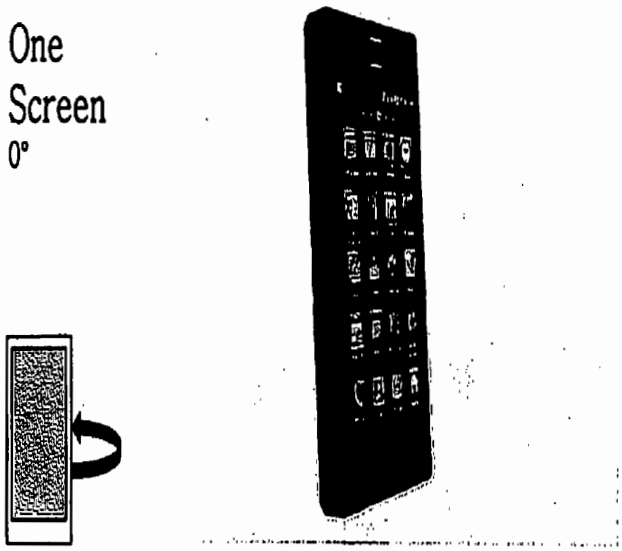
Double Screen
180 °



Out-Folded Screen
90°



One Screen
0°



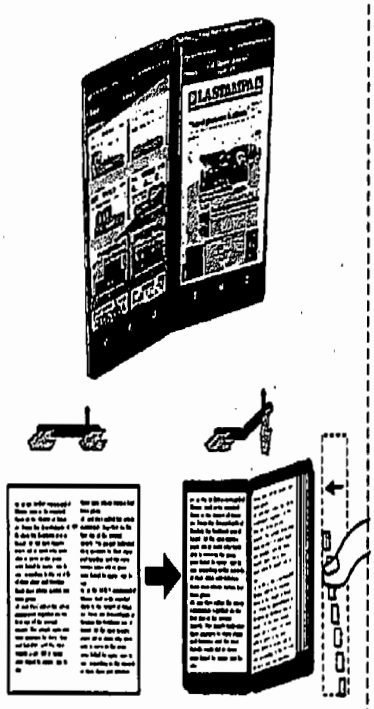
Copied from 13370939 on 05/11/2012

Form 01 | In-Folded Screen 210°



- A folded form of two screens is applied to a metaphor of daily life, to provide the product form most suitable to the corresponding function in performing a function, such as an electronic dictionary, personal broadcasting, and a home screen, thereby achieving a high usability and providing sensitive experience
- Recognize an interaction of folding and unfolding of a hinge, to provide new interaction

E-book



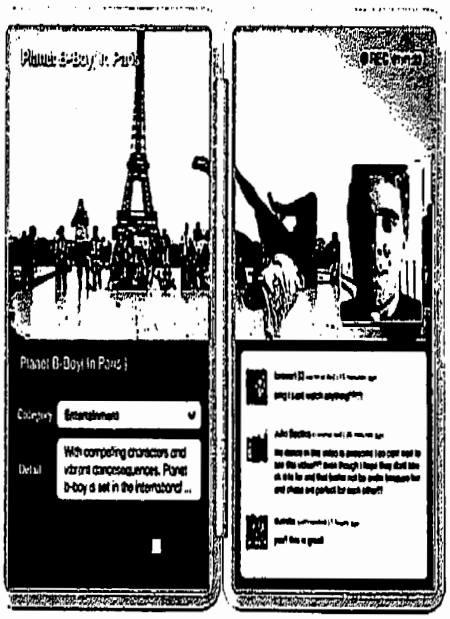
Provide an experience of looking at an actual book through an interaction similar to that of lifting the fore edge of a book

Customized Home



Provide a familiar and new Home UI brining up an image of a long wallet or a cosmetic powder case of women.
Select a user desirable home mode

Personal Broadcasting



Provide a personal broadcasting through simultaneously photographing a background picture and a self picture with front and back cameras.
A vertical mode give a good grip feeling, and a horizontal mode is useful for communication during broadcasting

Copied from 13370939 on 05/11/2012

Form 01 | In-Folded Screen 210°

Customized Home

- An action of opening dual displays is applied to metaphor of daily life
- Organization of a home screen according to a use characteristic of a user
- Expand a usage range and control an App depending on a size of Widget



Widget Mode
: Directly execute Hotkey

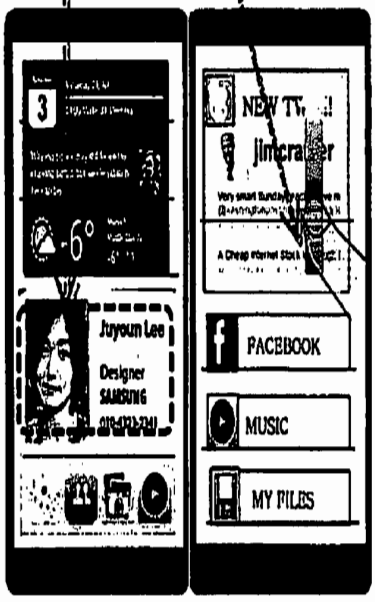


Widget expanded Mode
: Updated information
Information update in real time
Perform partial function



Direct Call function

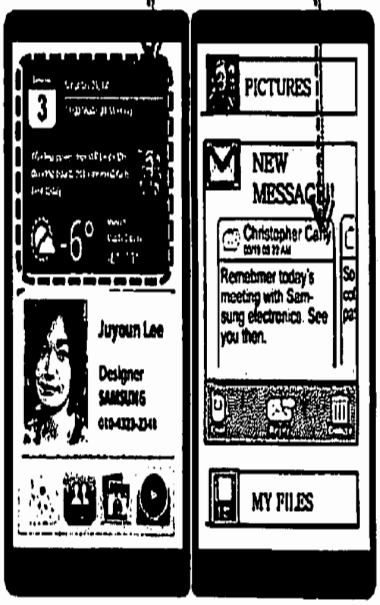
Draw with drag up to provide expansion of a partial function



Organize a direct call function and a shortcut ion
Execute a basic function through expansion of Widget

View favorite information, such as weather and schedule (real-time automatic update)

Real-time update simple information, such as message and Twitter
Perform basic edition



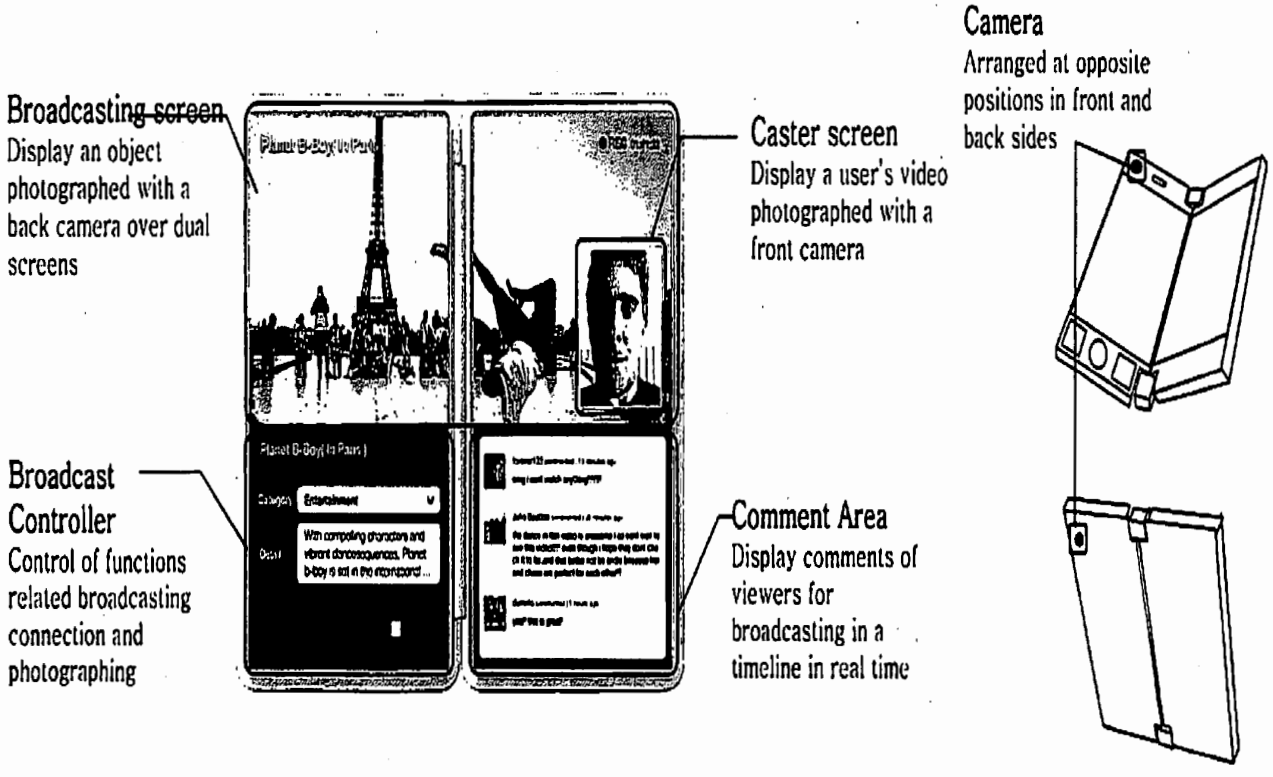
Execute a real-time viewer and a function for an App requiring simple information and alarm such as message and personal information

Copied from 13370939 on 05/11/2012

Form 01 | In-Folded Screen 210°

Personal Broadcast

A subject and a broadcasting host are simultaneously photographed and a video of the host in a broadcasting screen is arranged in a screen of the subject in a PIP form, to provide a broadcasting environment like a professional broadcasting
Relay while simultaneously viewing a photographed video and comments of viewers



Copied from 13370939 on 05/11/2012

Form 02 | Double Screen 180 °



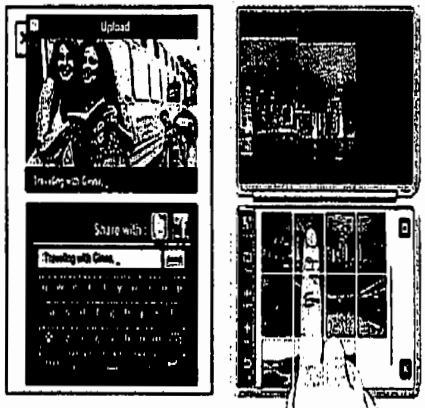
- Two screens are connected to overcome a limitation of a display in an existing mobile device and perform an efficient activity on an enlarged screen
- Enlarge a screen, simultaneously execute different Apps., provide different two views in one App.
- Utilize one screen for a space shared with a friend

Expanded Canvas



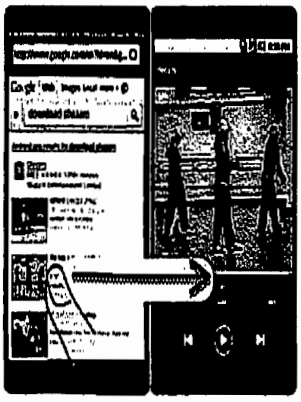
Enlarge and display one App. in two screens

Multi-View



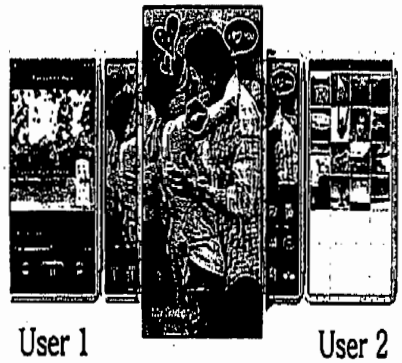
Provide different views of one App. in two screens

Multi-Tasking



Simultaneously execute different Apps. in two screens

Shared Place



Jointly work in one screen with a friend

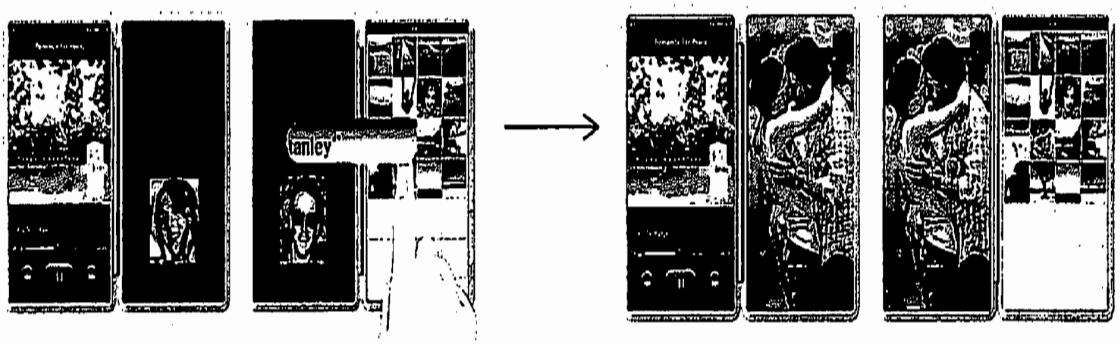
Copied from 13370939 on 05/11/2012

Form 02 | Double Screen 180 °

Shared Place

Share a picture, a memo, a video, music, a drawing board, and a real-time screen
Divide dual screens into a private screen and a sharing screen

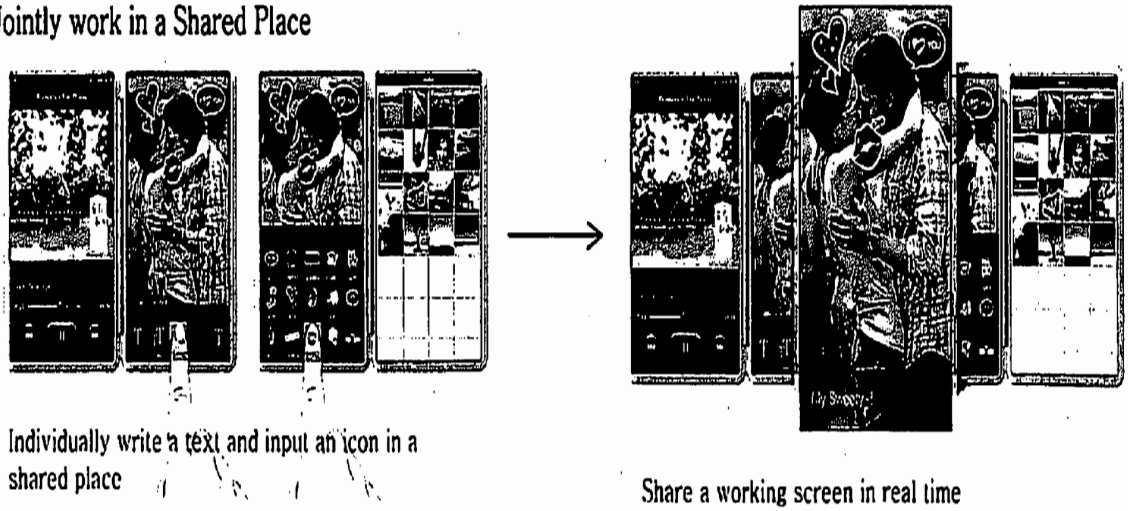
Share contents in Shared Place



Play a picture in a shared place (Drag & Drop)

Share a screen between connected devices

Jointly work in a Shared Place

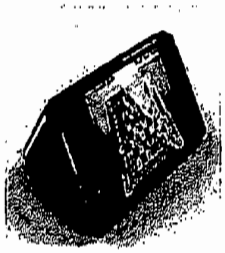


Individually write a text and input an icon in a shared place

Share a working screen in real time

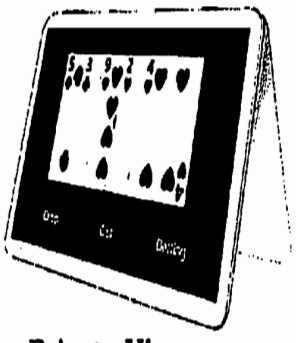
Copied from 13370939 on 05/11/2012

Form 03 | Out-Folded Screen 90°



- Unfold both screens to provide a standing form capable of standing on a desk, etc.
- One screen is basically in a sleep mode for power save, and divide both screens into a private screen and a public view screen for use depending on a situation
- Useful for contents viewing for a long time or a joint game in a standing state of the screens for the charge

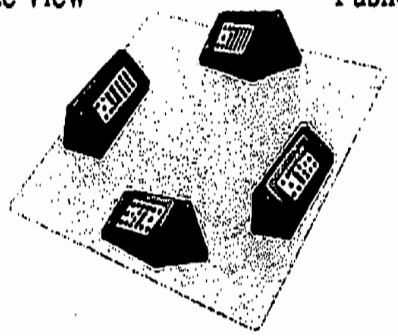
Collaborative Game



Private View

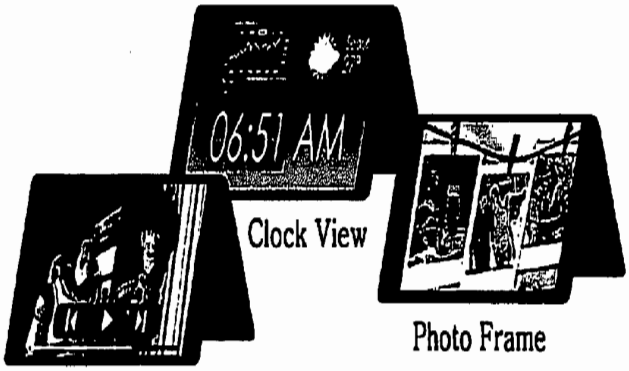


Public View



Set a private view for a user and a public view for a counterpart in a standing state of the screens and enjoy a joint game, such as a poker game, with several people

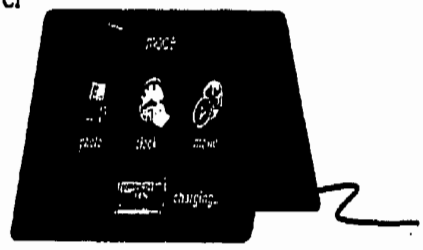
Charging Mode / Contents Watching



Clock View

Photo Frame

Movie player



Charging Mode

Usable for a digital clock or a frame in a standing state for the charge
Useful for contents, such as a personal broadcasting and a movie, viewing for a long time

Copied from 13370939 on 05/11/2012

Form 04 | One Screen 0°



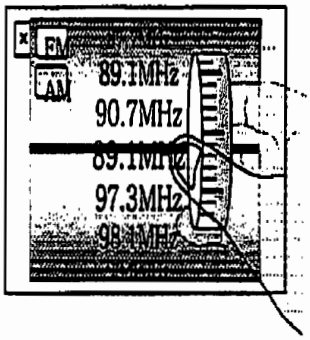
- Use one screen conveniently usable in a situation of a user in a closed state of two screens
- Simultaneously recognize touches in front and back screens according to a situation and provide new interaction by using both touches

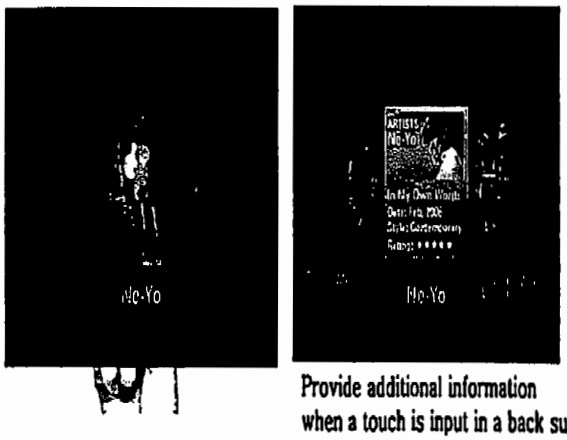
Auto Screen-ON



When a call or notification is generated in a laid state of a device, recognize a surface contact the floor and automatically turn on a usable screen. Switchable in a direction desired by a user

Dual-Touch





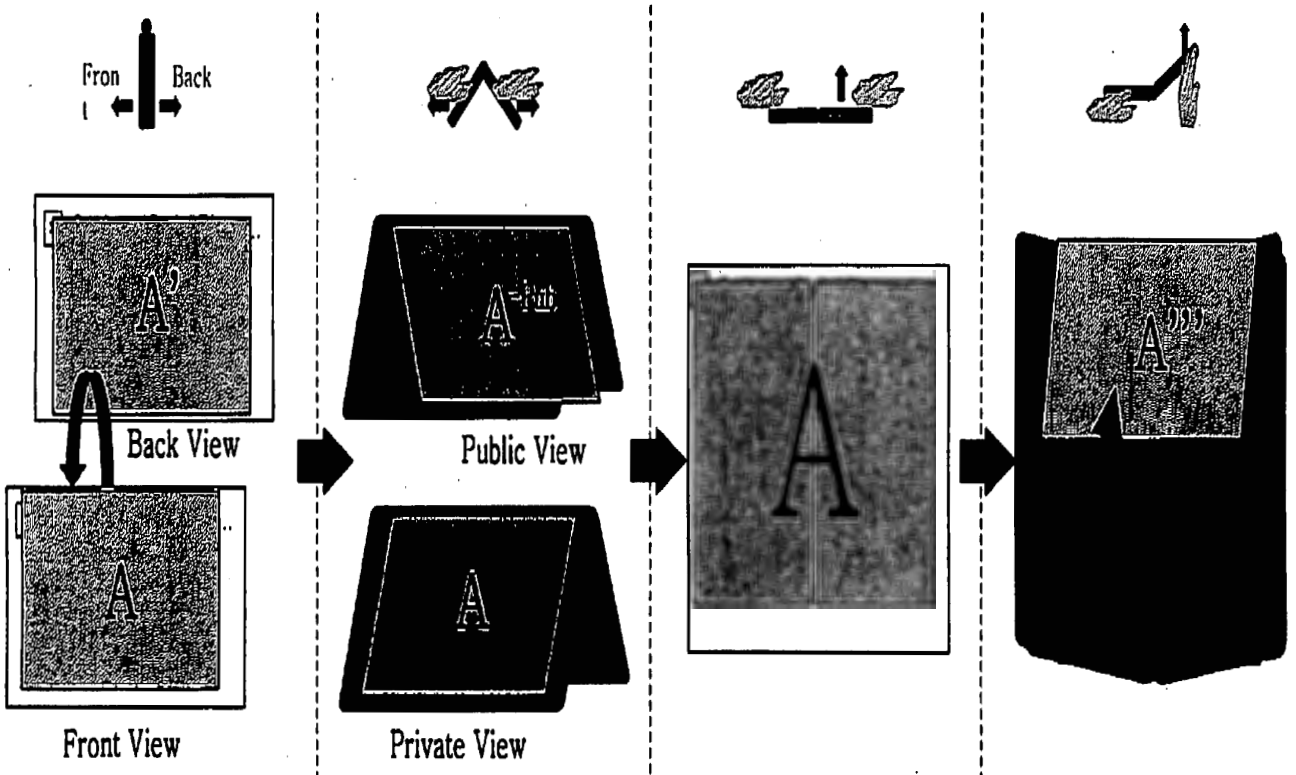
Provide additional information when a touch is input in a back surface

Simultaneously recognize touches in front and back screens to utilize the recognized touches as a 3D-like touch having a feeling of a thickness by using both touches or provide interaction without hindrance in a screen through a back touch

Copied from 13370939 on 05/11/2012

02 Interaction Rule | Folding

Adaptively organize a main/sub screen, and a function arrangement and interaction rule related to screen arrangement is applied whenever an angle of a screen is changed in one application.



LCD 1	LCD 2
A	A'
	OFF

LCD 1	LCD 2
A	A-Pub
	OFF

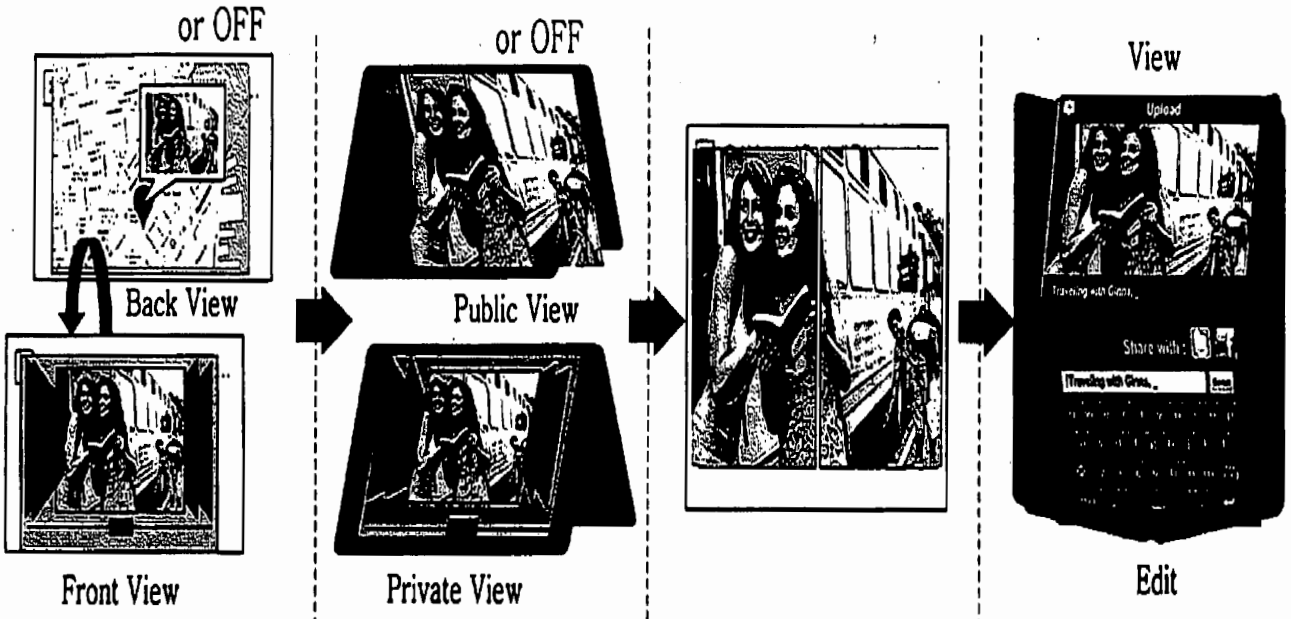
LCD 1	LCD 2
Expanded A	

LCD 1	LCD 2
A''	A'''

Copied from 13370939 on 05/11/2012

02 Interaction Rule | Folding

Adaptively organize a main/sub screen, and a function arrangement and interaction rule related to screen arrangement is applied whenever an angle of a screen is changed in one application.



Front/Back Mode

Display detailed information, such as map view, of a picture selected in a back surface during browsing of a picture list in a front screen in a state when a terminal is completed folded

Private/Public Mode

Perform browsing of a picture list in a view of a user and display a slide show of selected pictures in a view of a counter part in a standing state of a terminal.

Expand Mode

When the screens are completely unfolded by 180°, a selected picture is enlarged and displayed in two screens as one picture.

Edit Mode

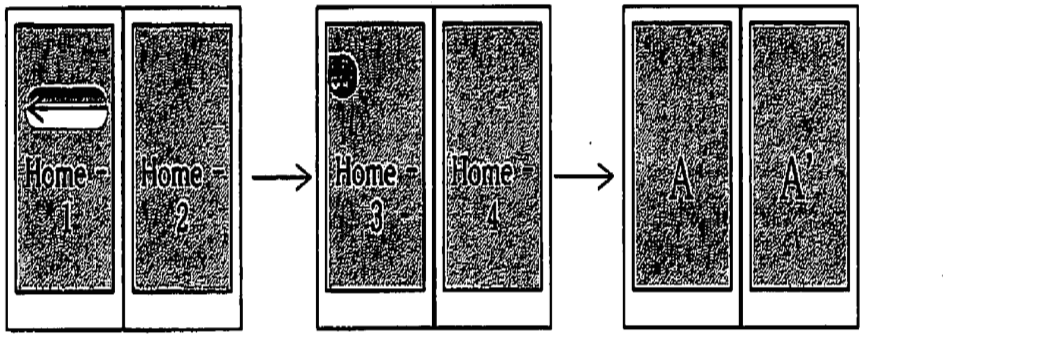
When a terminal is inwardly bent, a lower screen is used as an input window and an edit result is displayed in an upper screen, it is possible to naturally input in a state where a user holds the terminal with a hand.

Copied from 13370939 on 05/11/2012

02 Interaction Rule | Dual Screen

App is basically displayed in dual screens.

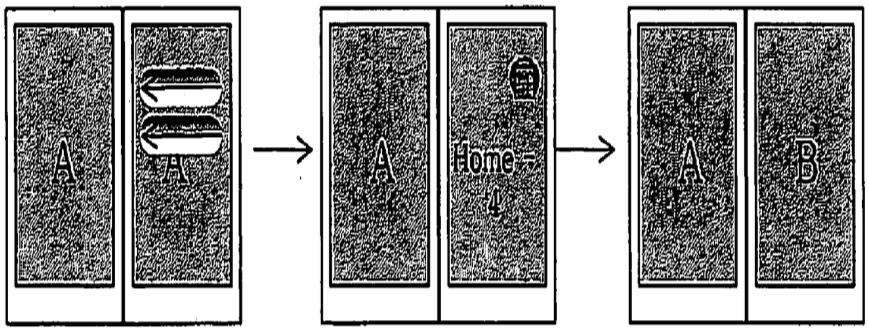
Home Interaction



Change to 2 page in flicking of a home screen

Display in dual screens when App is selected in a home screen

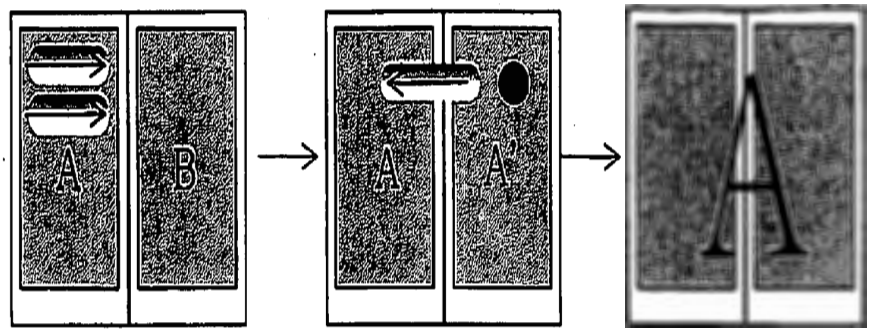
Multi Tasking



Change to sing by 2-finger flicking

Display in a sing mode in a sing home screen

Screen Expand



Change to dual screens by 2-finger flicking

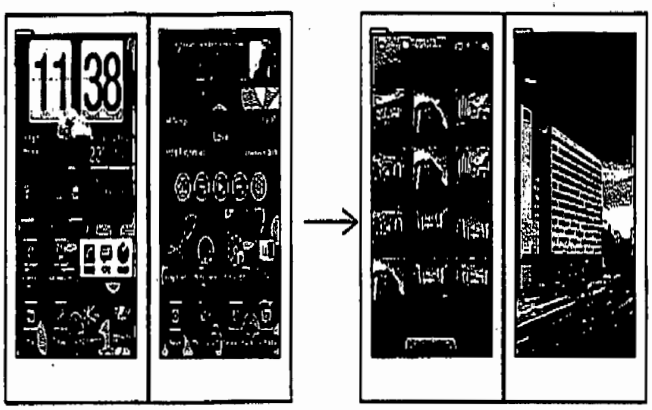
When a pinch-zoom is performed over dual screens, one image is displayed through two

Copied from 13370939 on 05/11/2012

02 Interaction Rule | Dual Screen

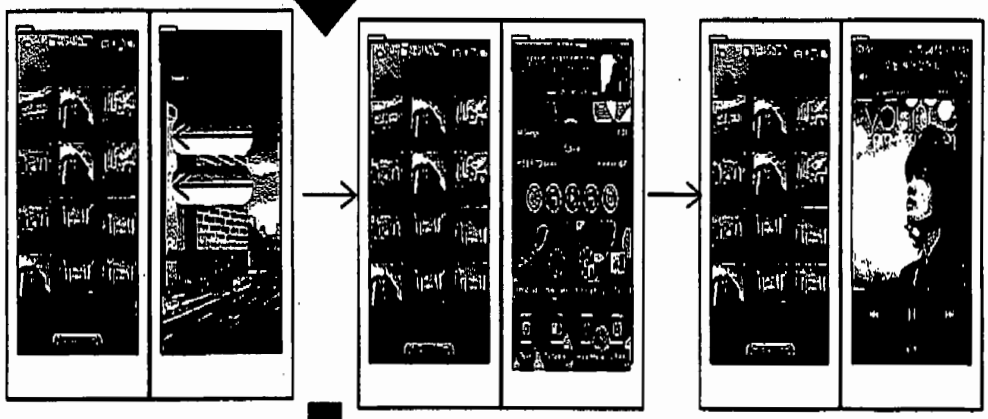
Home Interaction

A thumbnail screen and a preview screen are displayed in dual displays when a photo gallery is executed in a home screen.



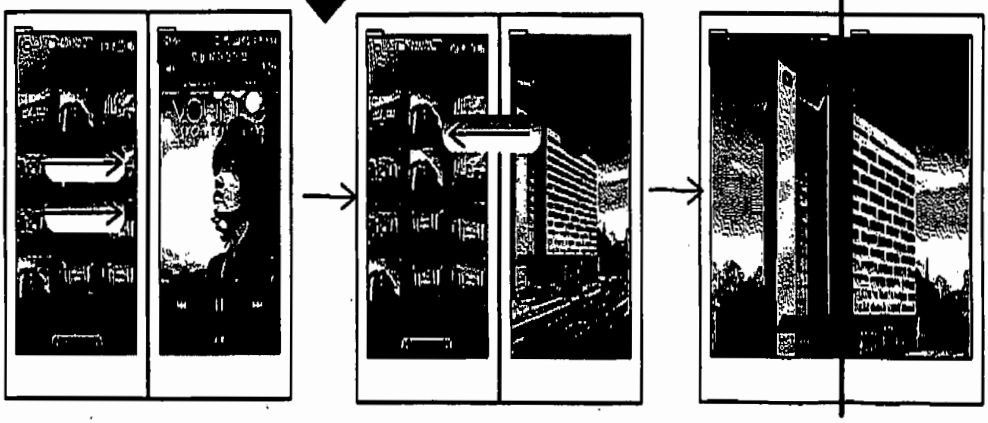
Multi Tasking

A screen added to the photo gallery returns to a home screen and executes music.



Screen Expand

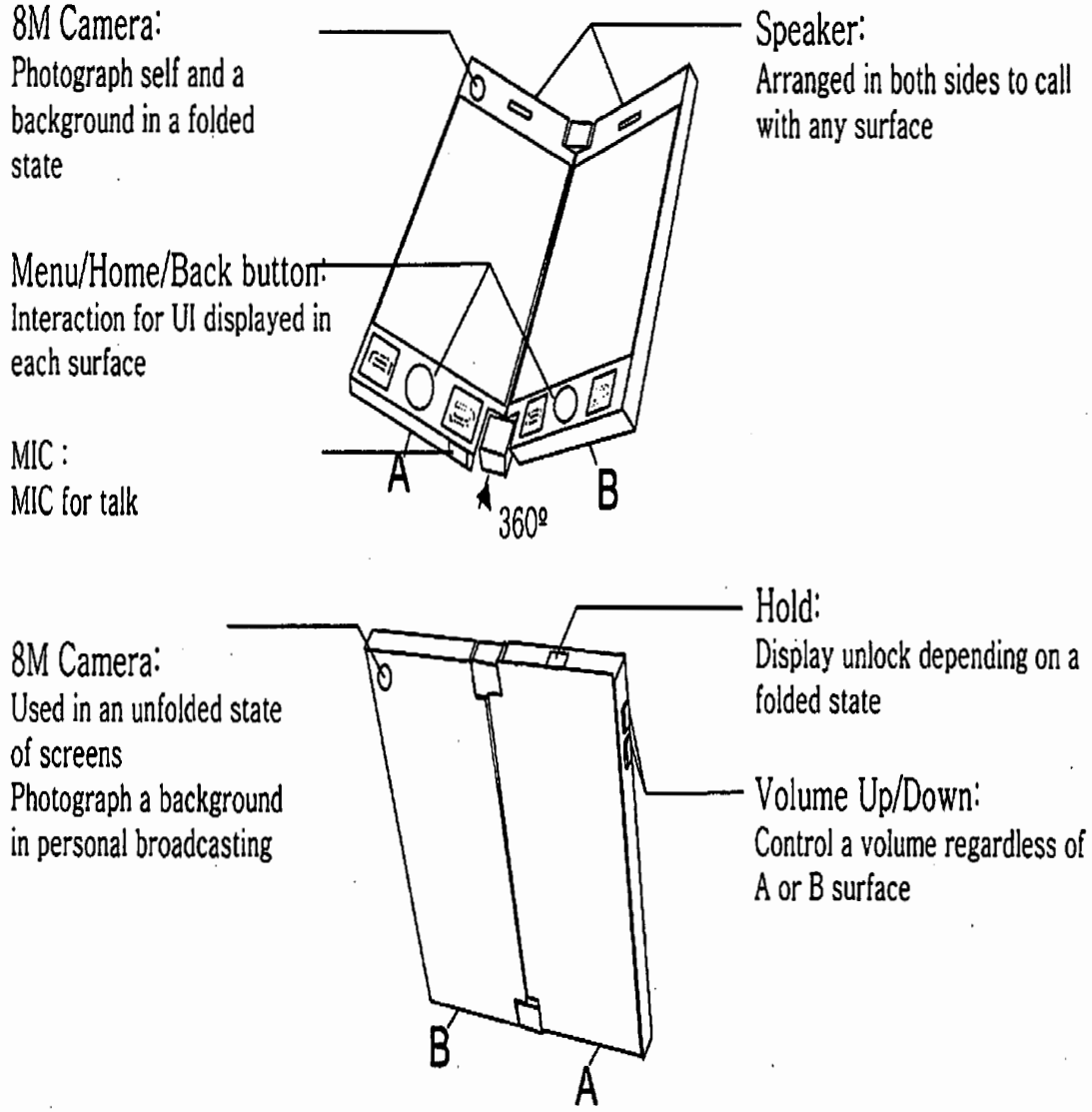
A picture is displayed in dual screens, and a preview picture is enlarged through a pinch-zoom during a picture and music multi-tasking.



Copied from 13370939 on 05/11/2012

03 PUI Design | Dual-Main Concept

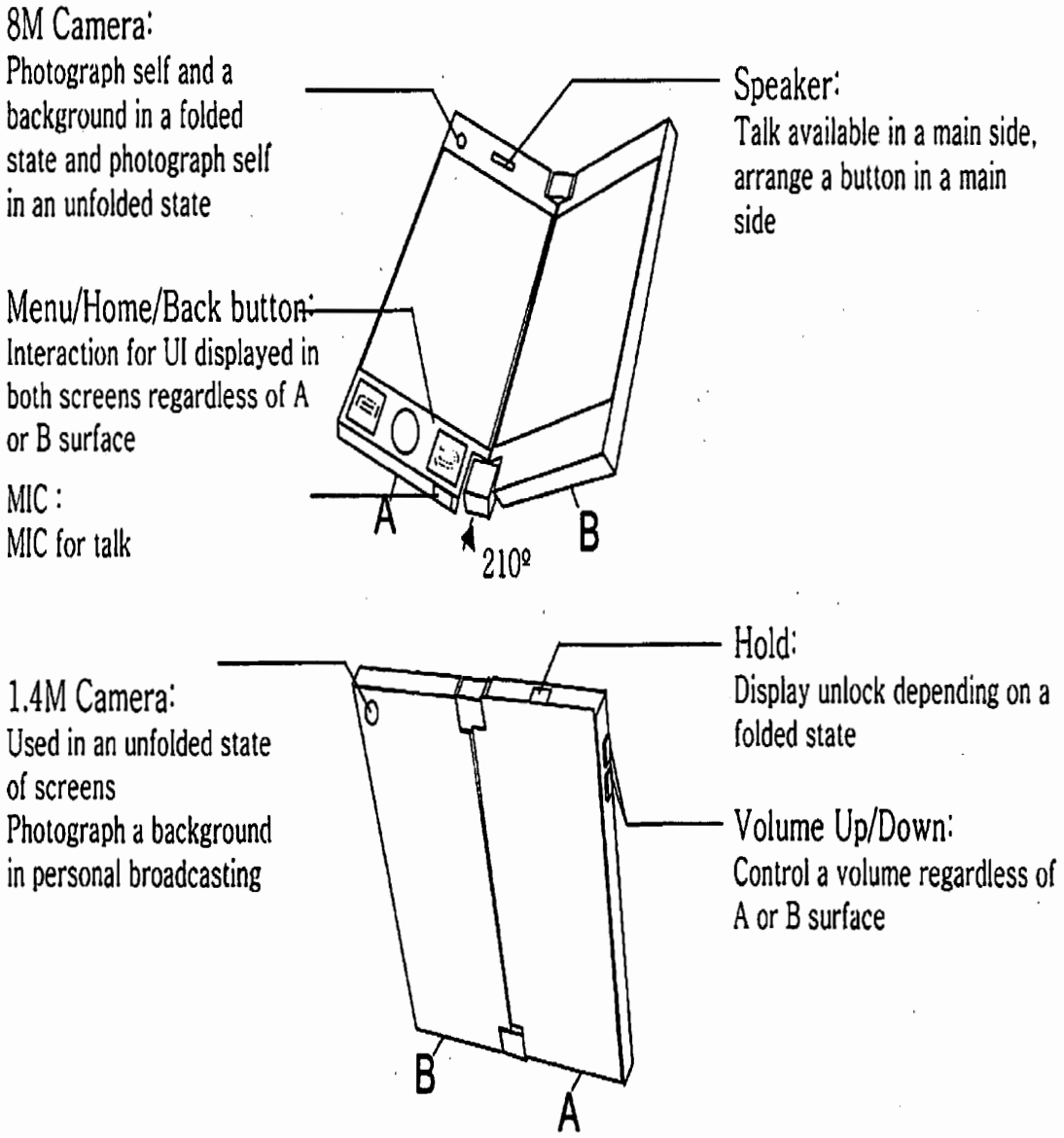
Provide the same PUI in front and back sides and input on a corresponding surface regardless of a surface held by a user
Control two applications in each screen



Copied from 13370939 on 05/11/2012

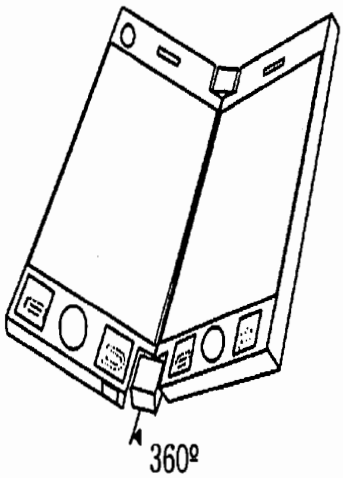
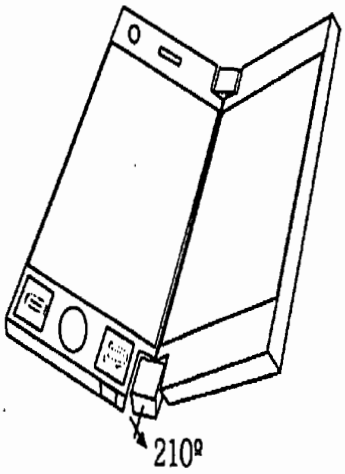
03 PUI Design | Main-Sub Concept

All buttons related to input are arranged in a main screen and a sub screen is used for display than an input.



Copied from 13370939 on 05/11/2012

03 PUI Design | Comparison of PUI

Dual-Main Concept	Item	Main-Sub Concept
Two: One in each of both sides	Menu	One: One in main screen
Two: One in each of both sides	Home	One: One in main screen
Two: One in each of both sides	Back	One: One in main screen
One	Hold	One
One	Volume Up/Down	One
Two: One in each of both sides	Speaker	One: One in main screen
Two 8M Pixels: Arranged at opposite positions in front and back sides	Camera	One 8M Pixel: back side One 1.4M Pixel: front side
One	MIC	One
360º	Rotation angle	210º
	PUI arrangement	
Provide various UX using two screens	Advantage	Low power and expense
High power and expense	Disadvantage	A use frequency of a sub screen is low and it is difficult to apply various UX.

Copied from 13370939 on 05/11/2012

Appendix

Copied from 13370939 on 05/11/2012

Dual Display UX
Interaction Rule

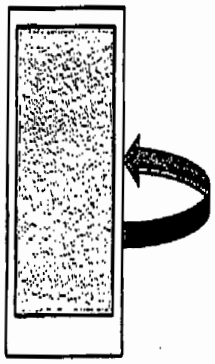
Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

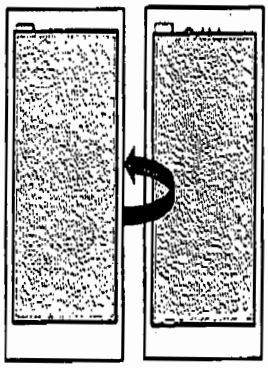
1+1 Screen

0°



Flip :
Flip and use screens one by one

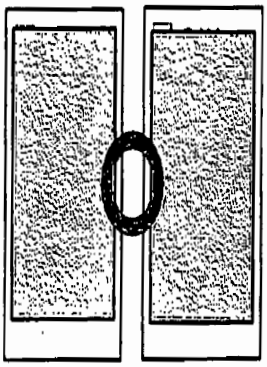
- Home vs fixed App
- Multi-task : App change
- App Control/OFF



Front Back

Sync :
Use front and back screens at the same time

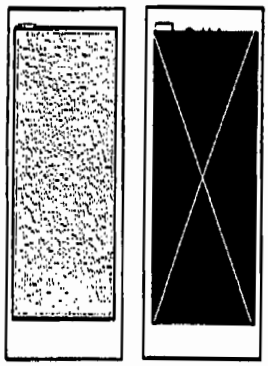
- Double-side Multi-Touch



Front Back

Half :
Use only one side

- laid on a ground
- Answer a phone



Front Back

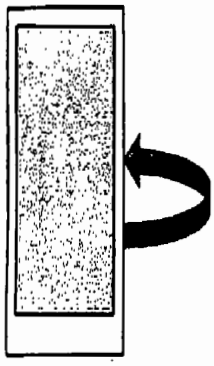
Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

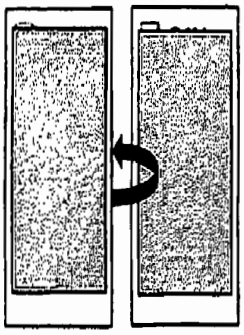
1+1 Screen

0°



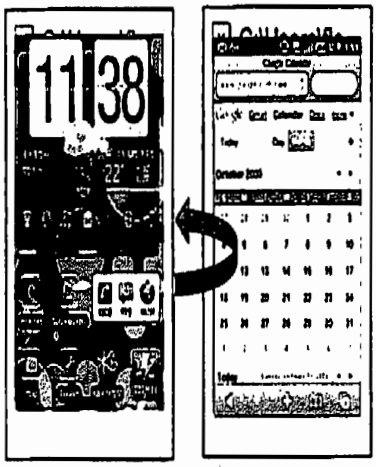
Flip :

Flip and use



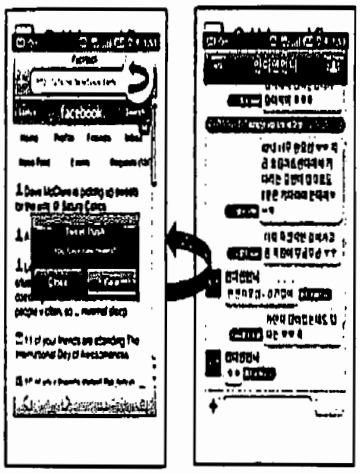
Front Back

Main vs fixed App



Front Back

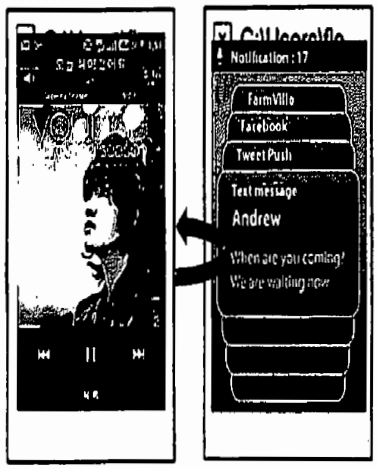
Multi-Task : App change



Front Back

Back View → Notification

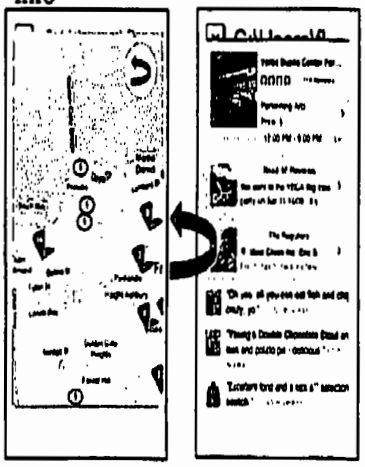
- Notification Stack View



Front Back

Double-side View

- Front view vs back view/ Map vs detailed Info



Front Back

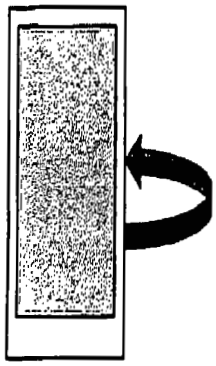
Copied from 13370939 on 05/11/2012

Concept Development |

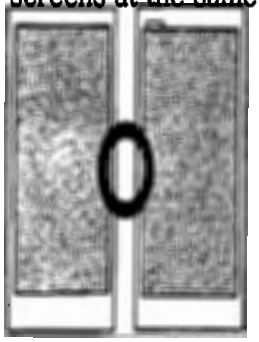
Dual Display | Interaction Rule

1+1 Screen

0°

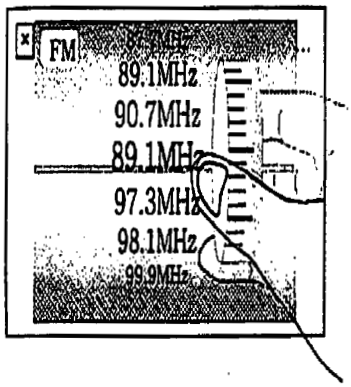


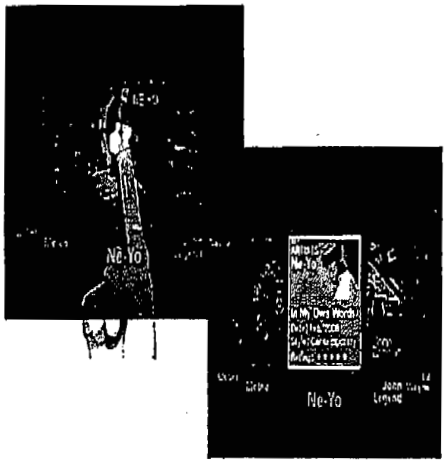
Sync :
Use front and back screens at the same time



Front Back

Dual-Touch



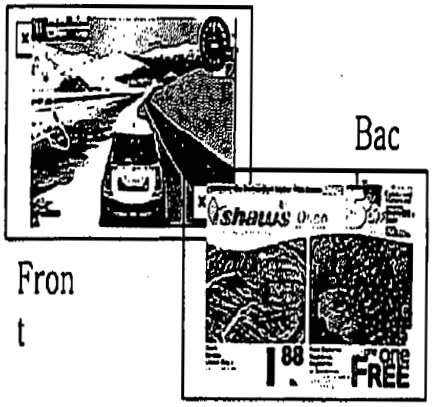


Front-Touch vs Back-Touch

- 3D-like Input Interaction (Dial)
- Back Touch
- 1-depth + 2-depth
- Zoom In/Out + Fixed Pin

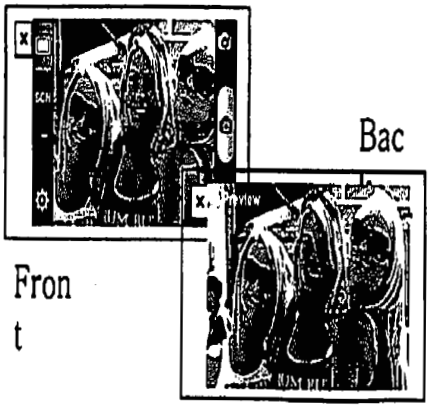
Back View → Personal AD

- Main App vs local advertisement / personal advertisement



Private View vs Public View

- Show a friend view when taking a picture
- Show a friend view in a back screen as it is



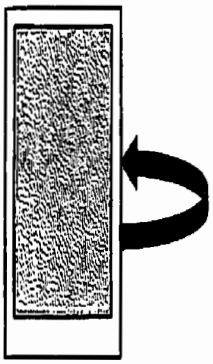
Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

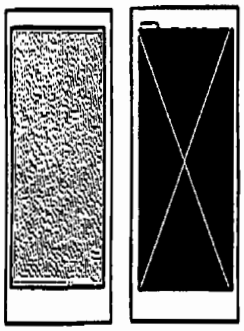
1+1 Screen

0°



Half :

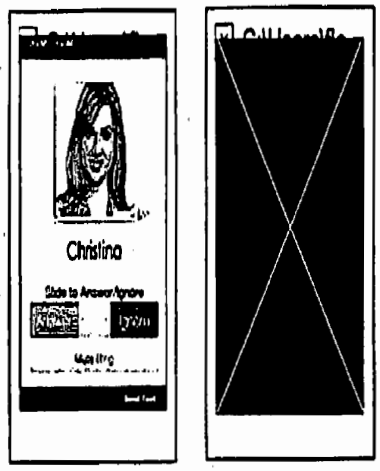
Use only one screen



Front Back

Laid on a ground

• Recognize an upper side and alert

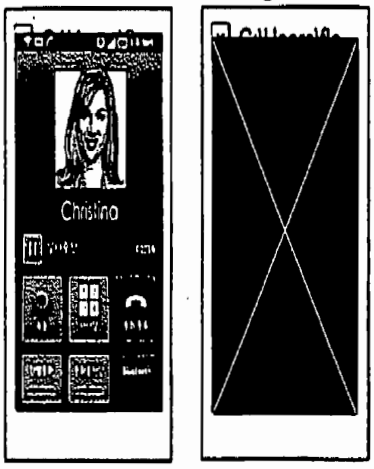


Upper Bottom



Answer a phone

• Automatically turn off an opposite side when receiving a call



Front Back

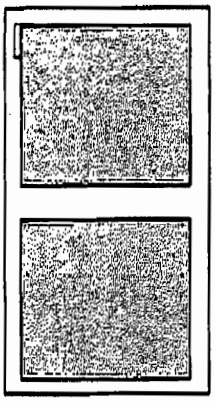


Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

Double Screen
180°



Multi-View Mode
Different view of one App

- Dependent: Main vs Sub



Multi-Task Mode
Simultaneously operate several Apps

- Independent: Multi-tasking



Expand Mode
One App in two screens

- App to be viewed in a large size
- App to be frequently viewed



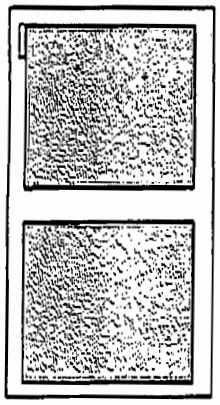


Copied from 13370939 on 05/11/2012

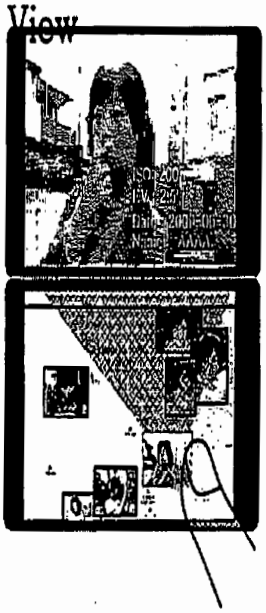
Concept Development |

Dual Display | Interaction Rule

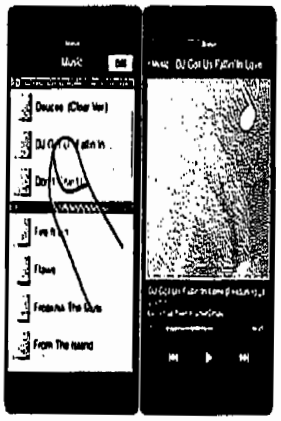
Double Screen
180°



Main vs Enlarged View



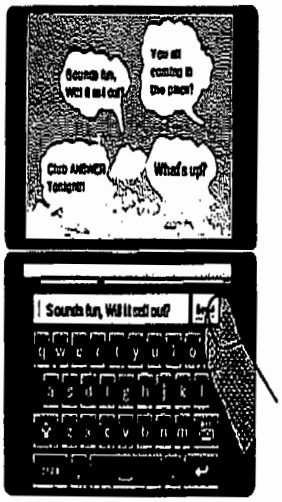
List vs Detailed information



Multi-View Mode
Different views of one App



View vs Input

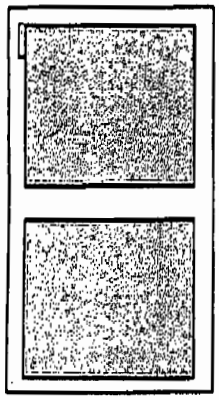


Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

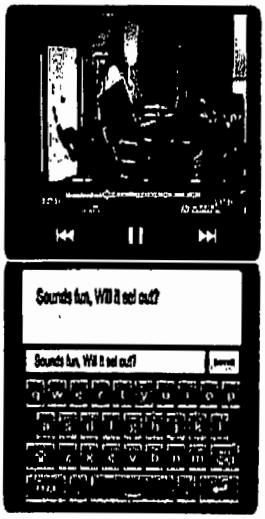
Double Screen
180°



Same App



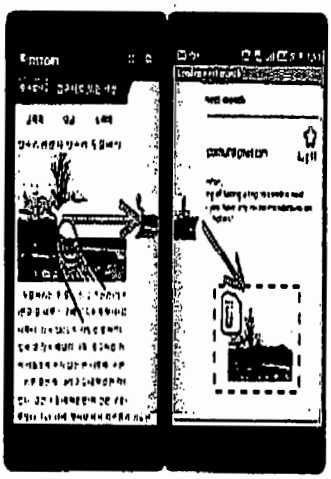
Different Apps



Multi-Task Mode
Simultaneously execute several Apps



Hinge : Use as a clipboard



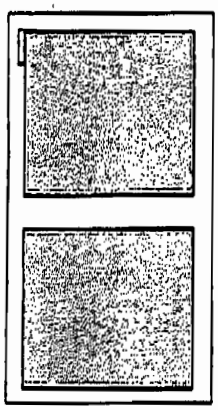
Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

Double Screen

180°



Expand Mode

One App in two screens

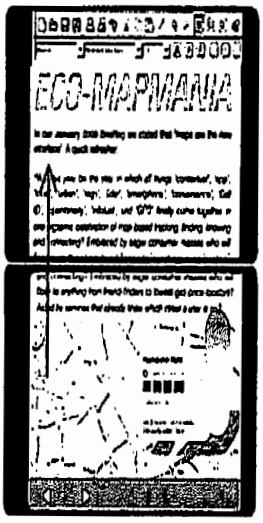


App to be viewed in a large size





App to be frequently viewed





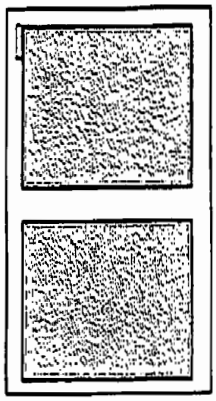
Copied from 13370939 on 05/11/2012

Concept Development |

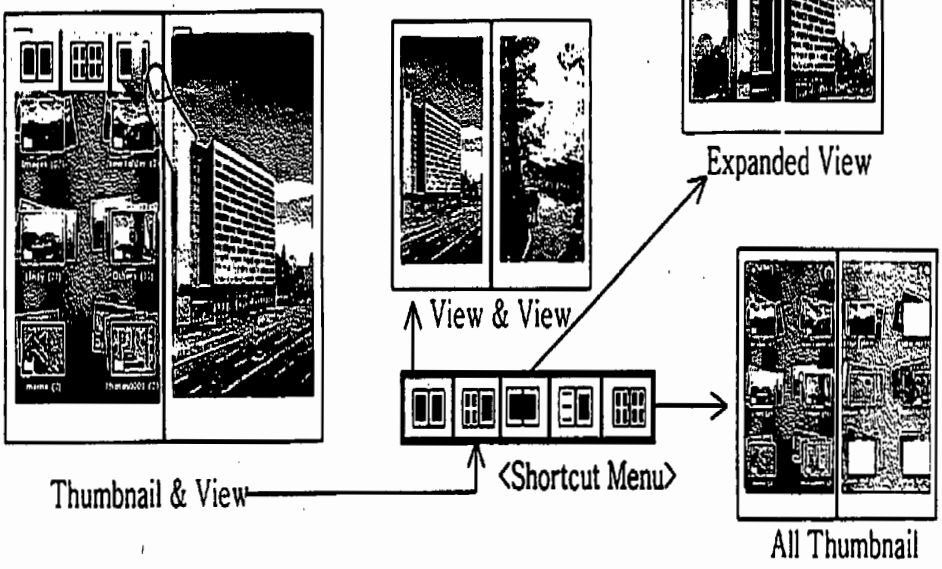
Dual Display | Interaction Rule

Double Screen

180°

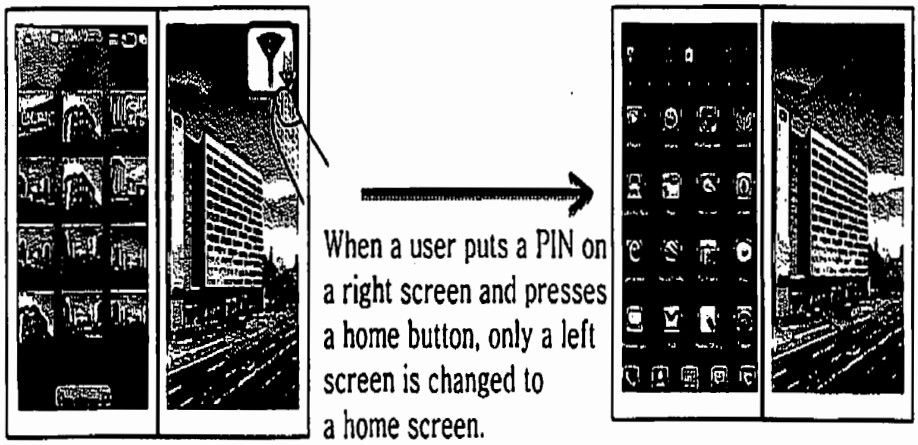


Provide Layout Shortcut in Expanded Mode



Function of fixing a designated screen in multi-tasking

: A corresponding App is maintained if any gesture, short cut, a home button is pressed



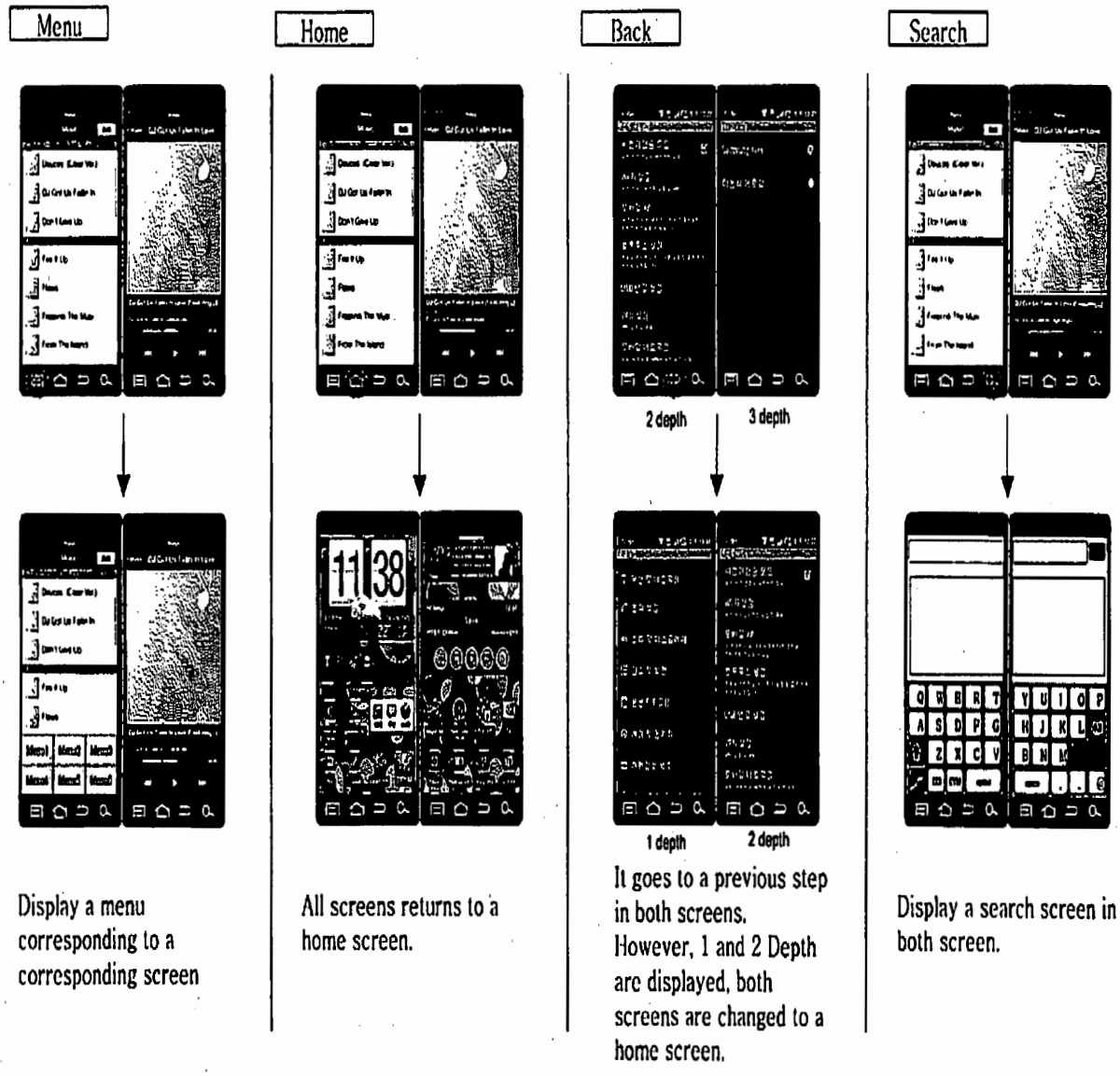
When a user puts a PIN on a right screen and presses a home button, only a left screen is changed to a home screen.

Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

A-A' : PUI button when one App is used in two screens



Display a menu corresponding to a corresponding screen

All screens returns to a home screen.

It goes to a previous step in both screens. However, 1 and 2 Depth are displayed, both screens are changed to a home screen.

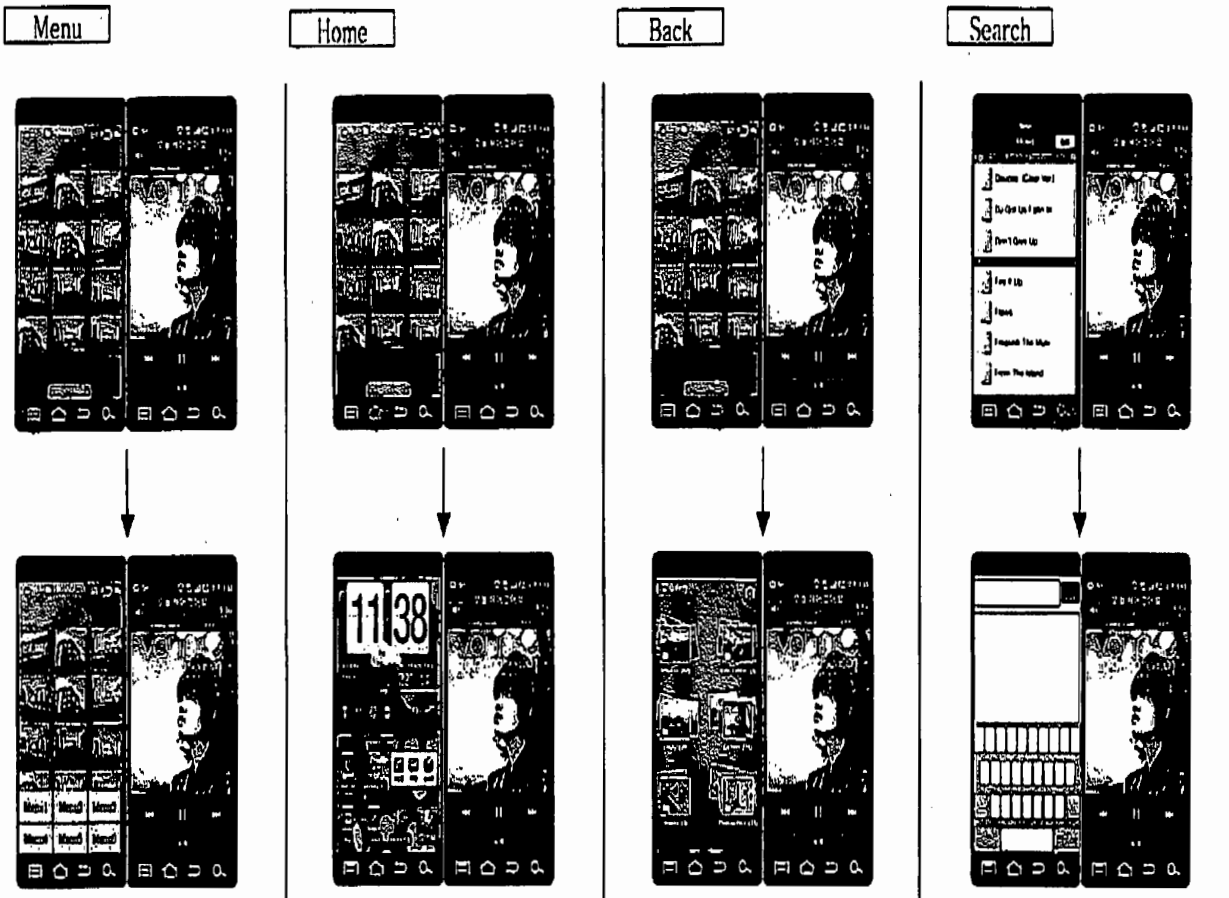
Display a search screen in both screen.

Copied from 13370939 on 05/11/2012

Concept Development |

Dual Display | Interaction Rule

Multi-Tasking : PUI button when two Apps are used in two screens



Display a menu corresponding to a screen in which a button is pressed

Close an App of a screen in which a button is pressed and display a home screen

Display a screen of a previous step for an App of a screen in which a button is pressed

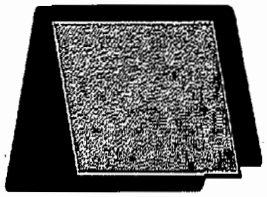
Display a search in an upper part of a screen in which a button is pressed

Copied from 13370939 on 05/11/2012

Concept Development |

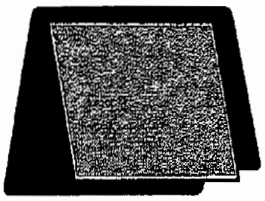
Dual Display | Interaction Rule

Folded Screen
< 180° (60°)



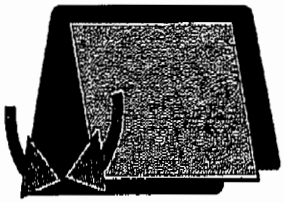
Standing

- Standing Viewer
- Private vs Public
- Facing Each Other
- Gravity Effect



Folding

- Reflect upper/lower positions
- Divide into upper and lower screens



Stretching

- Reflect upper/lower positions
- Combine upper and lower screens in one screen



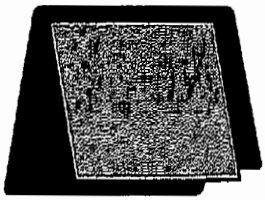
Copied from 13370939 on 05/11/2012

Concept Development |

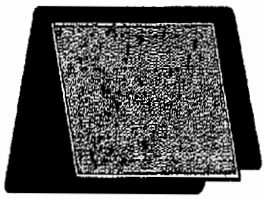
Dual Display | Interaction Rule

Folded Screen

< 180° (60°)



Standing



Standing Viewer :

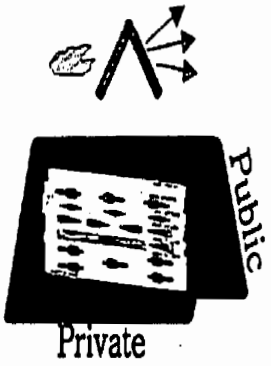
- electrical frame, video, clock
- video call, personal broadcasting





Private vs Public :

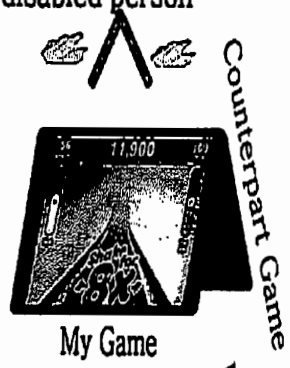
- poker game, 1:N Game
- level up: Show off





Facing Each Other :

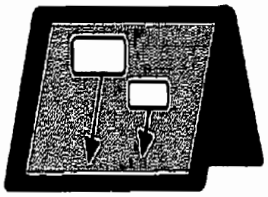
- 2-people game
- Communication with disabled person





Gravity Effect :

- Use gravity making an object fallen down

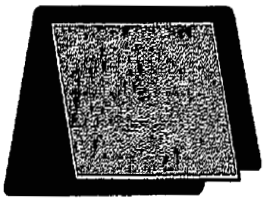


Copied from 13370939 on 05/11/2012

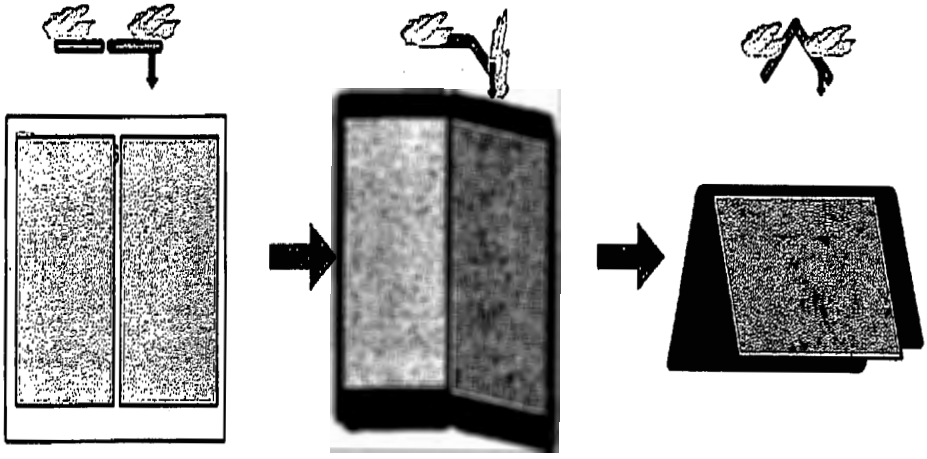
Concept Development |

Dual Display | Interaction Rule

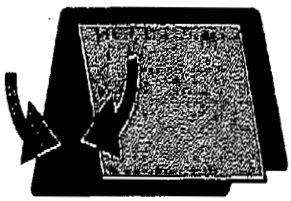
Folded Screen
< 180°



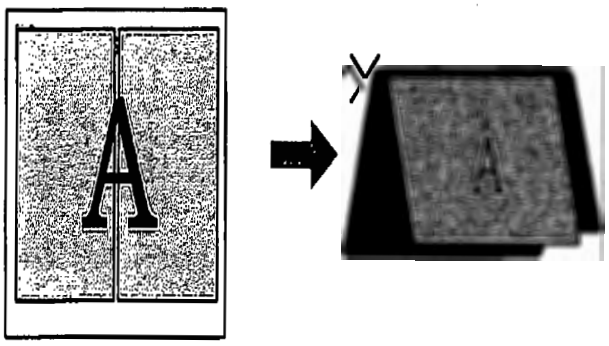
Folding : 180° → 120° (60°)
Backward-fold



Folding



- Reflect upper and lower positions
- Divide a screen into upper and lower screens



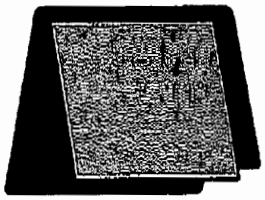
- A++ → A / X
- A++ → A / Home
- A++ → A / previous App

Copied from 13370939 on 05/11/2012

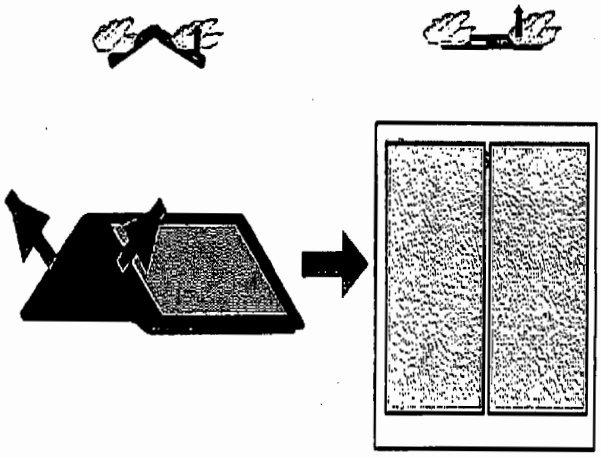
Concept Development |

Dual Display | Interaction Rule

Folded Screen
< 180°

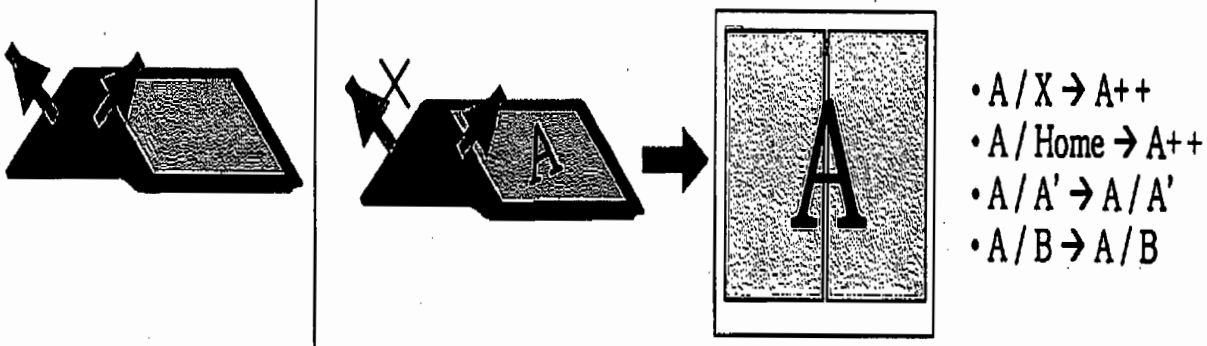


Stretching : 60° (120°) → 180°
Forward-stretch



Stretching

•Reflect upper and lower positions
• Combine upper and lower screens into one screen



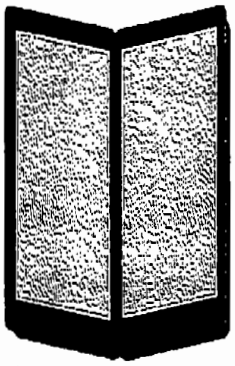
- A / X → A++
- A / Home → A++
- A / A' → A / A'
- A / B → A / B

Copied from 13370939 on 05/11/2012

Concept Development |

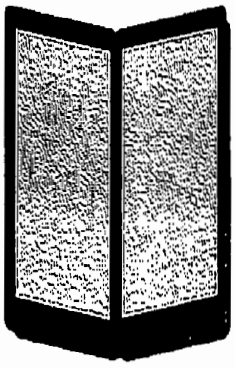
Dual Display | Interaction Rule

Folded Screen
> 180° (240°)



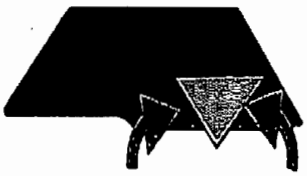
Standing

• Same as Double-Screen



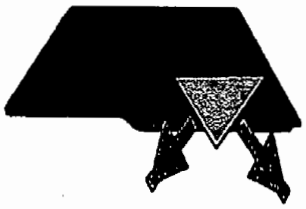
Folding

• Zoom In
• Unhide Index



Stretching

• Zoom Out

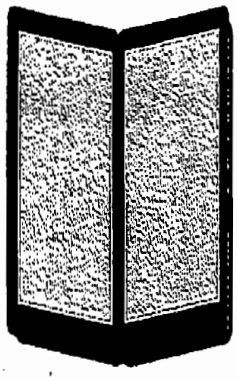


Copied from 13370939 on 05/11/2012

Concept Development |

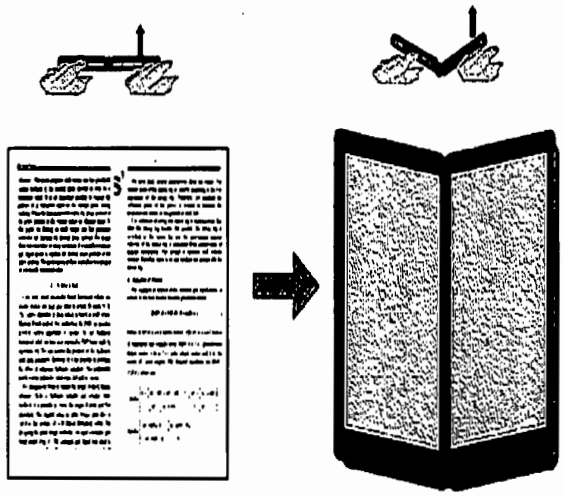
Dual Display | Interaction Rule

Folded Screen
> 180°

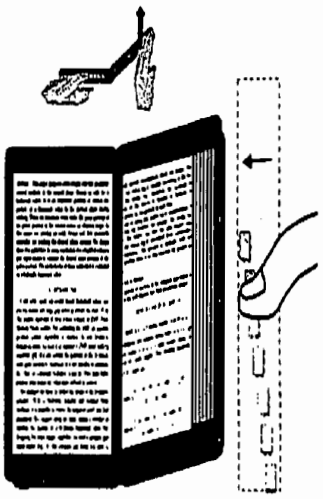


Folding : 180° → 240°

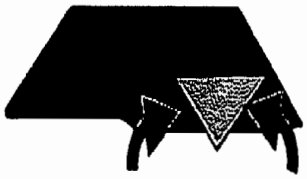
Forward-fold



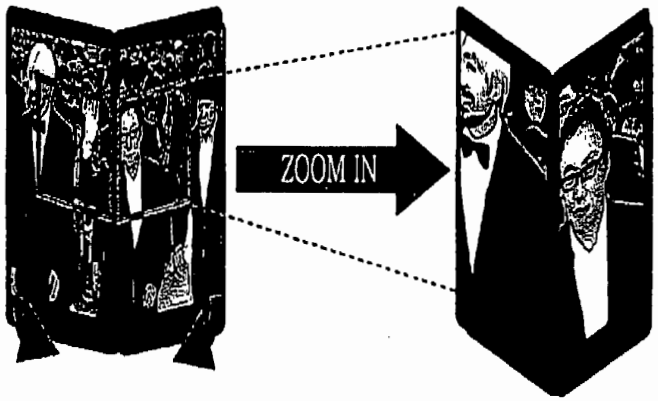
• Unhide Index



Folding :
접기



• Zoom In

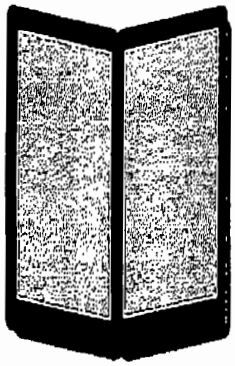


Copied from 13370939 on 05/11/2012

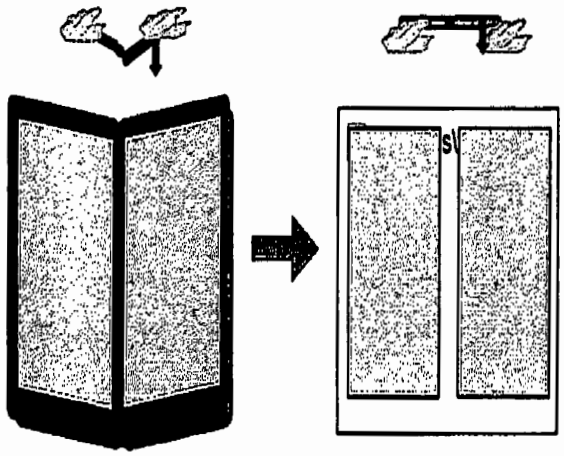
Concept Development |

Dual Display | Interaction Rule

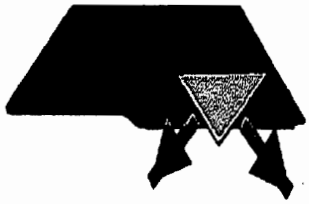
Folded Screen
> 180°



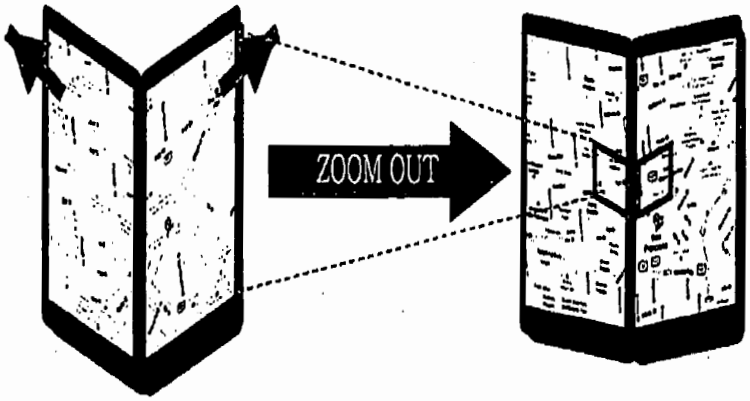
Stretching : 240° → 180°
Backward-stretch



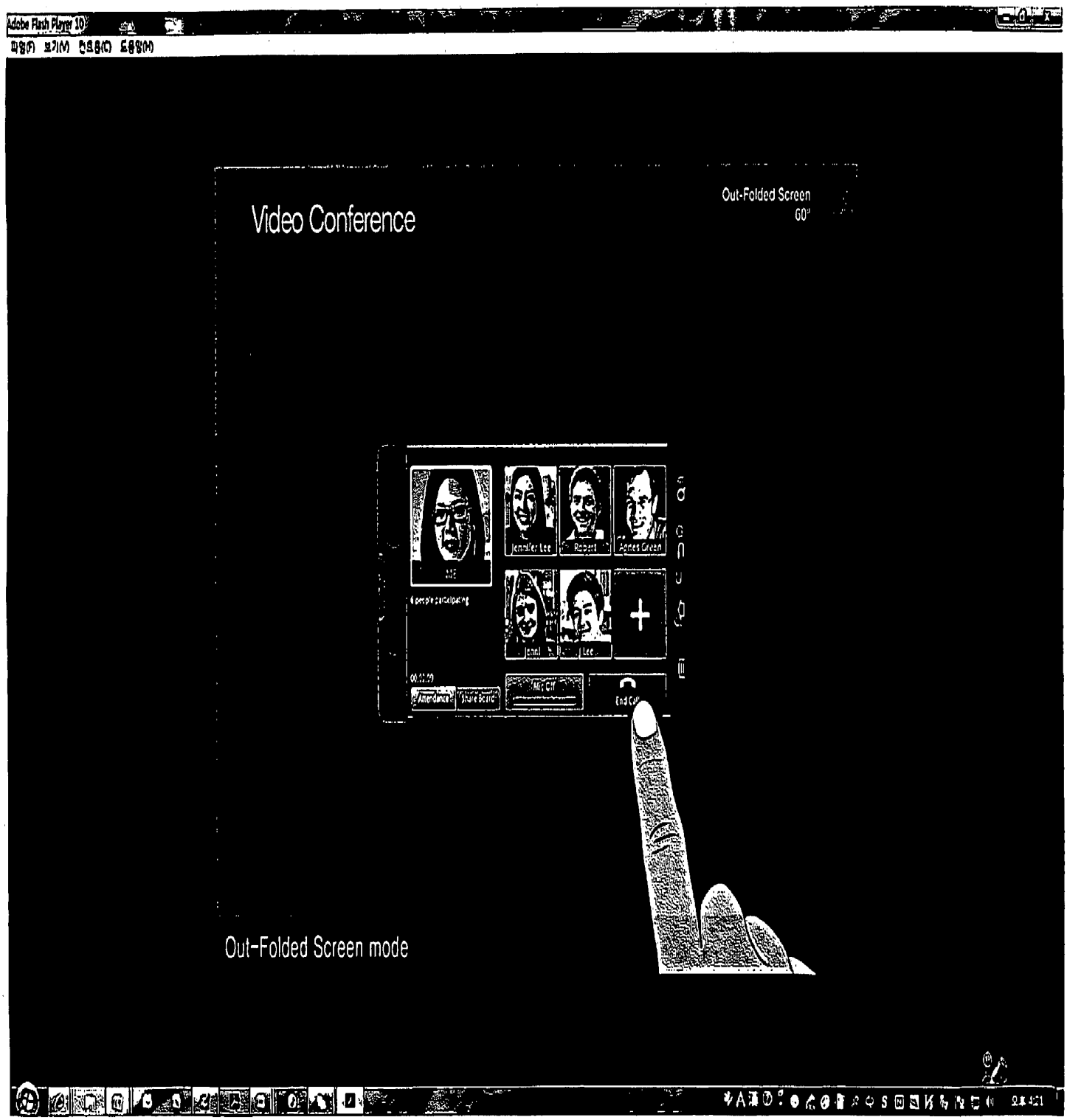
Stretching



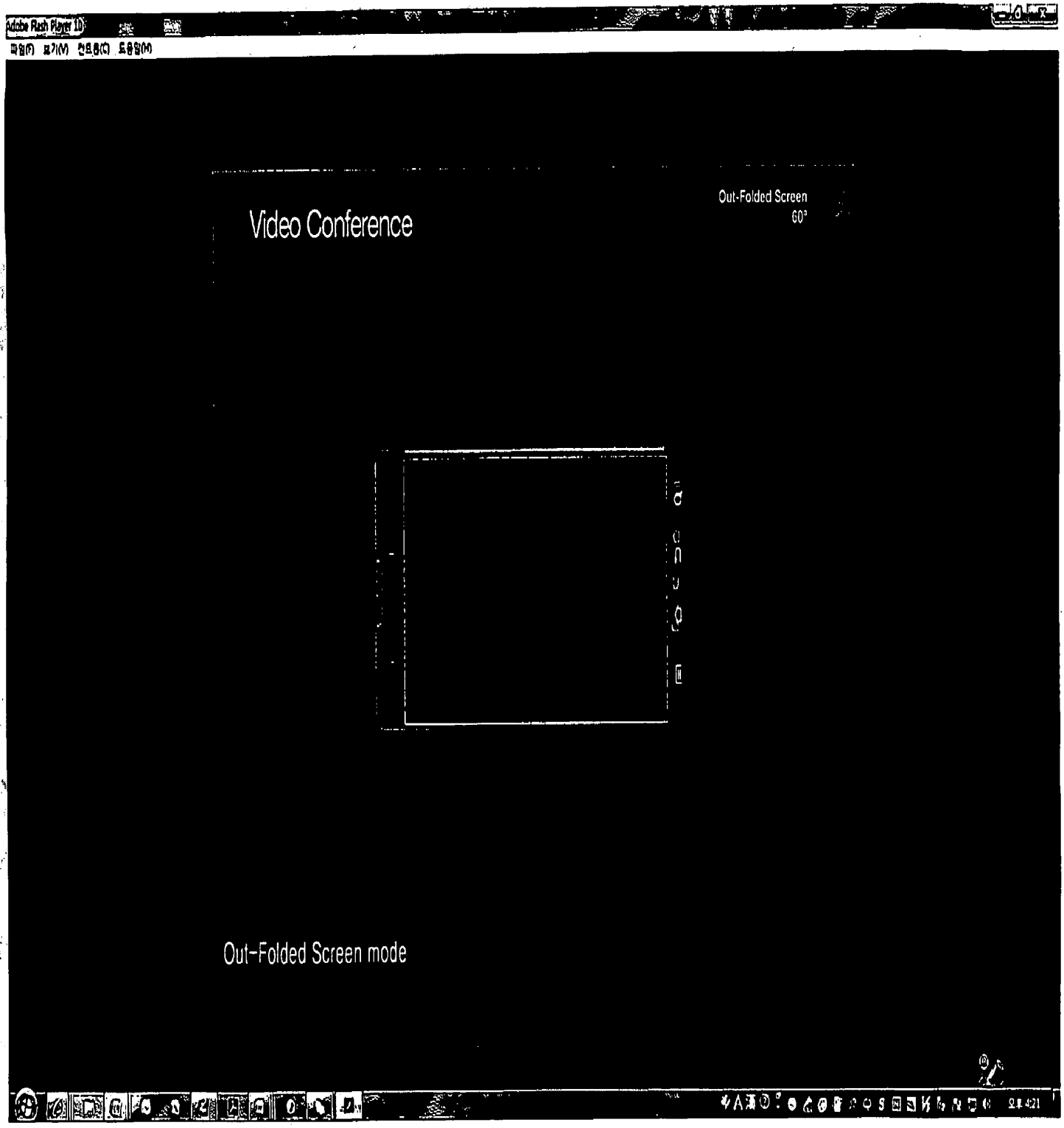
• Zoom Out



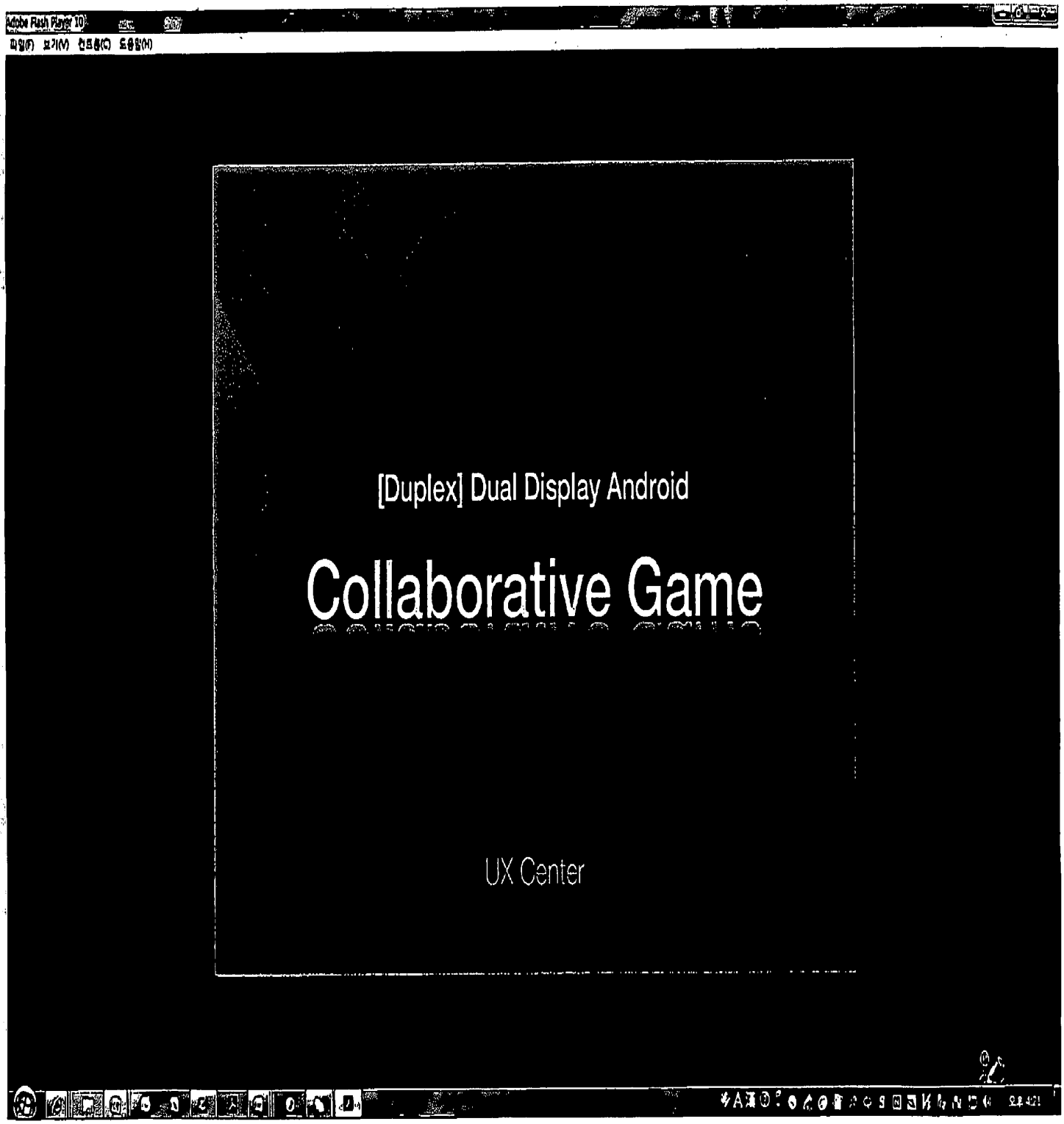
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



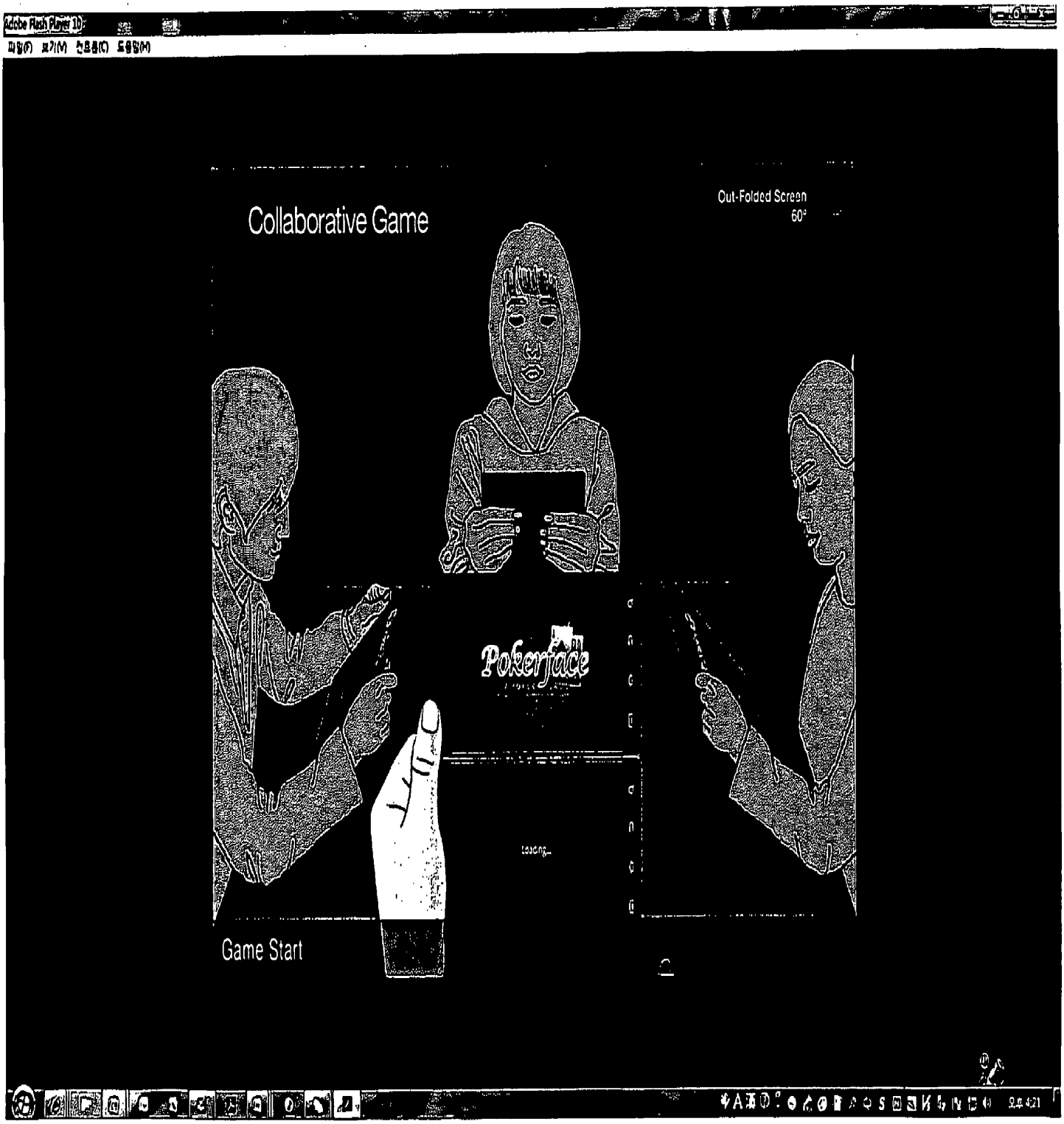
Copied from 13370939 on 05/11/2012



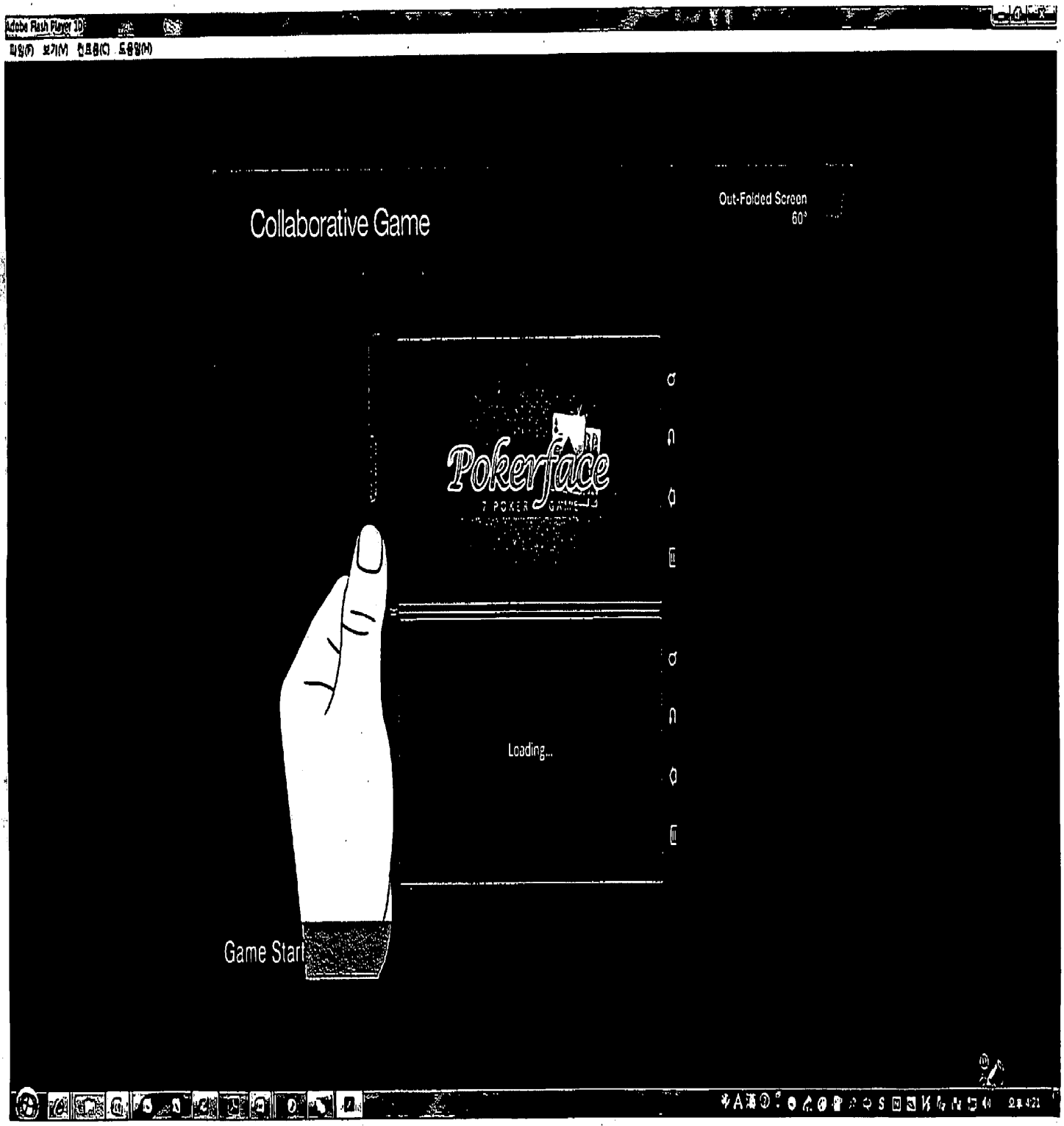
Copied from 13370939 on 05/11/2012



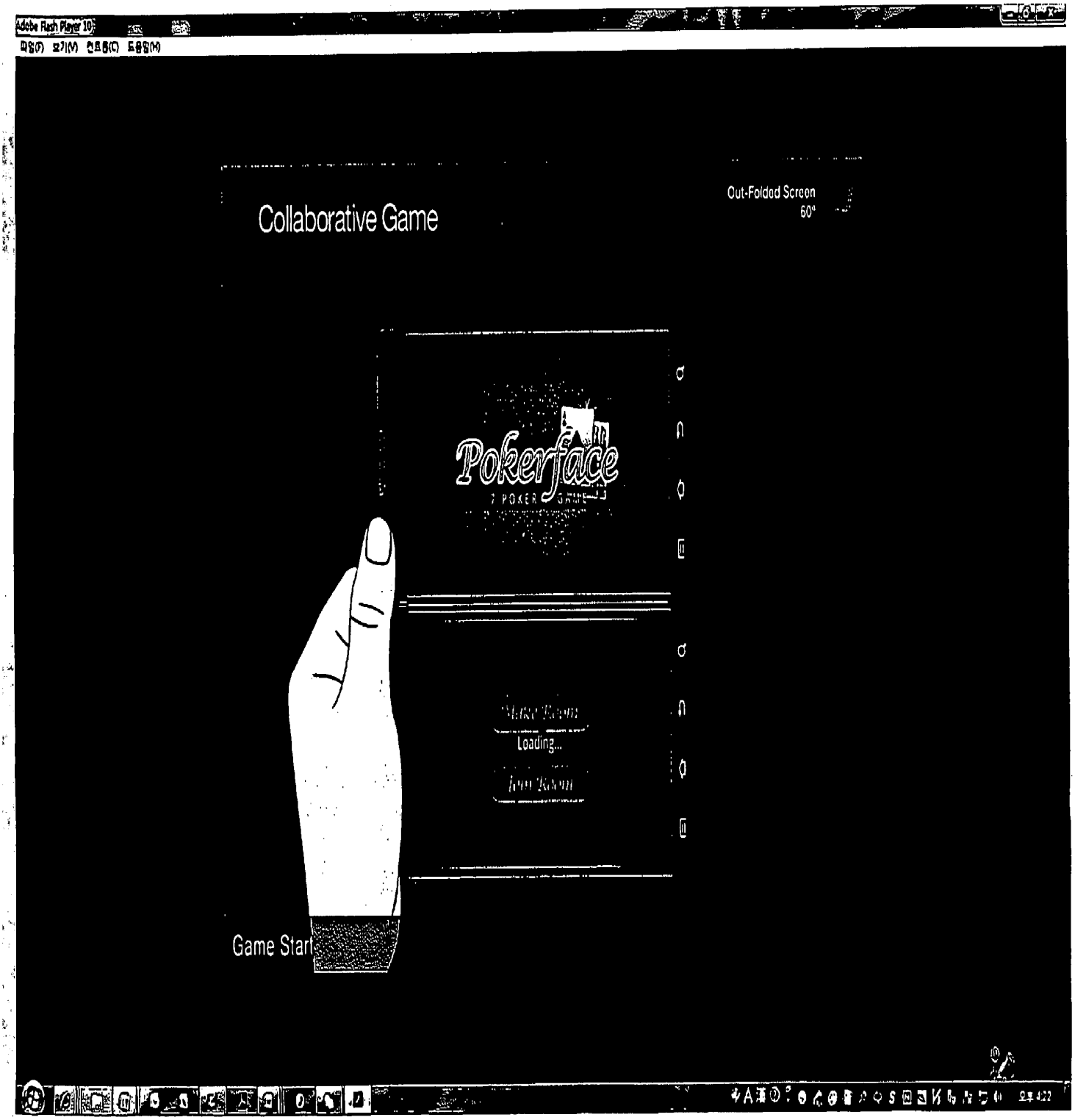
Copied from 13370939 on 05/11/2012



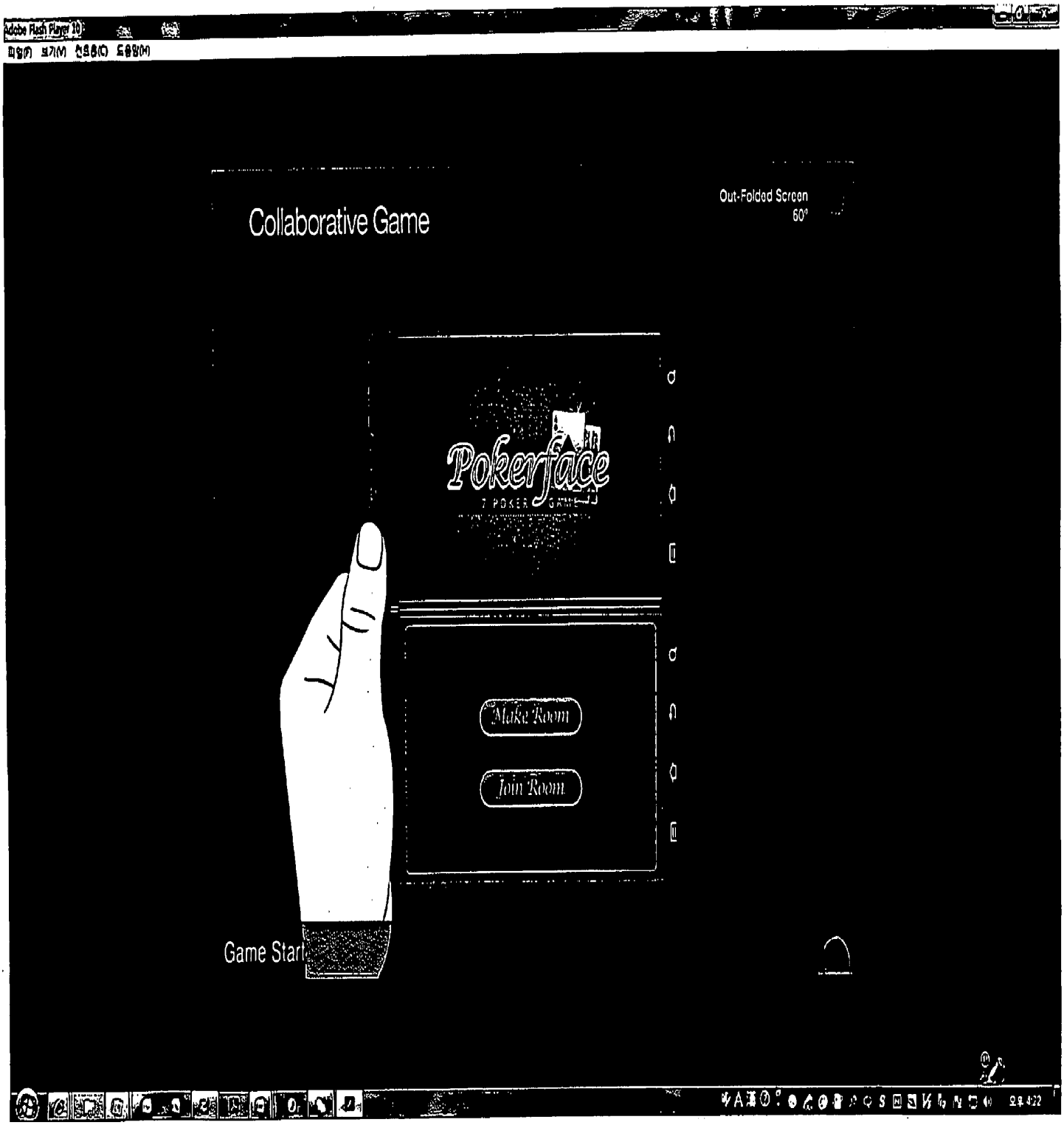
Copied from 13370939 on 05/11/2012



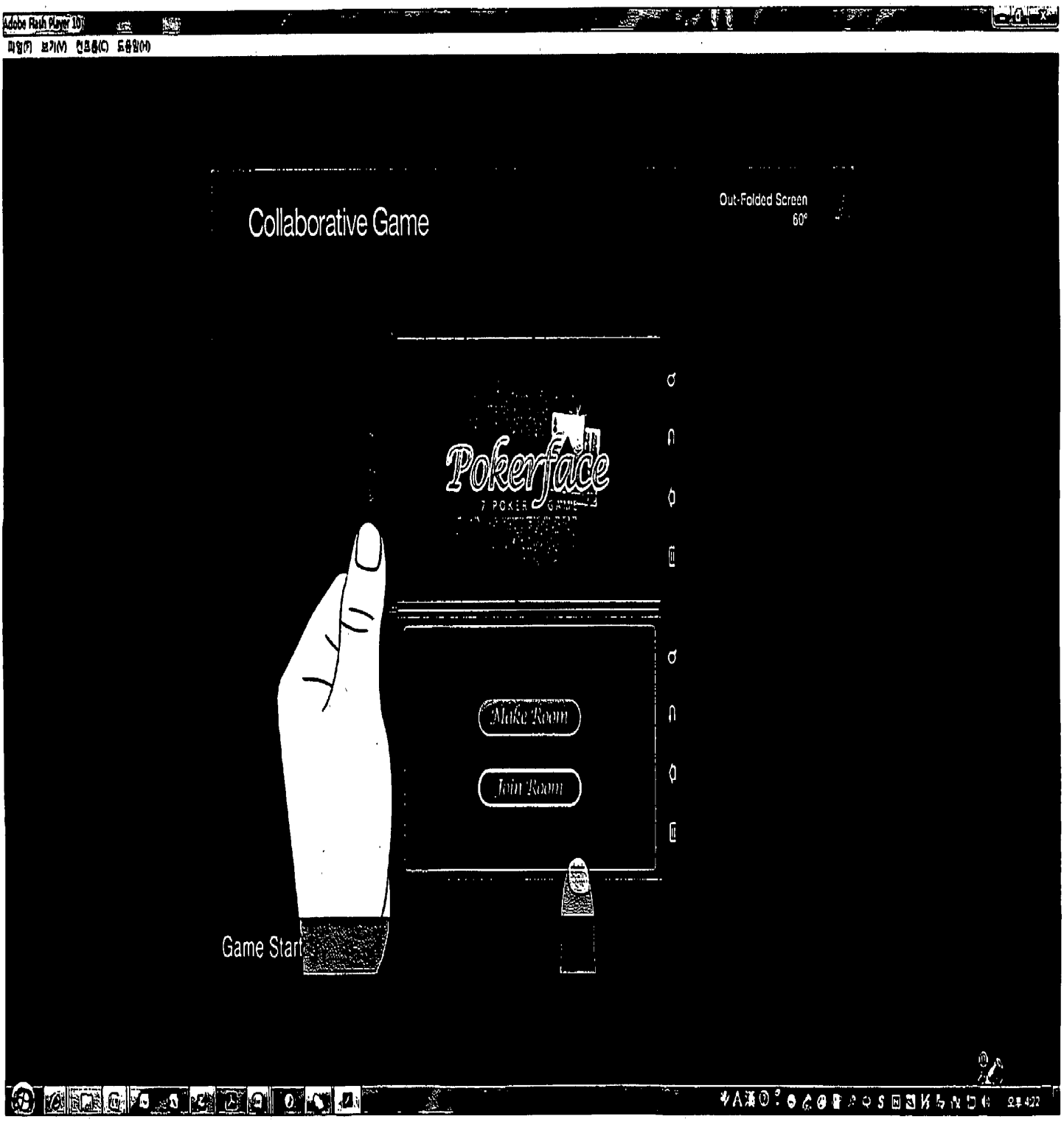
Copied from 13370939 on 05/11/2012



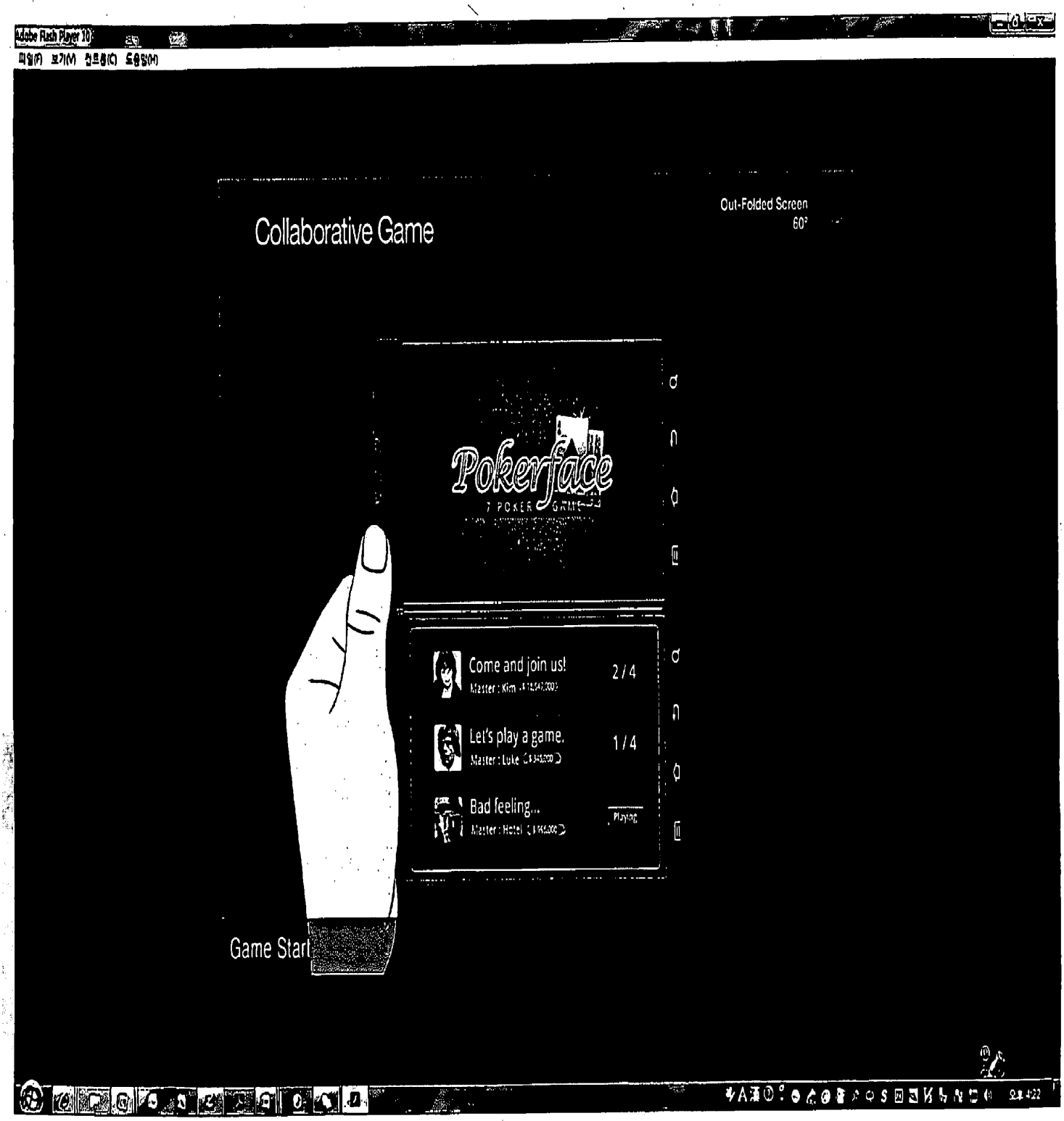
Copied from 13370939 on 05/11/2012



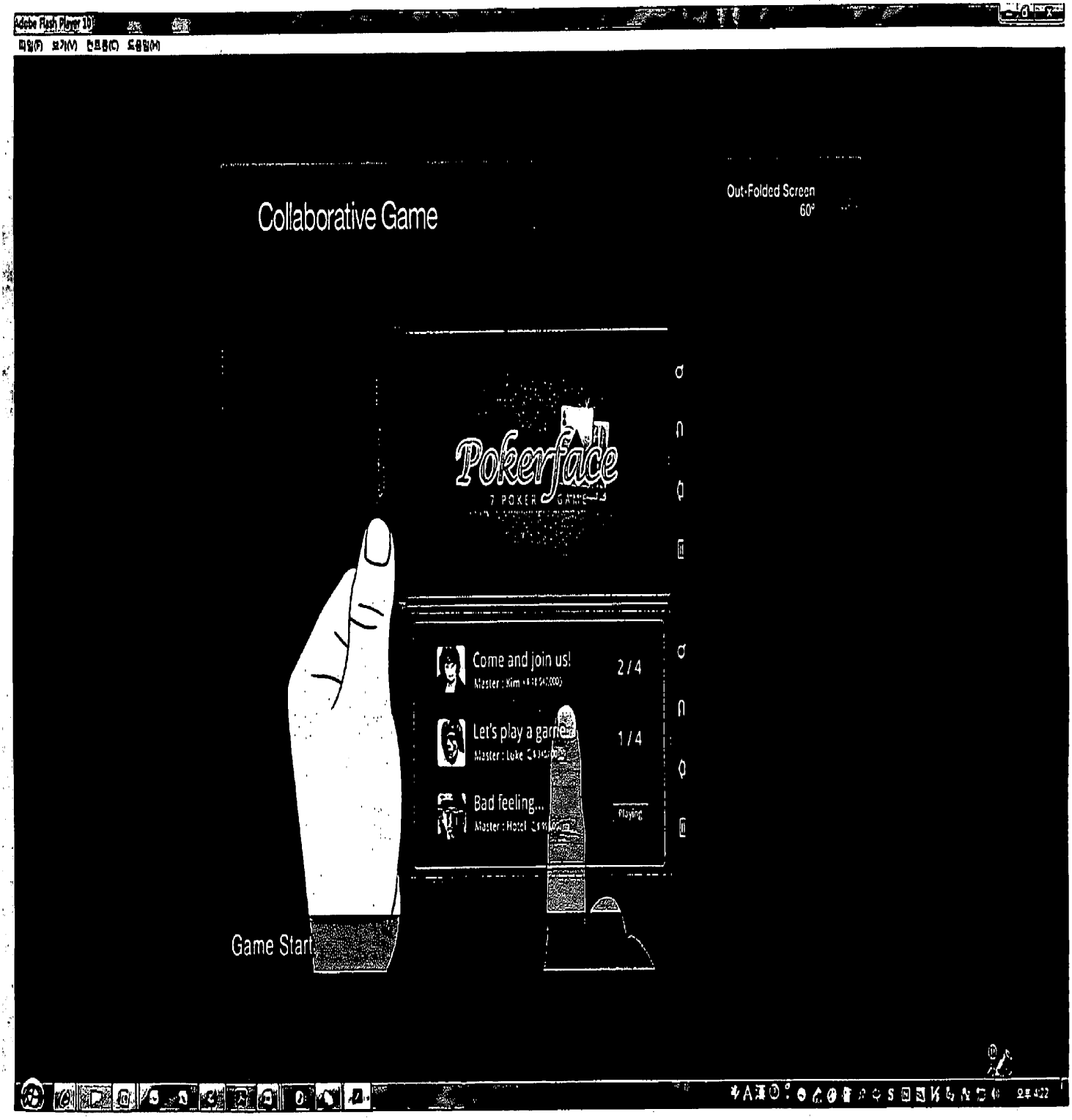
Copied from 13370939 on 05/11/2012



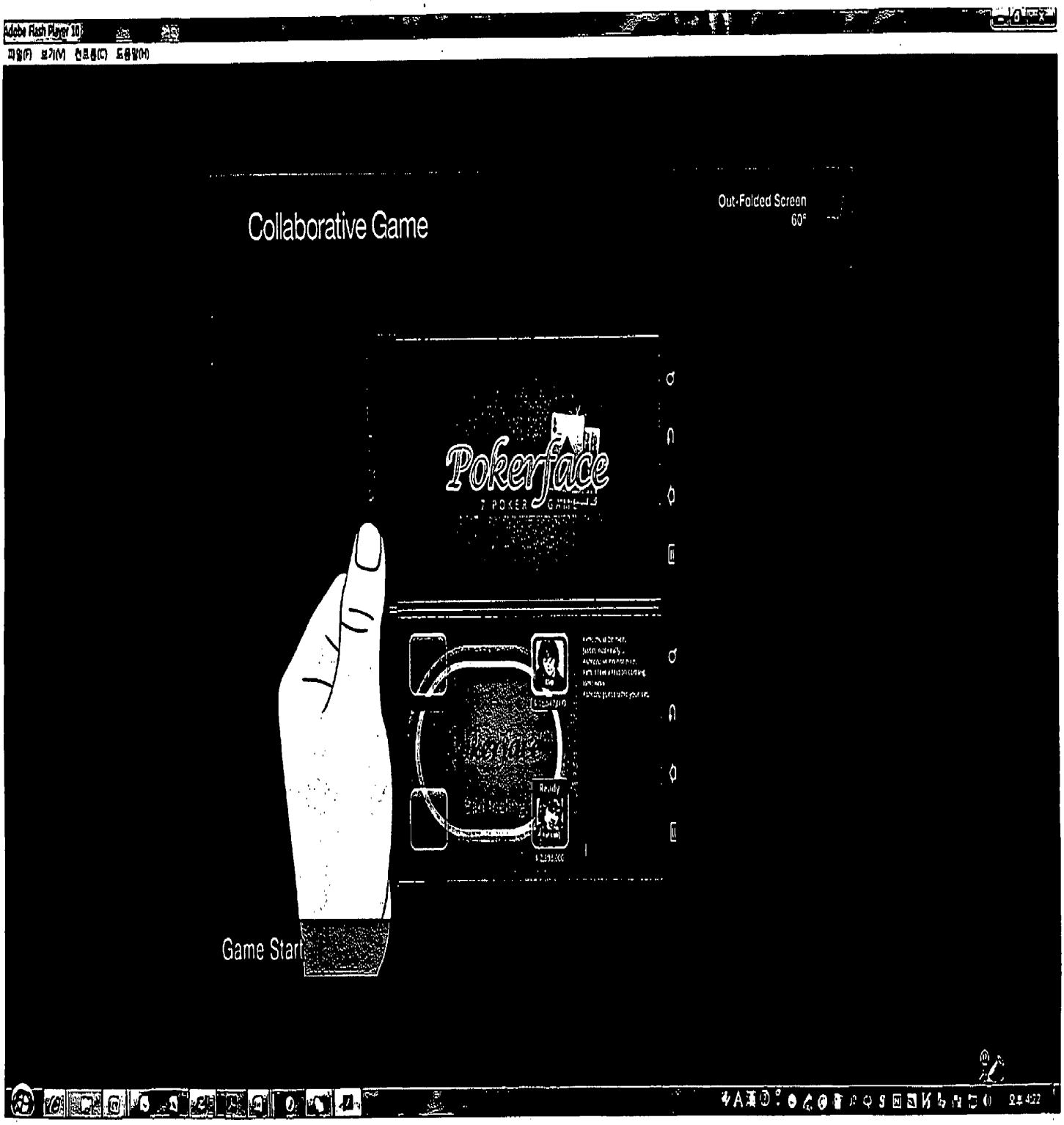
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



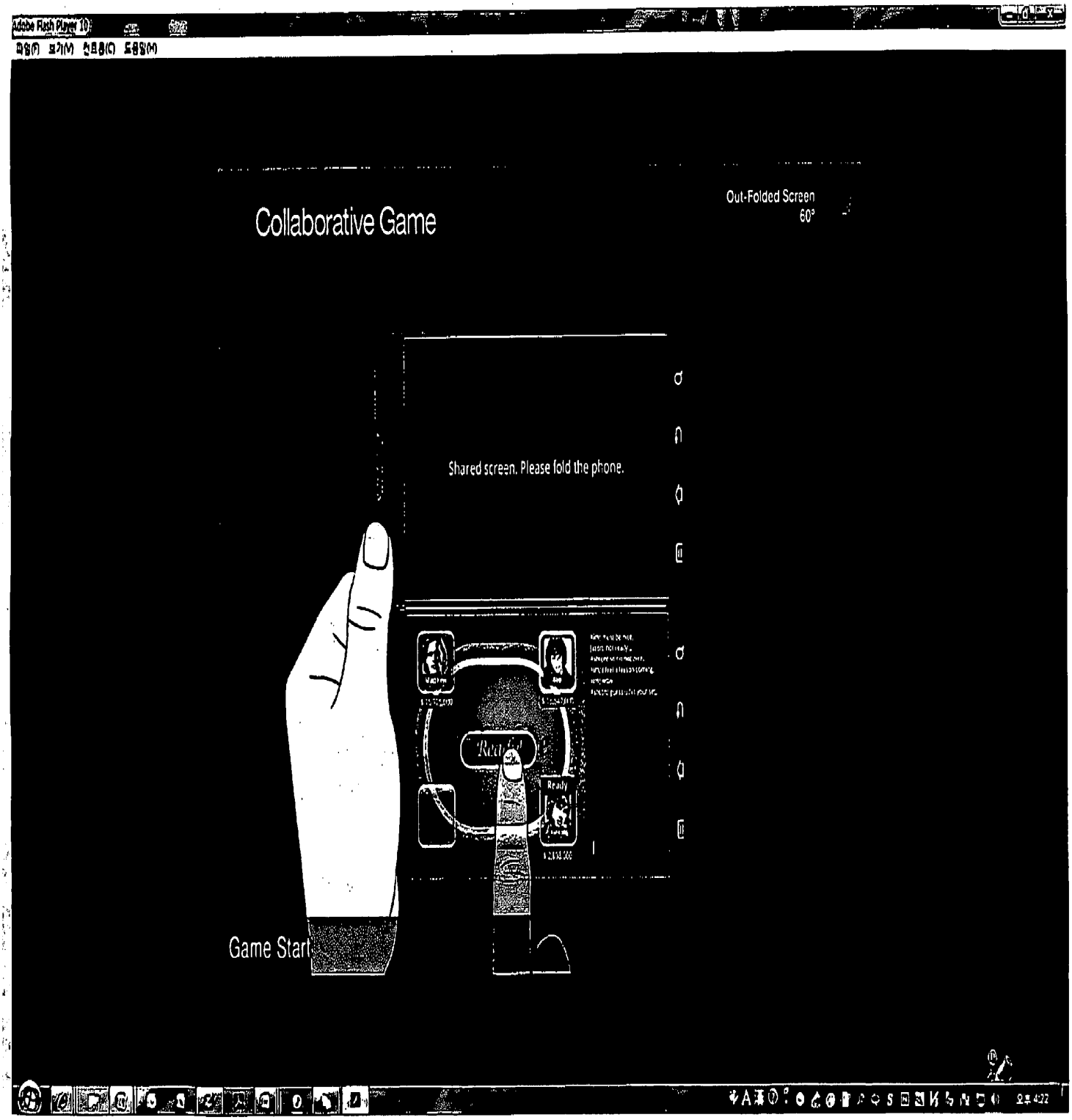
Copied from 13370939 on 05/11/2012



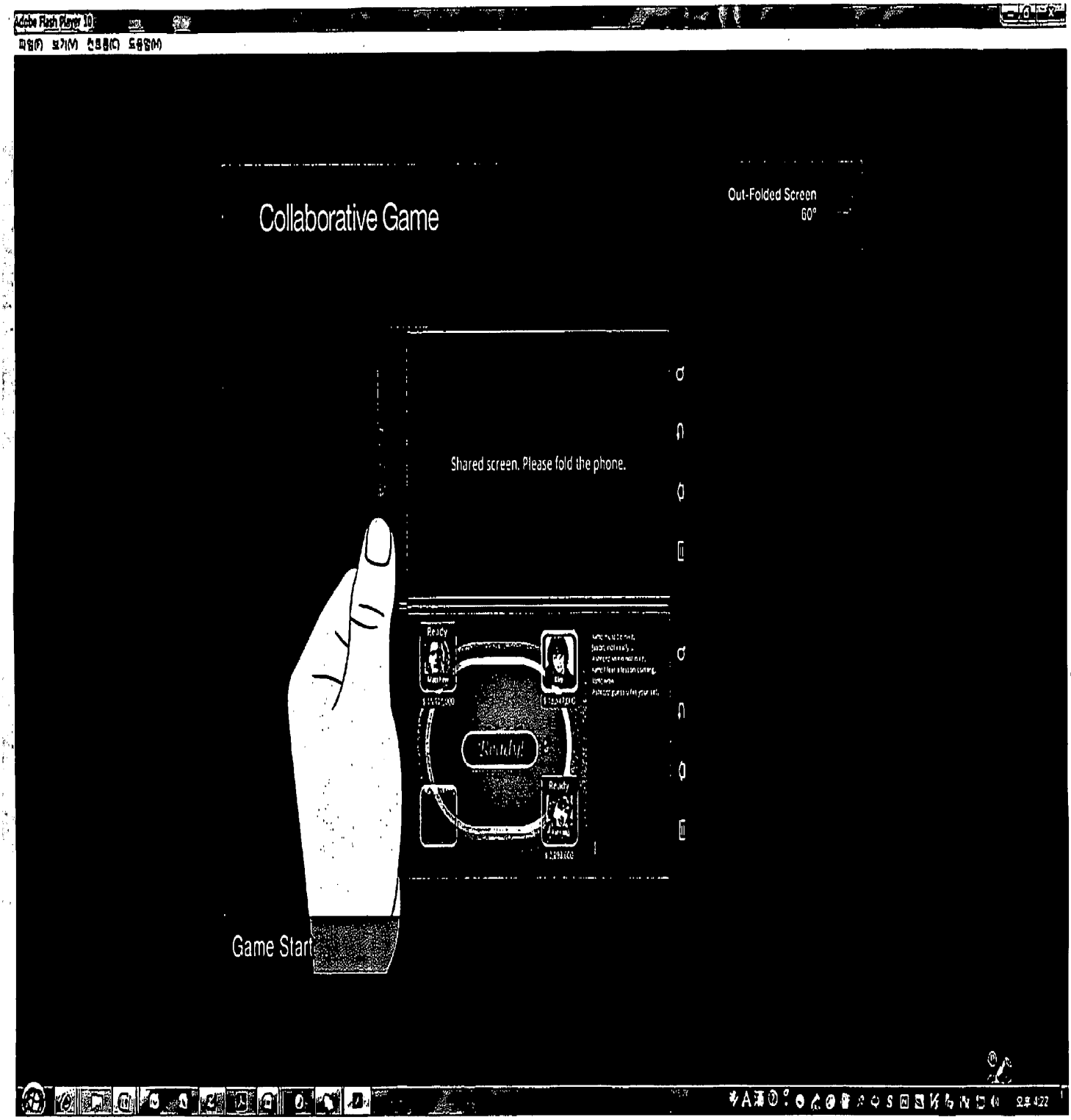
Copied from 13370939 on 05/11/2012



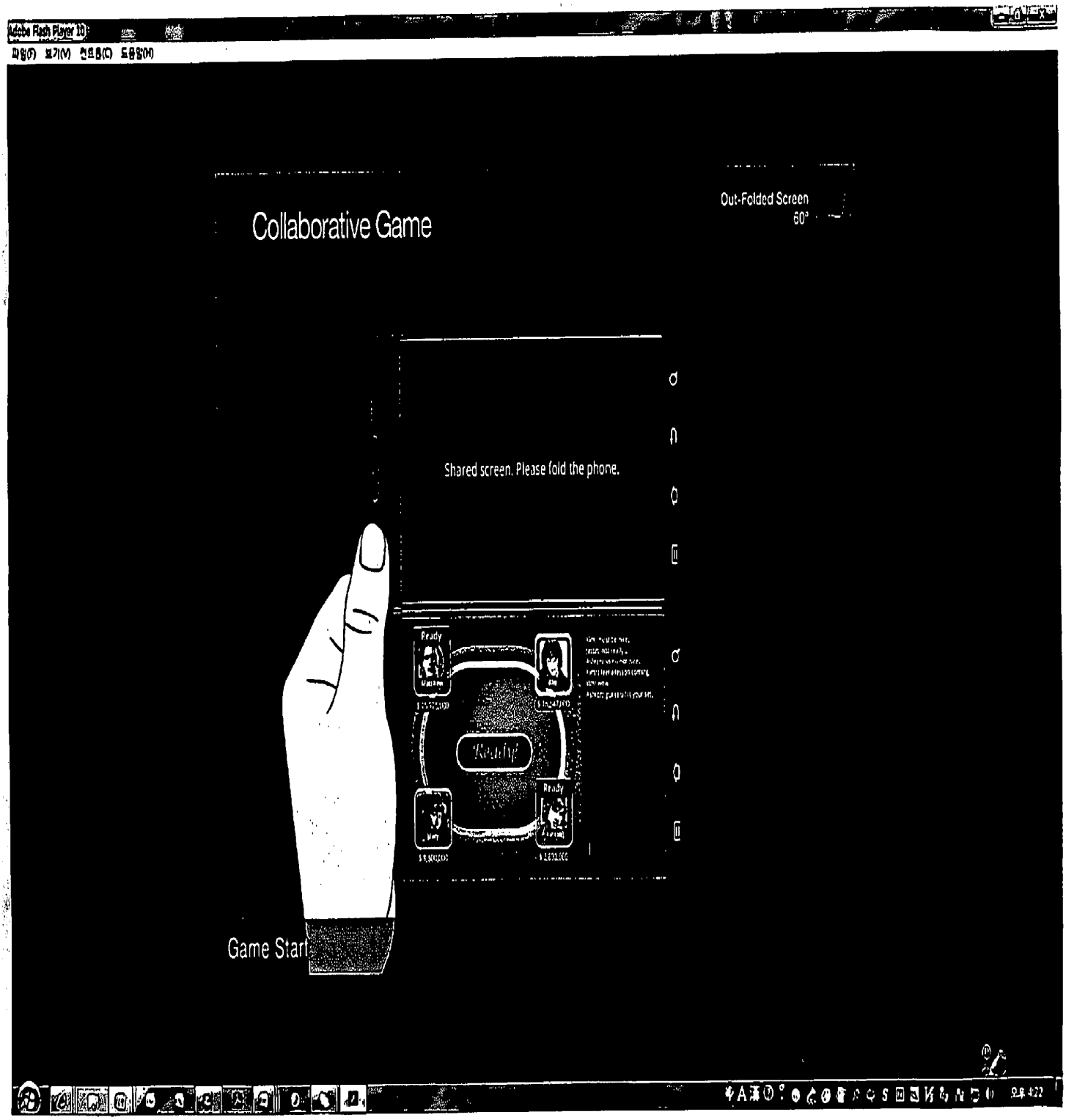
Copied from 13370939 on 05/11/2012



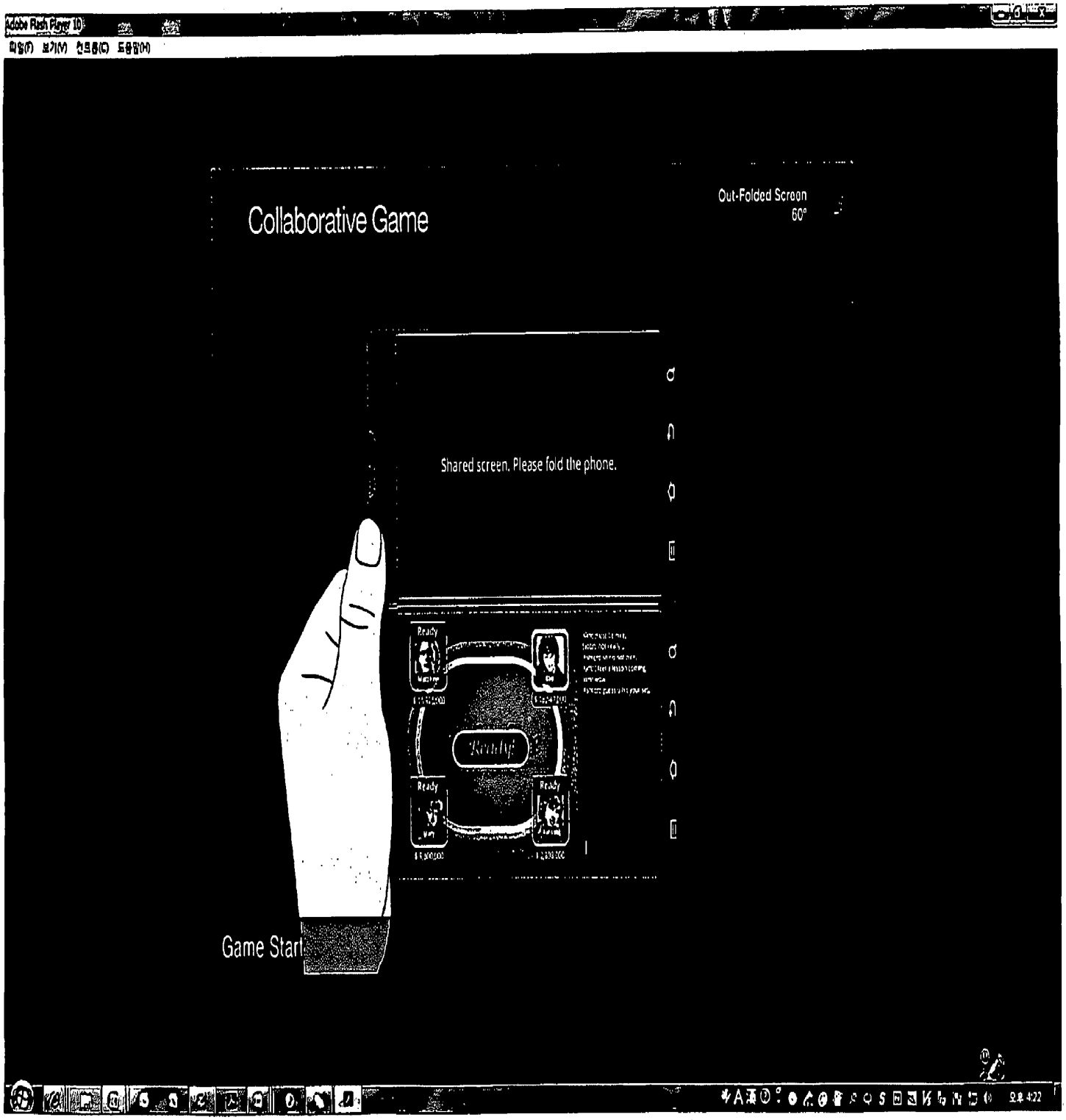
Copied from 13370939 on 05/11/2012



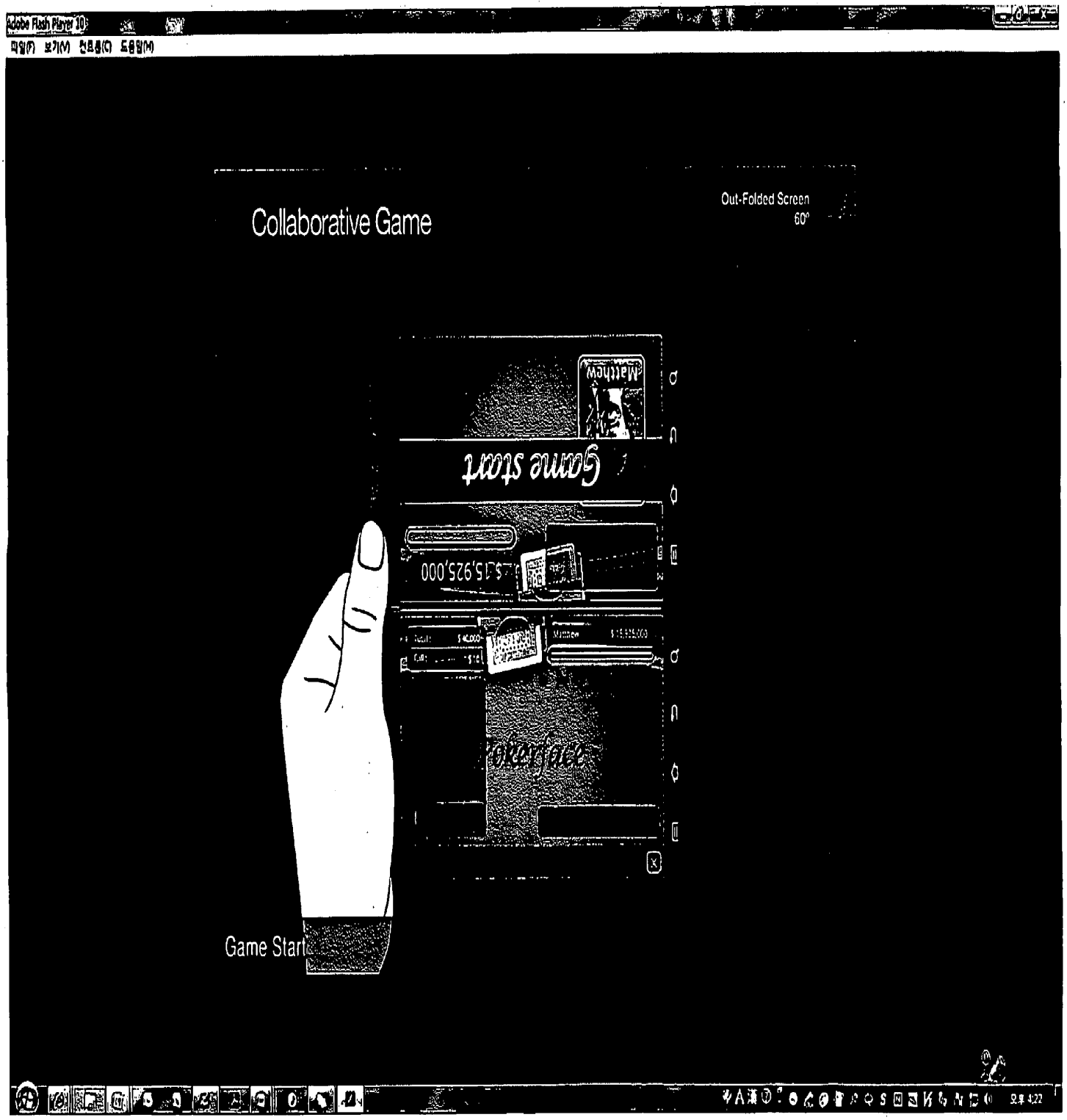
Copied from 13370939 on 05/11/2012



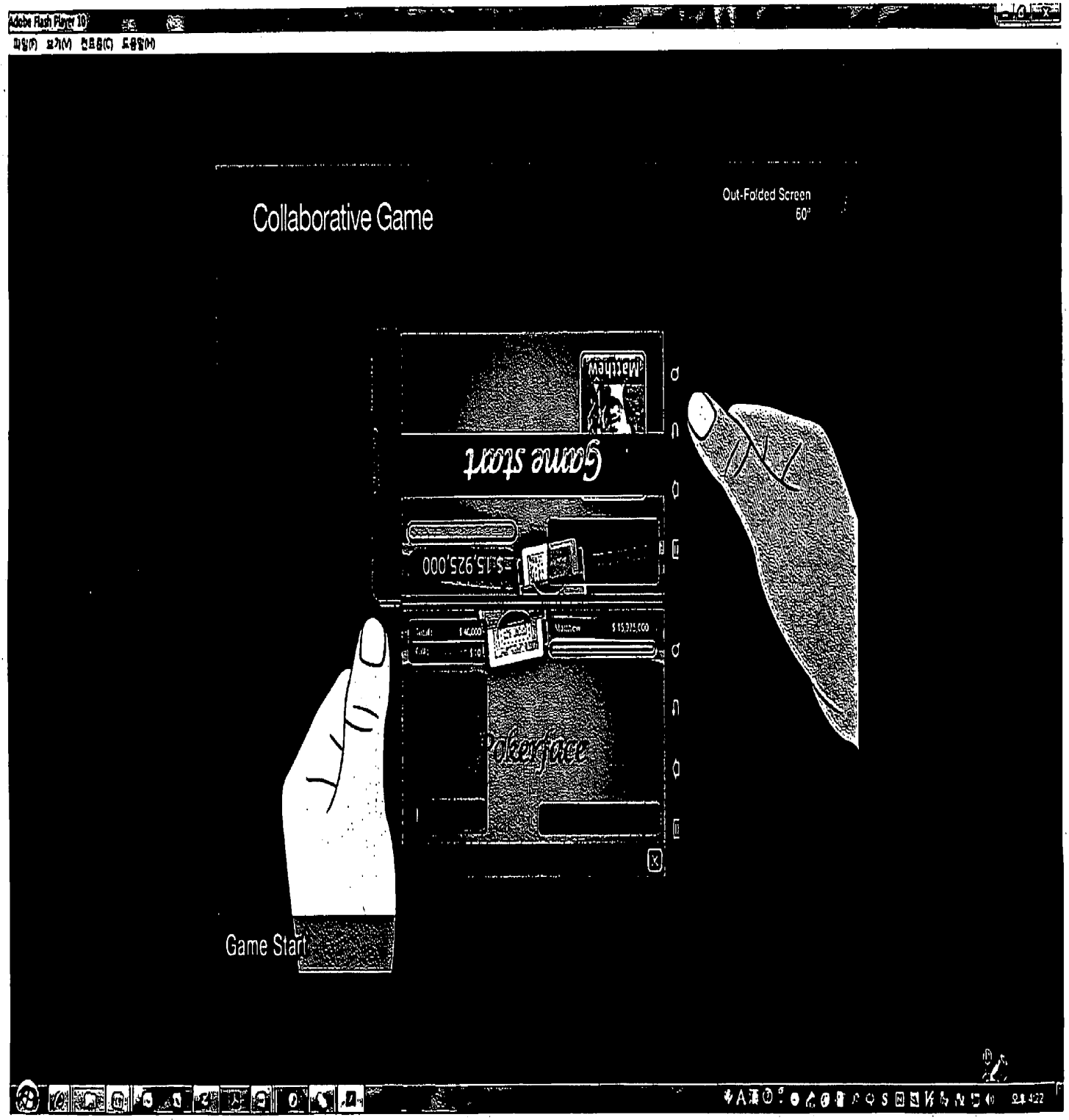
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

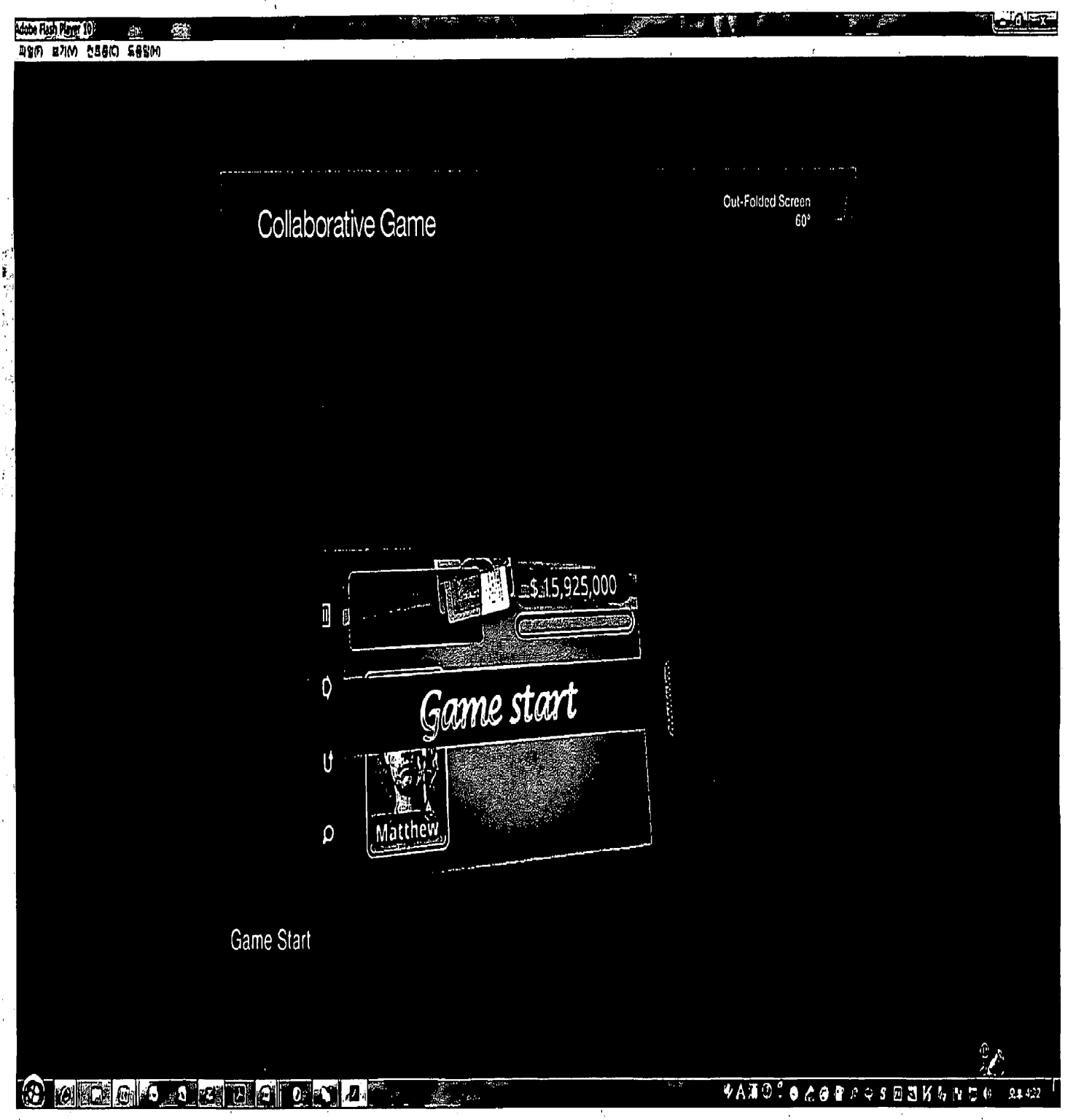
Collaborative Game

Out-Folded Screen
60°



Game Start

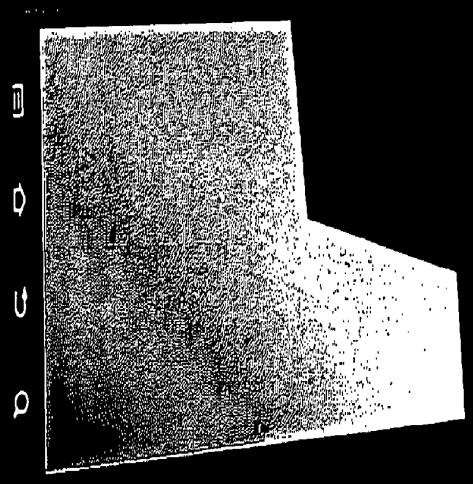
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

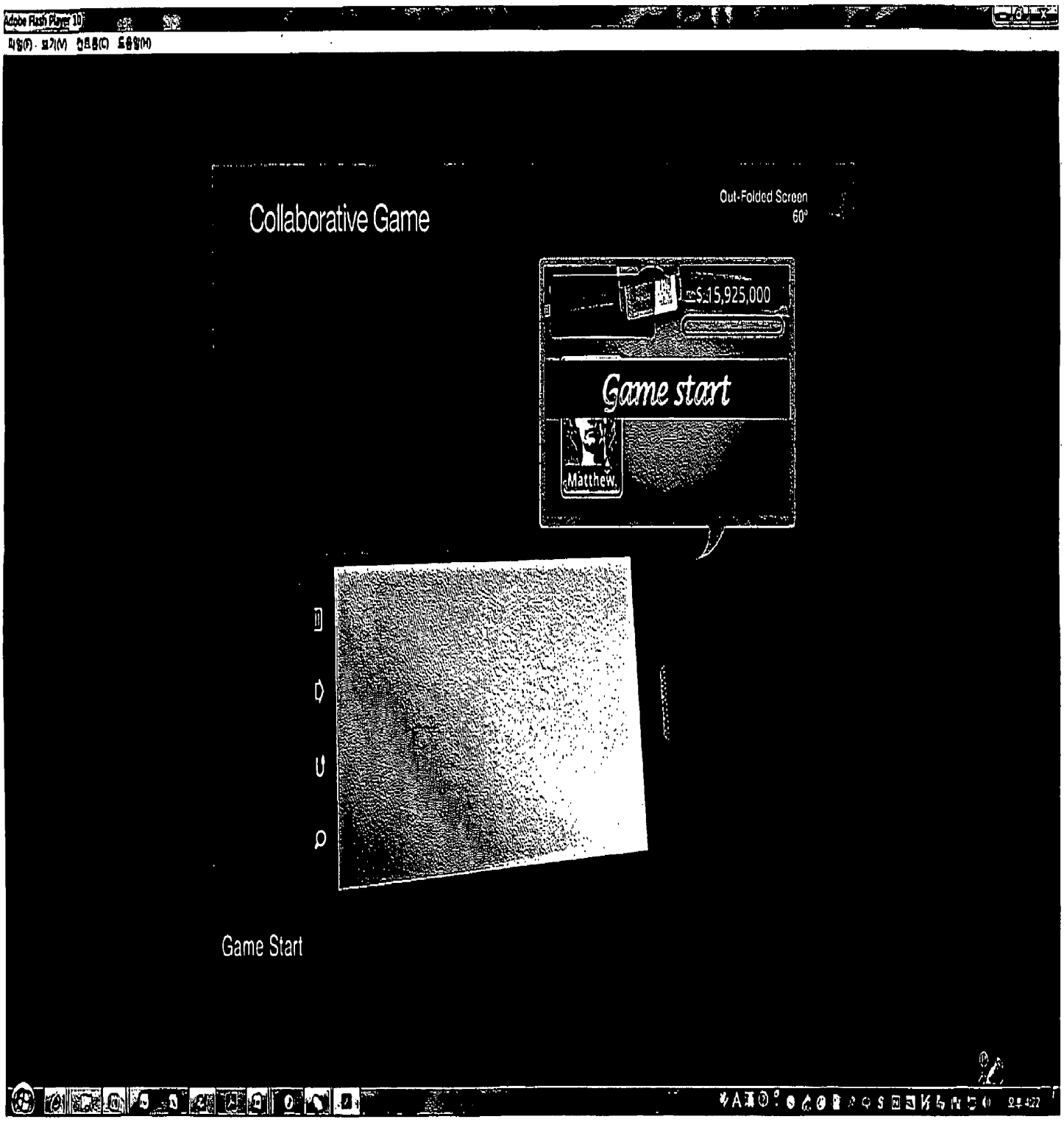
Collaborative Game

Out-Folded Screen
60°

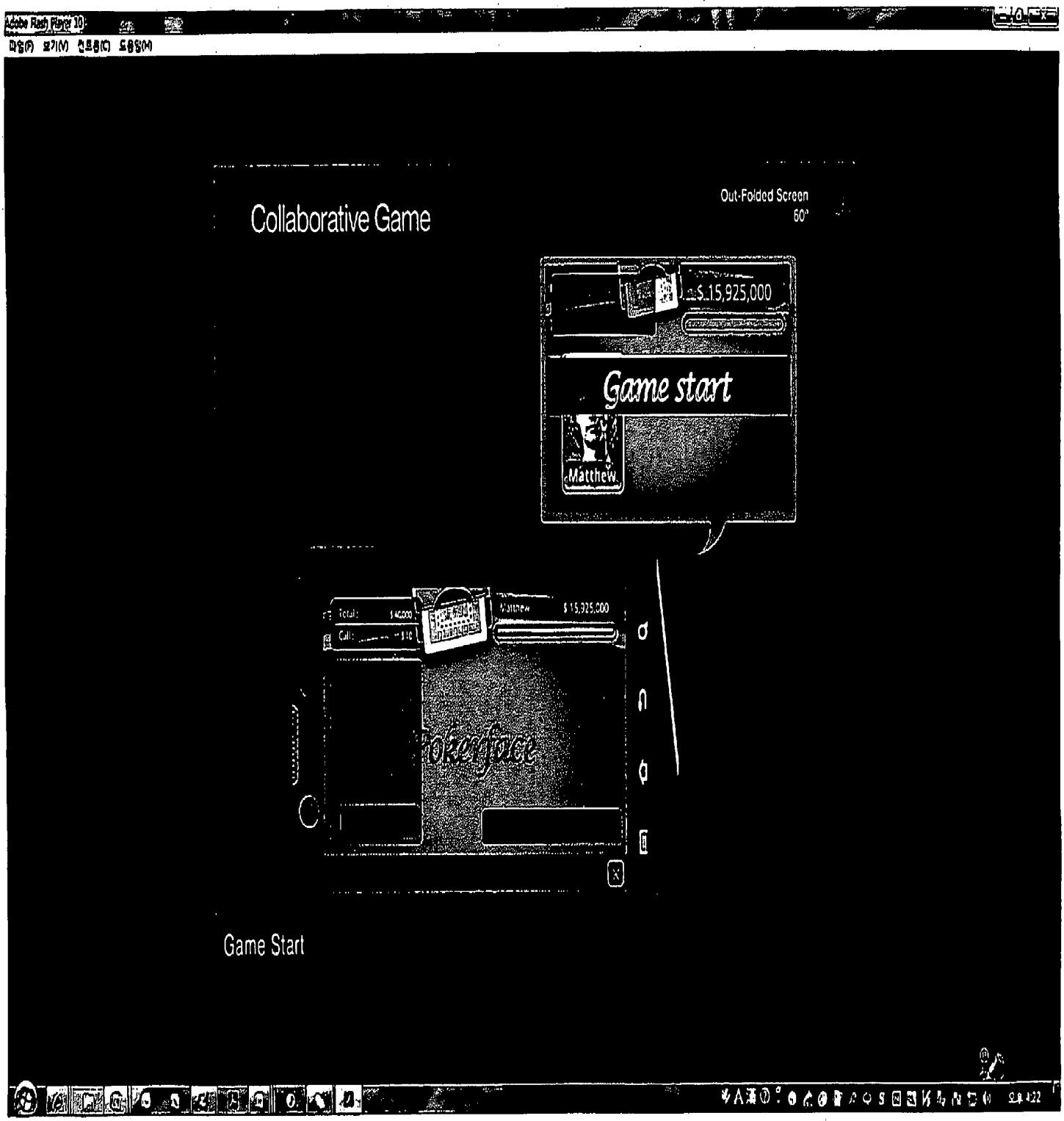


Game Start

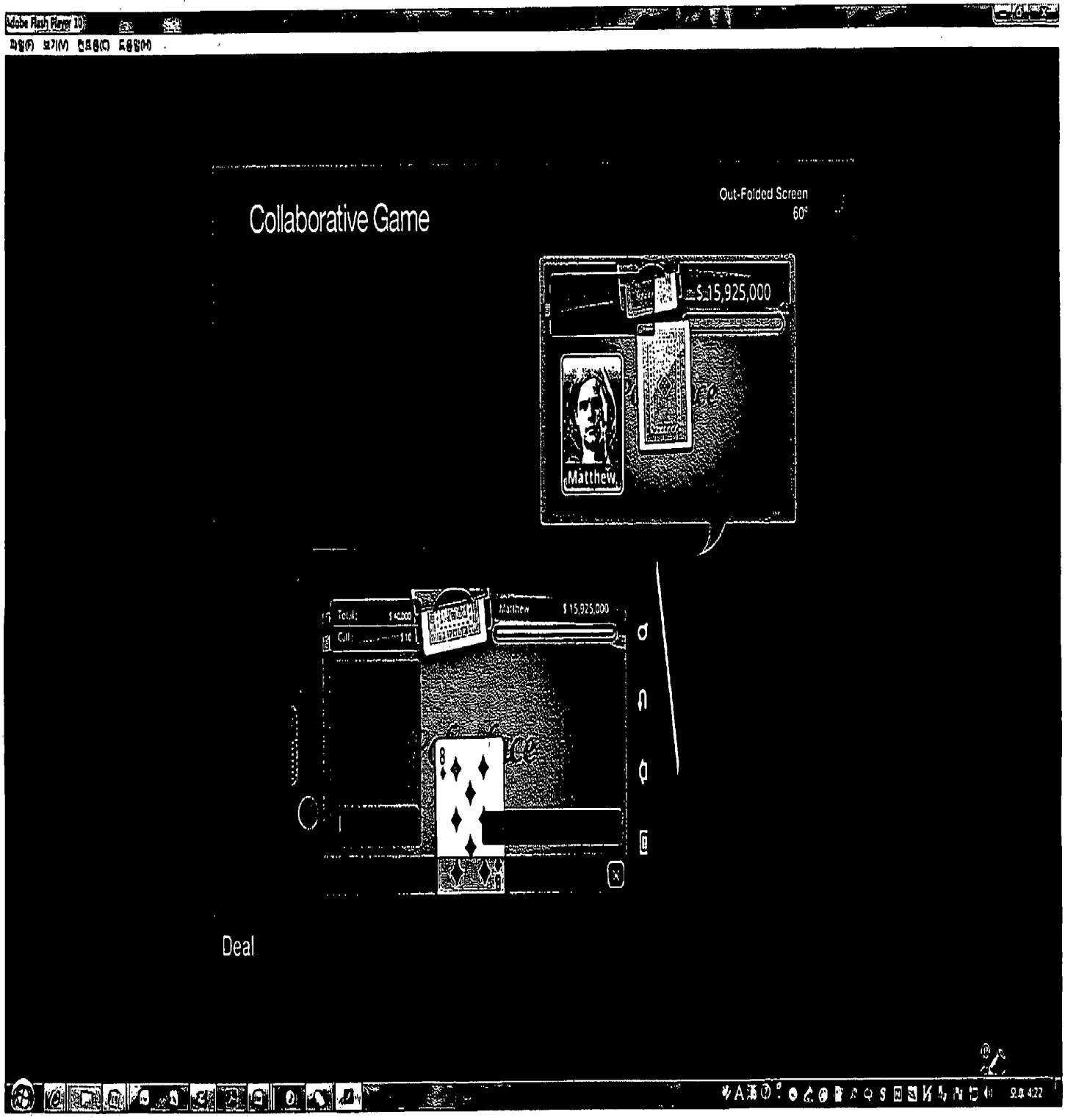
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

Collaborative Game

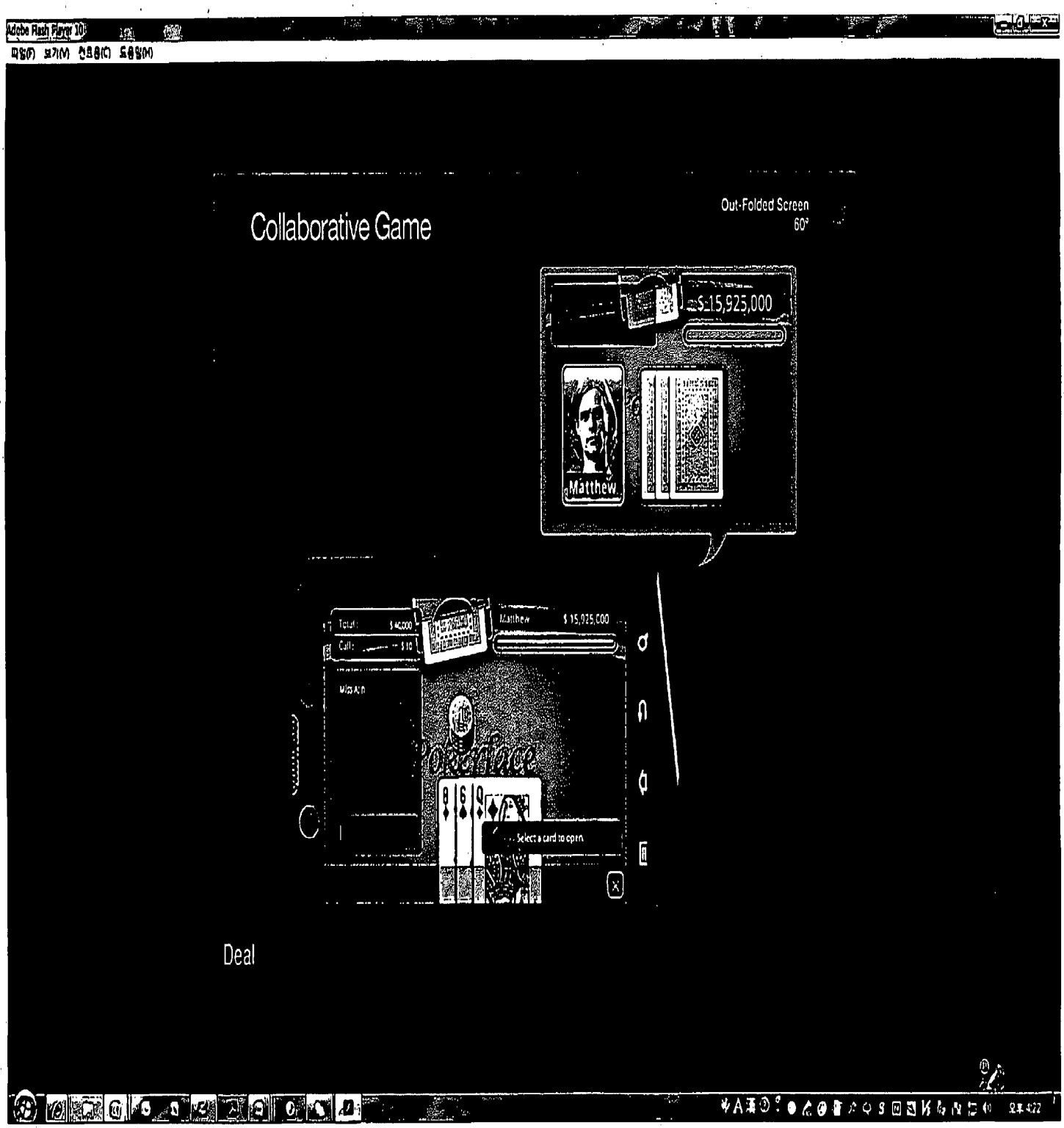
Out-Folded Screen
60°



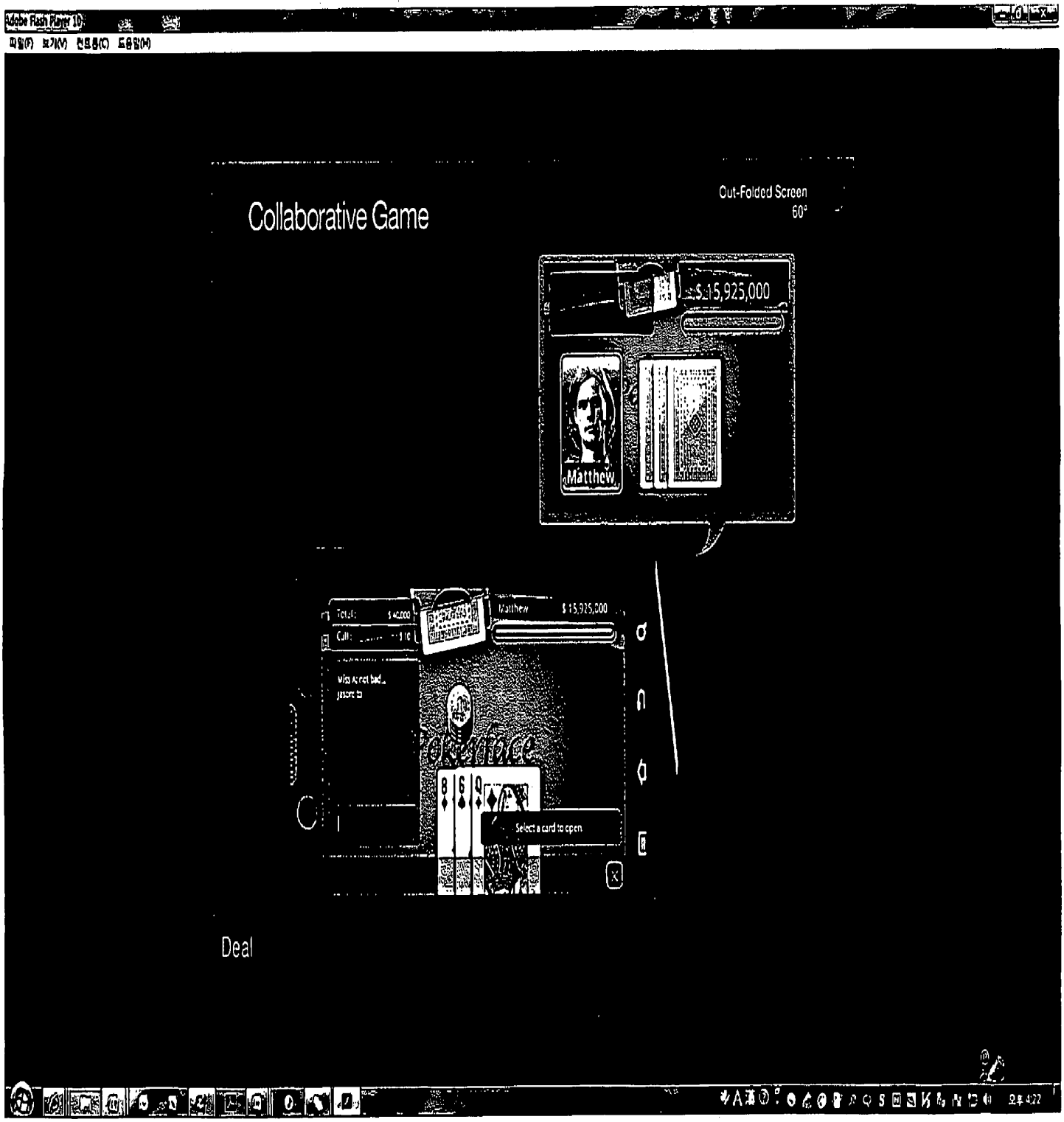


Deal

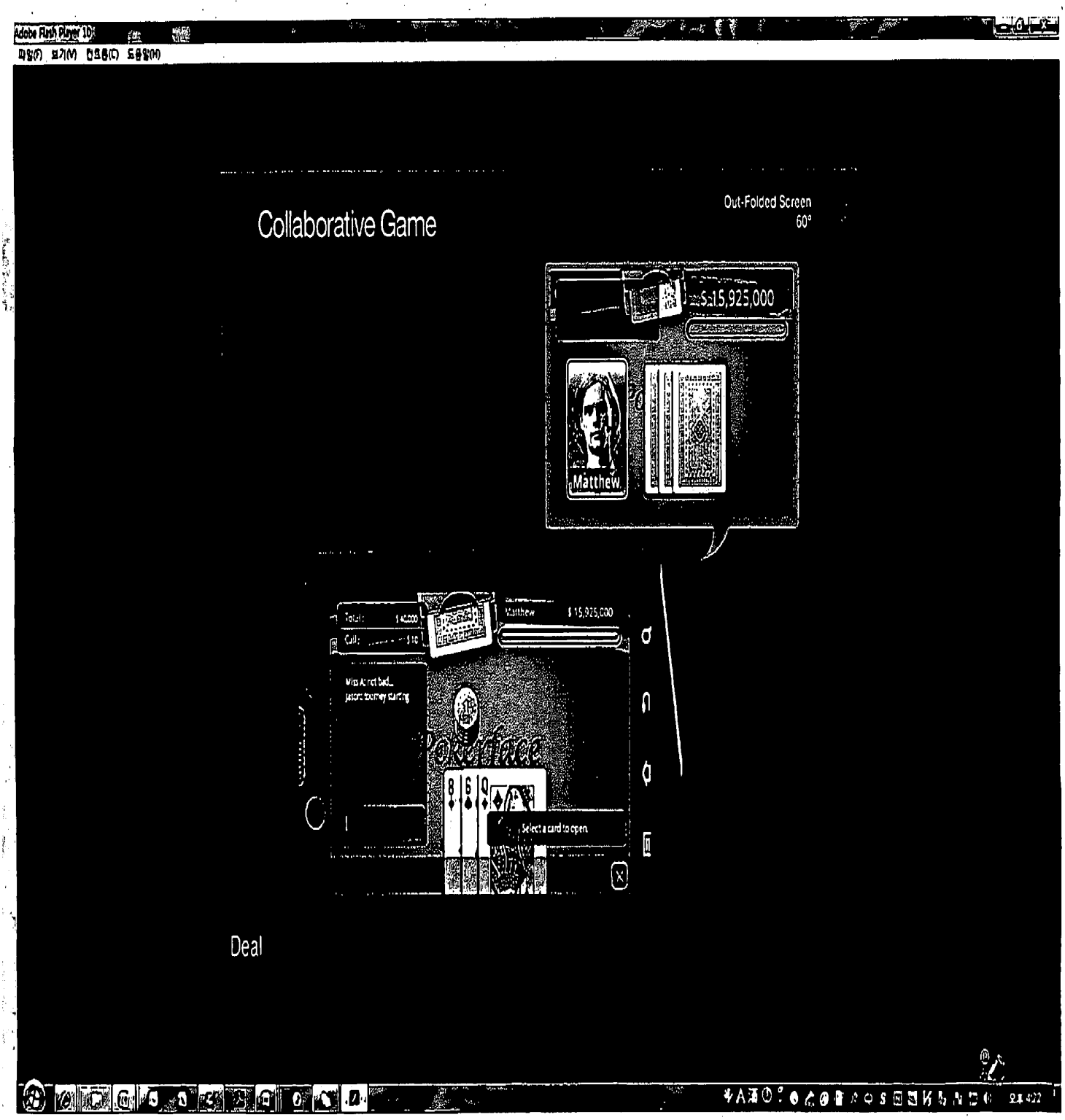
Copied from 13370939 on 05/11/2012



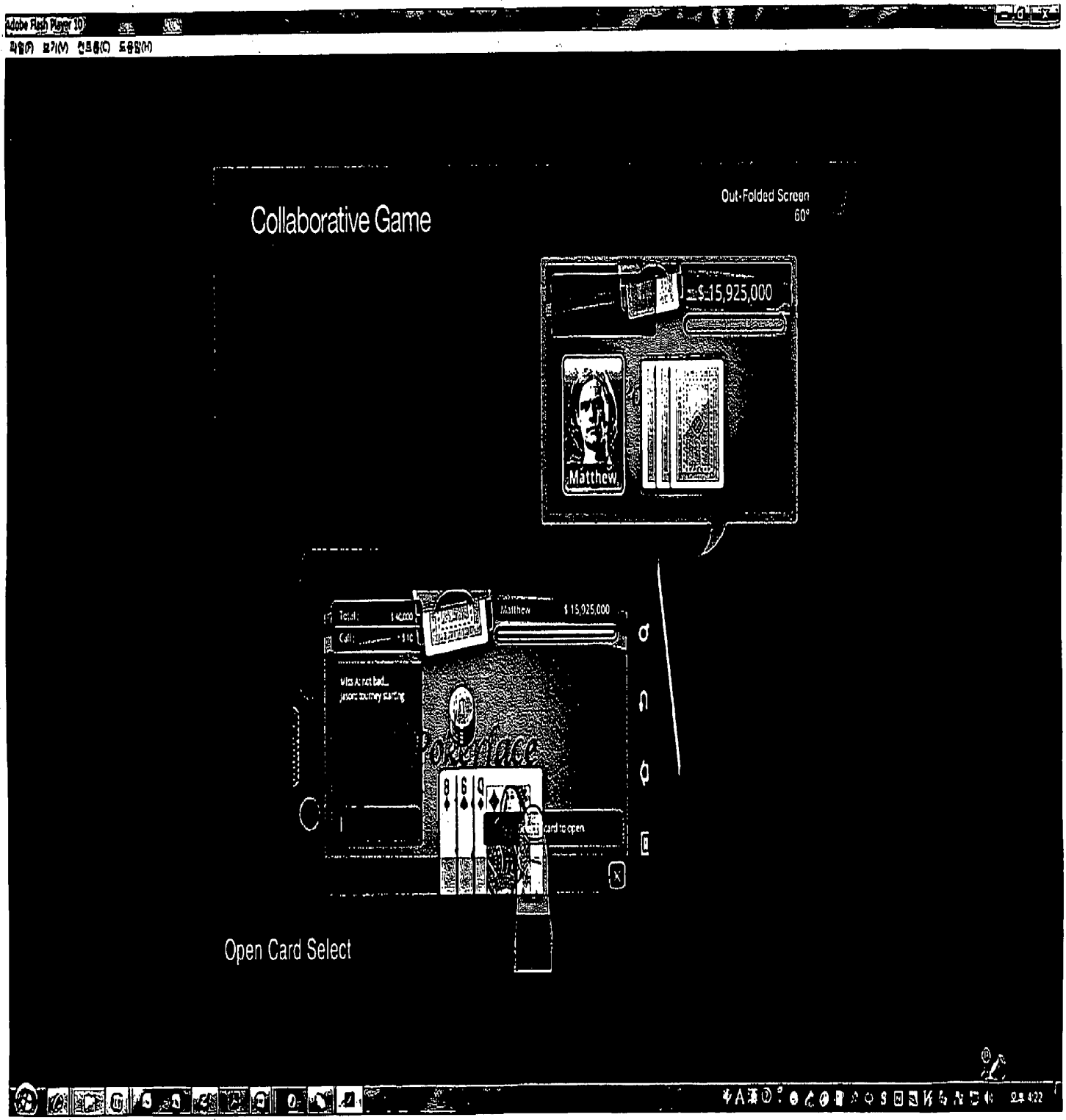
Copied from 13370939 on 05/11/2012



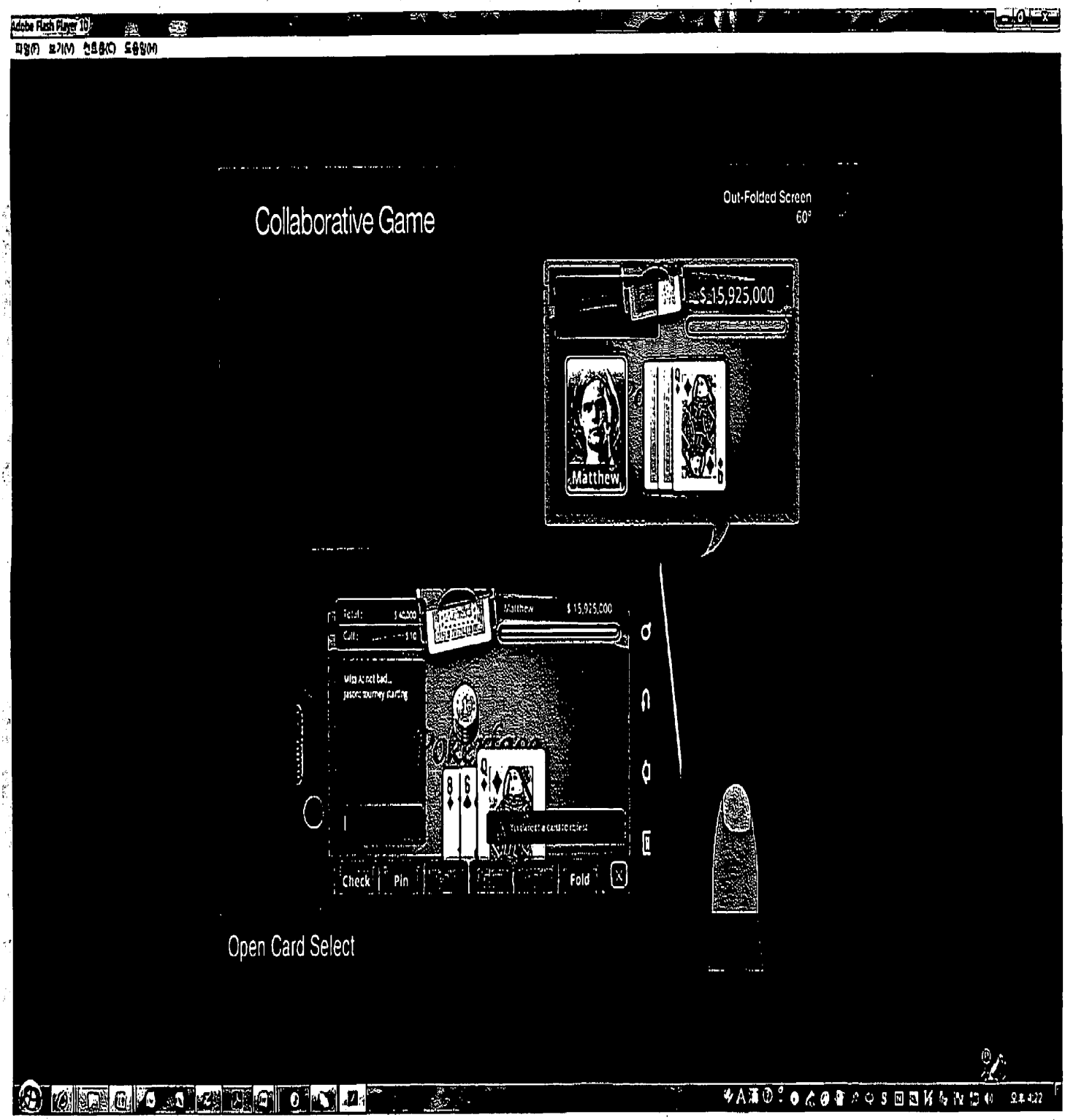
Copied from 13370939 on 05/11/2012



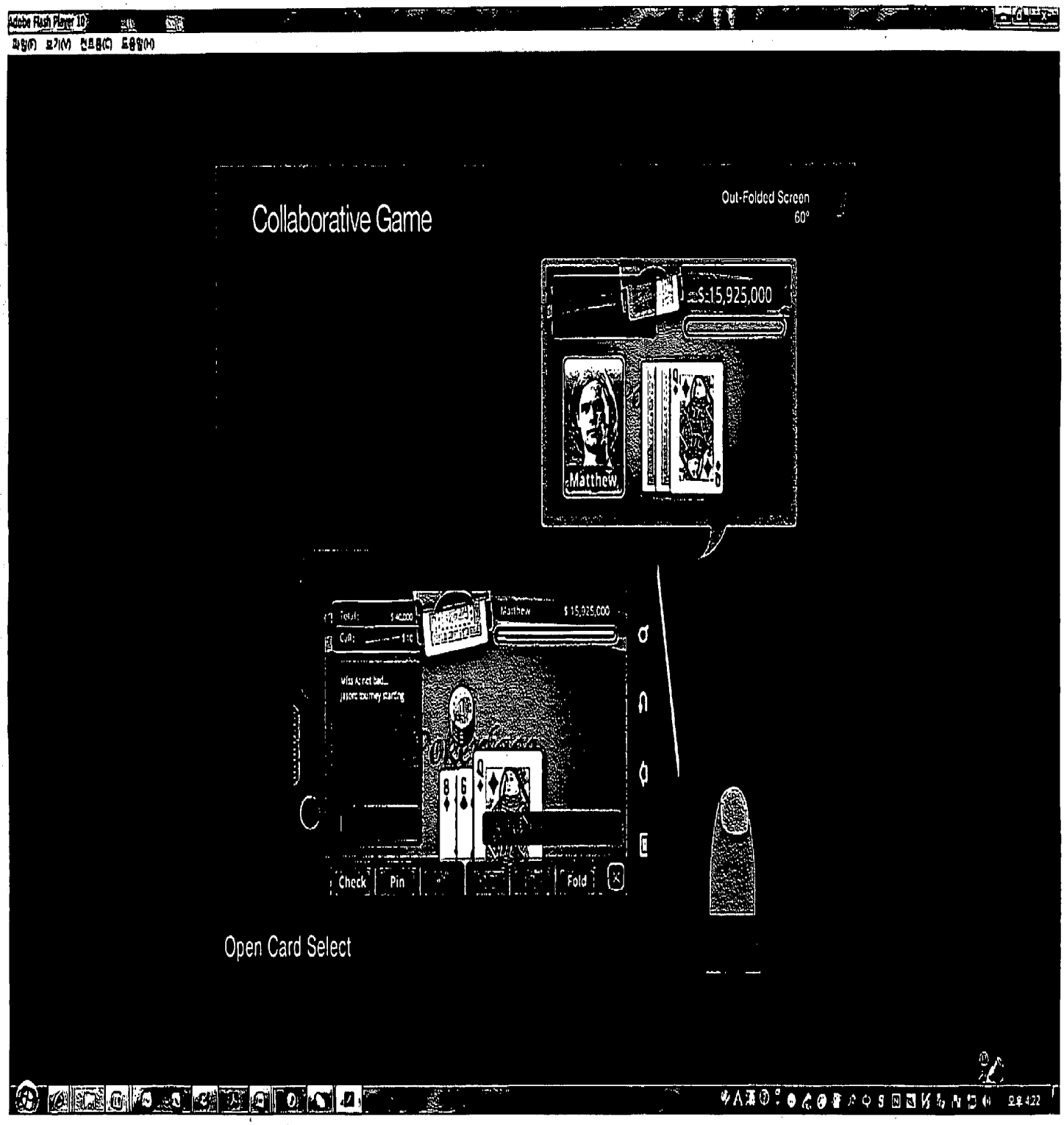
Copied from 13370939 on 05/11/2012



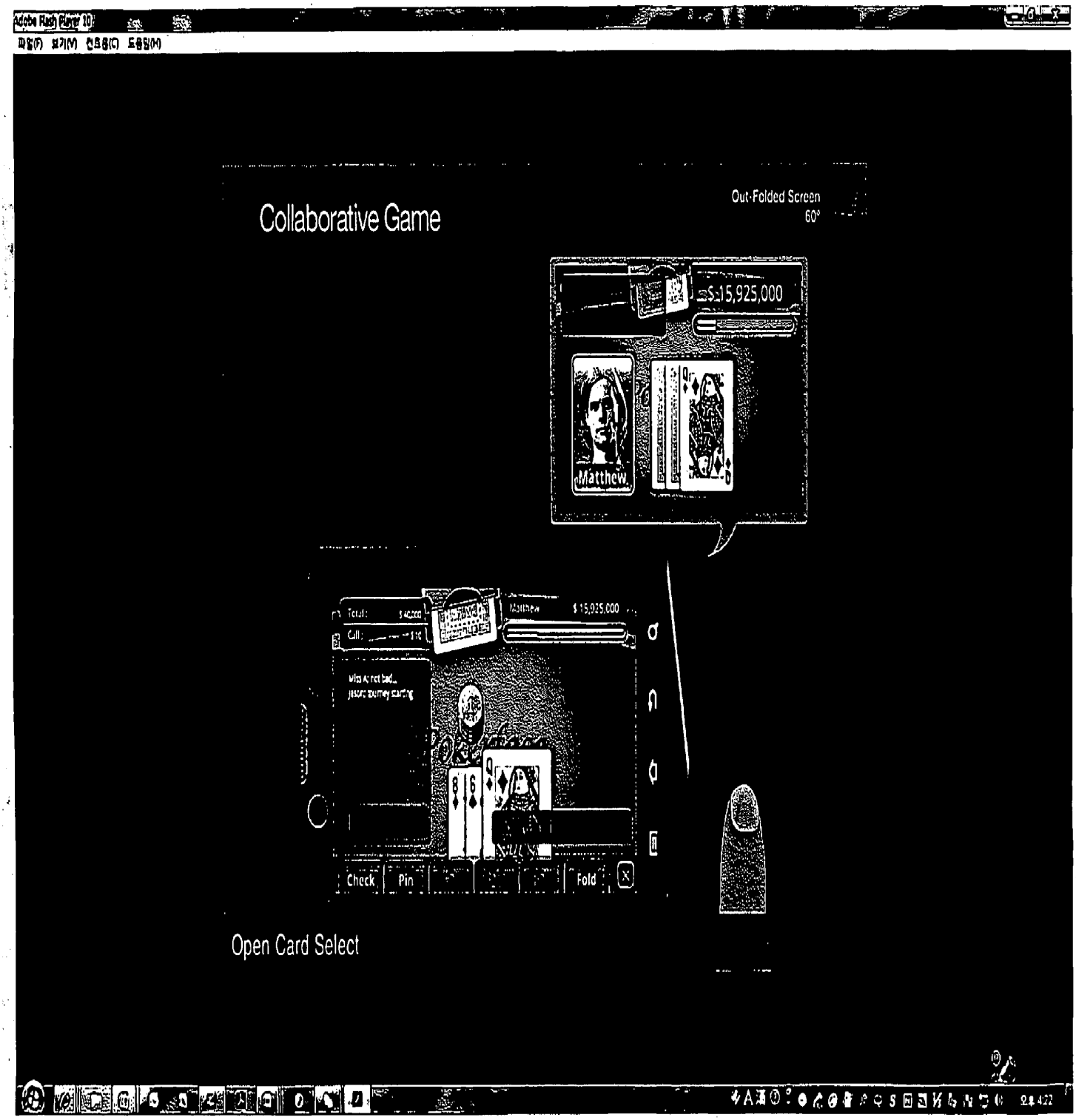
Copied from 13370939 on 05/11/2012



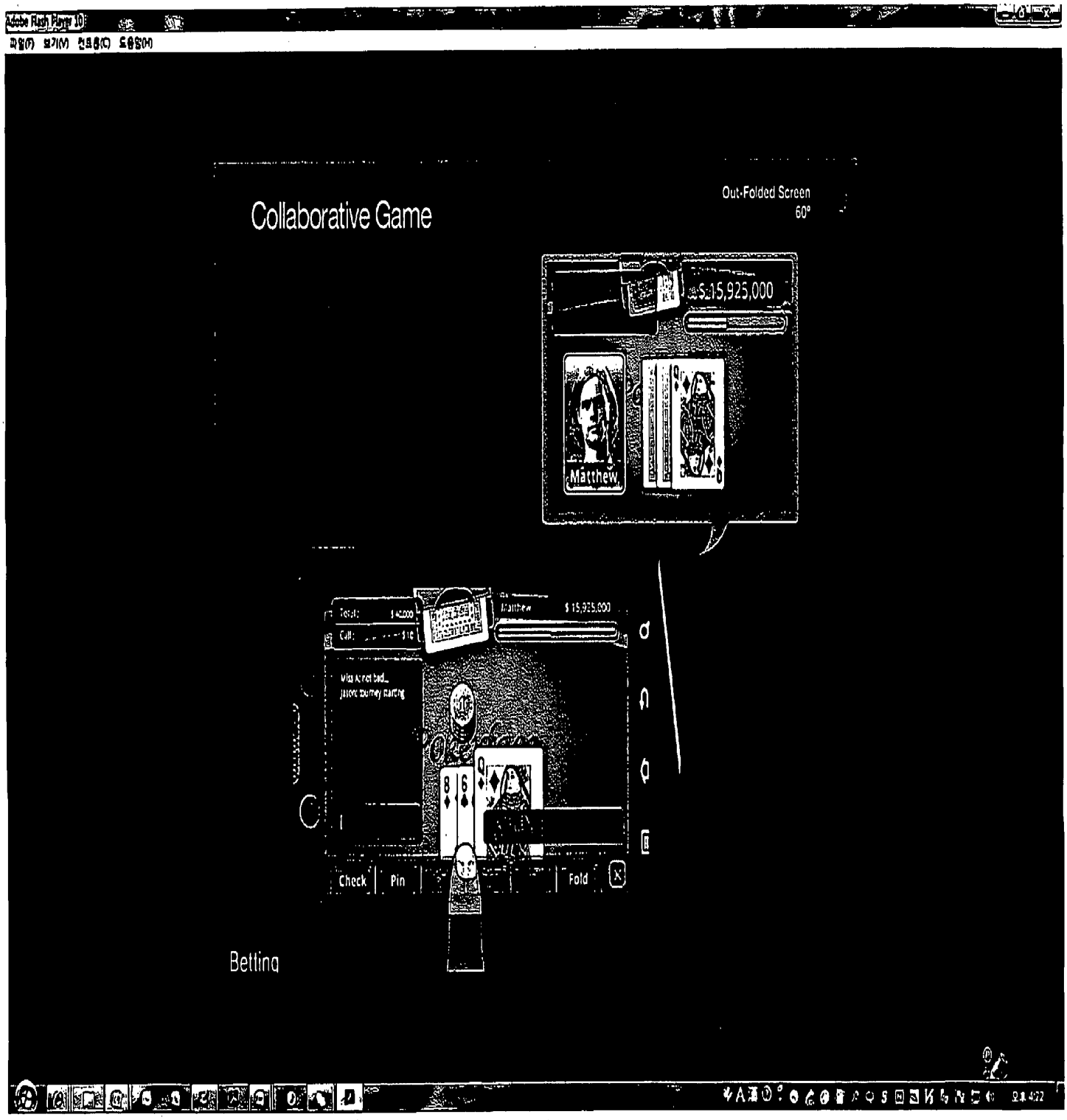
Copied from 13370939 on 05/11/2012



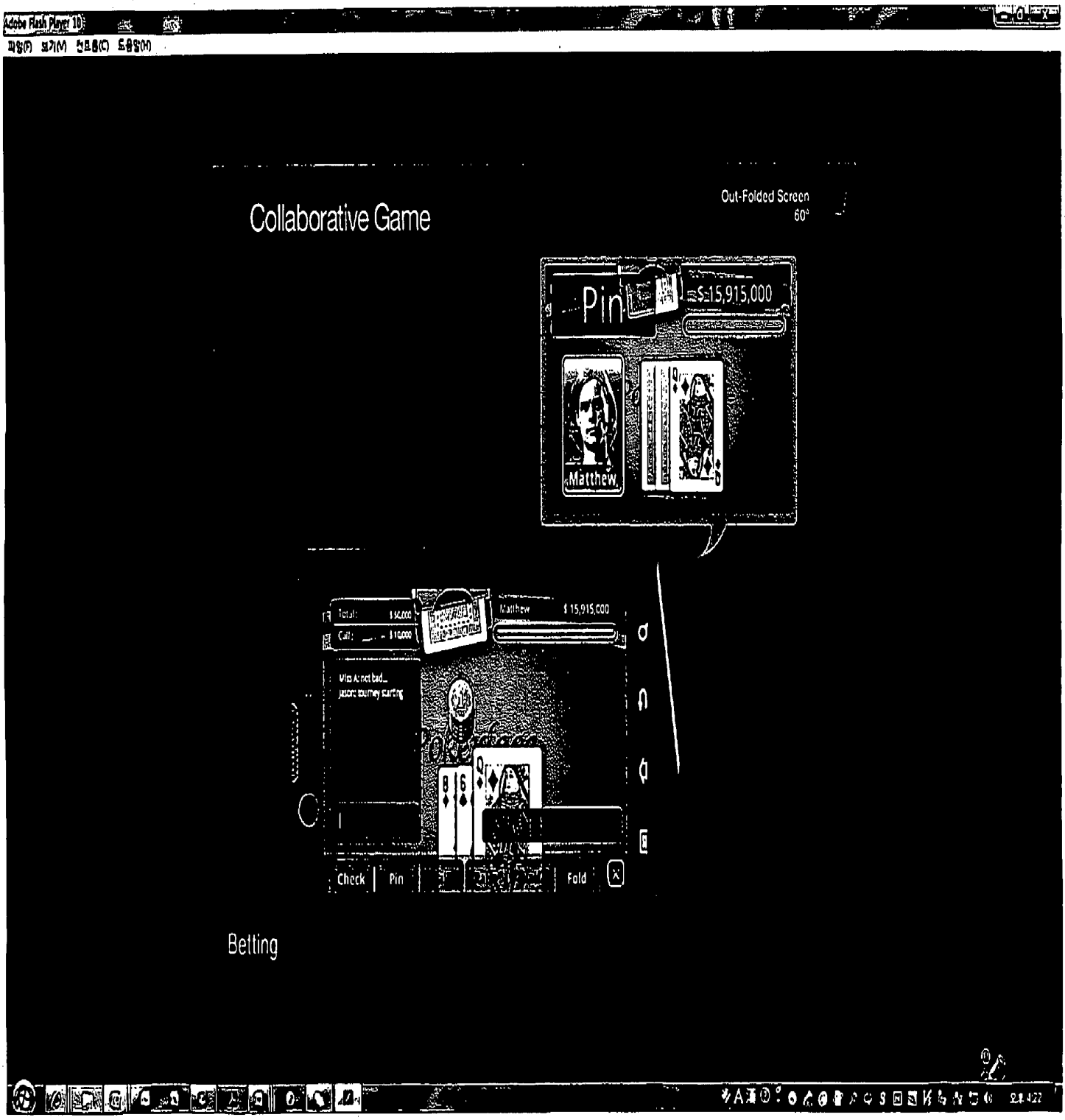
Copied from 13370939 on 05/11/2012



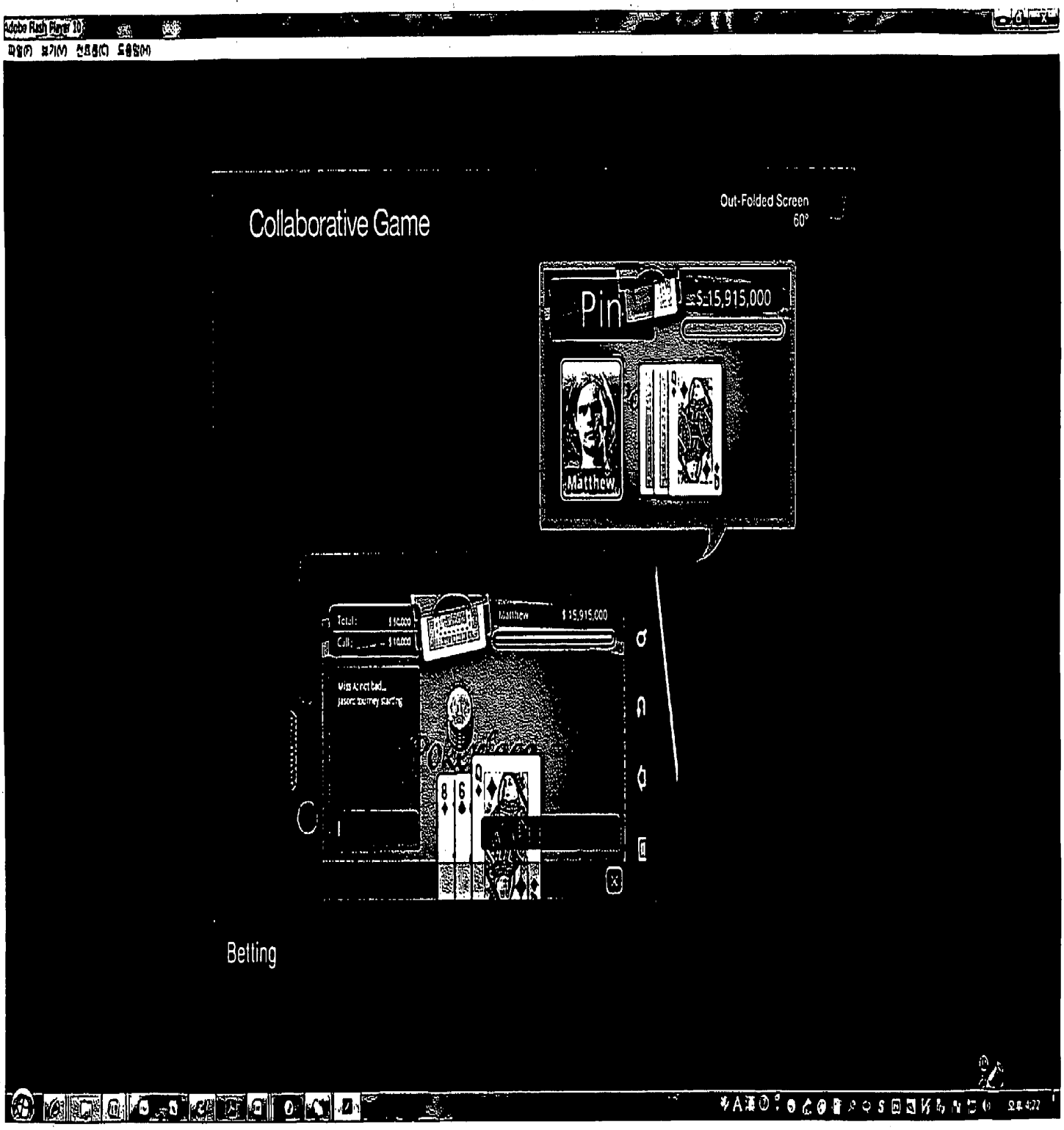
Copied from 13370939 on 05/11/2012



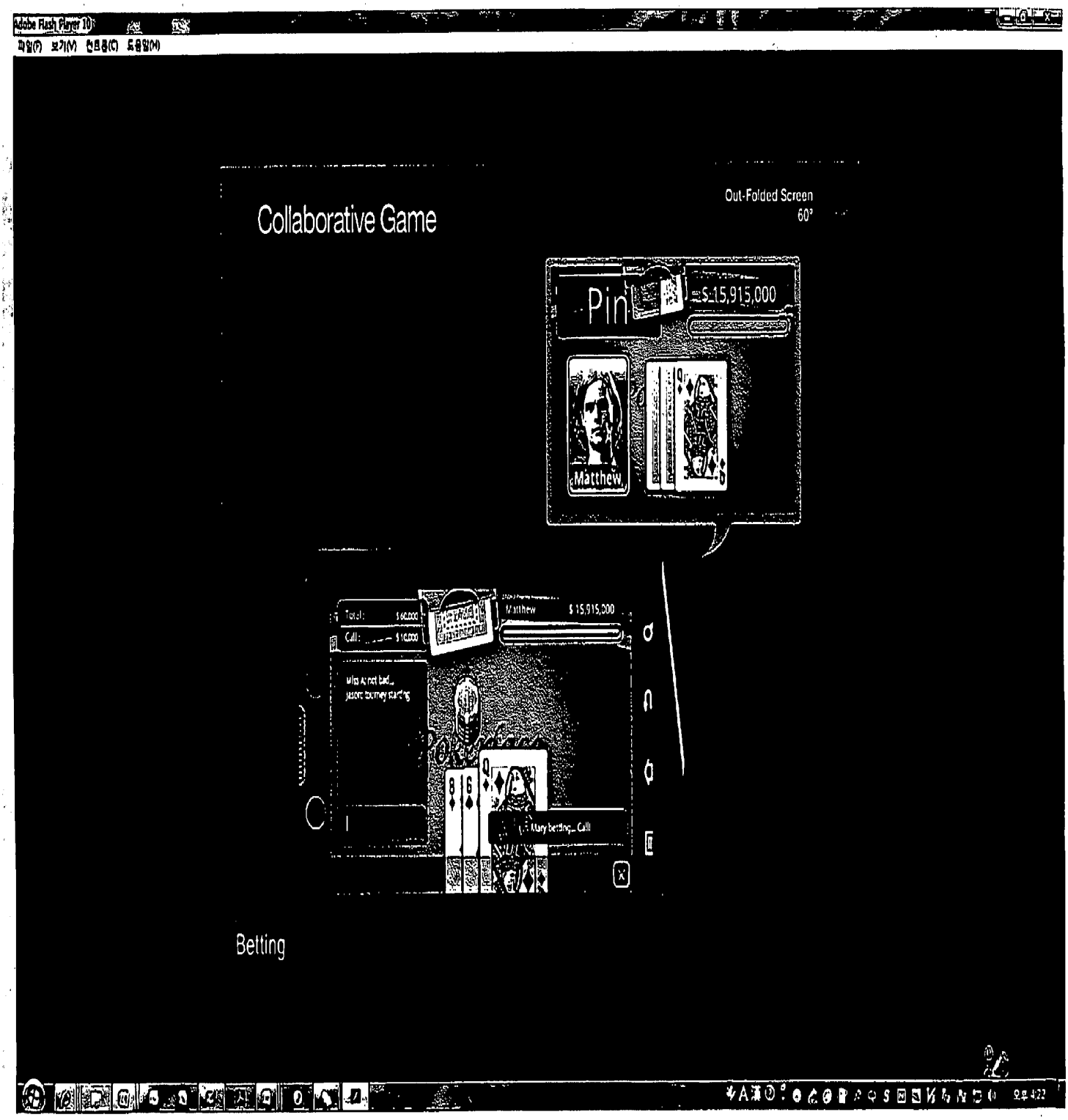
Copied from 13370939 on 05/11/2012



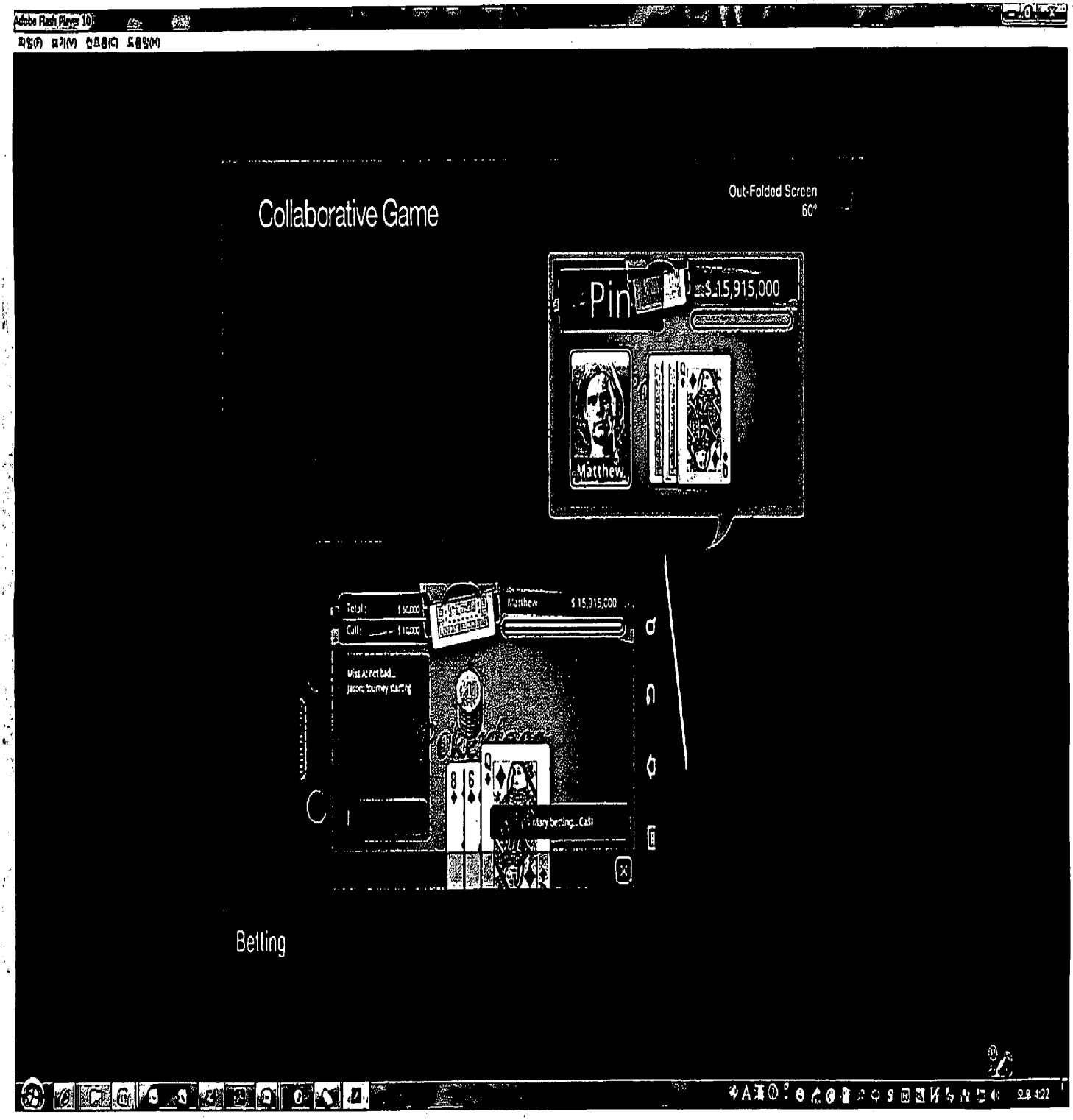
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



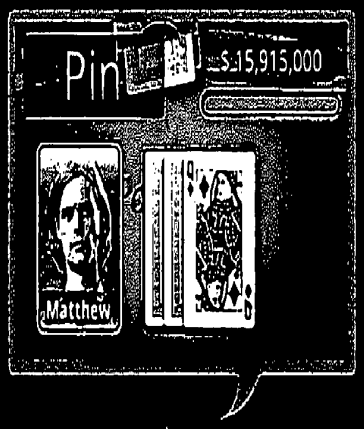
Copied from 13370939 on 05/11/2012

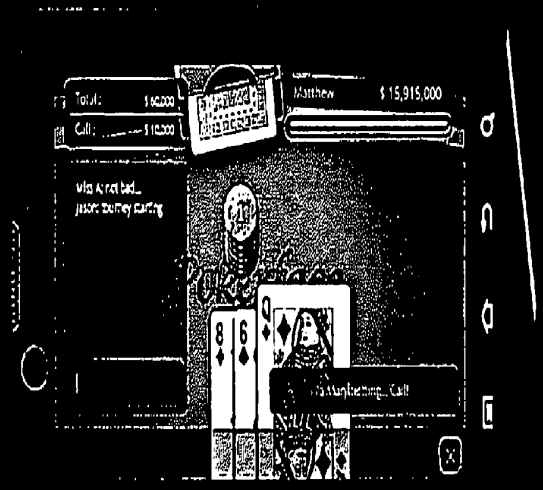


Copied from 13370939 on 05/11/2012

Collaborative Game

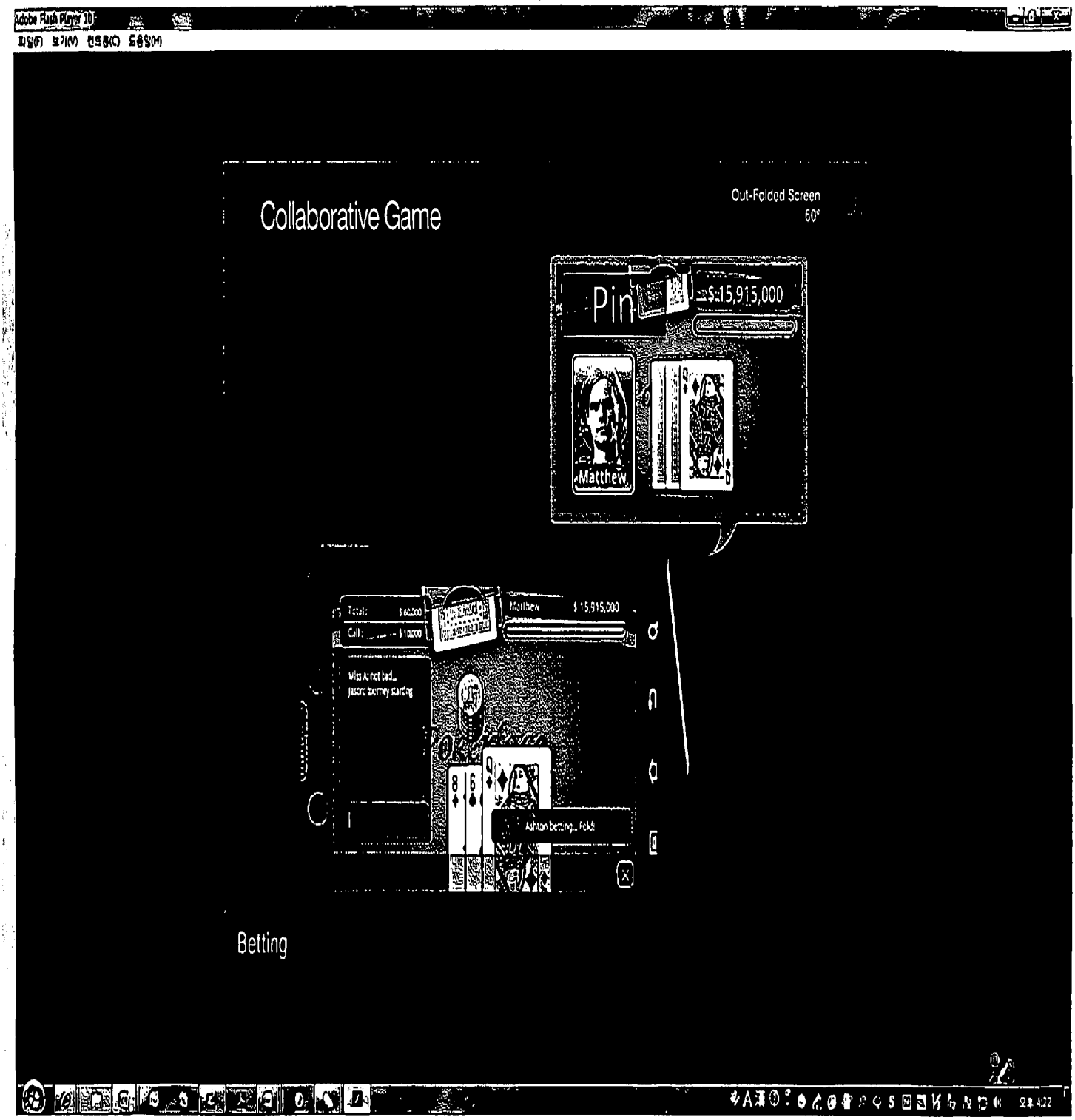
Out-Folded Screen
60°



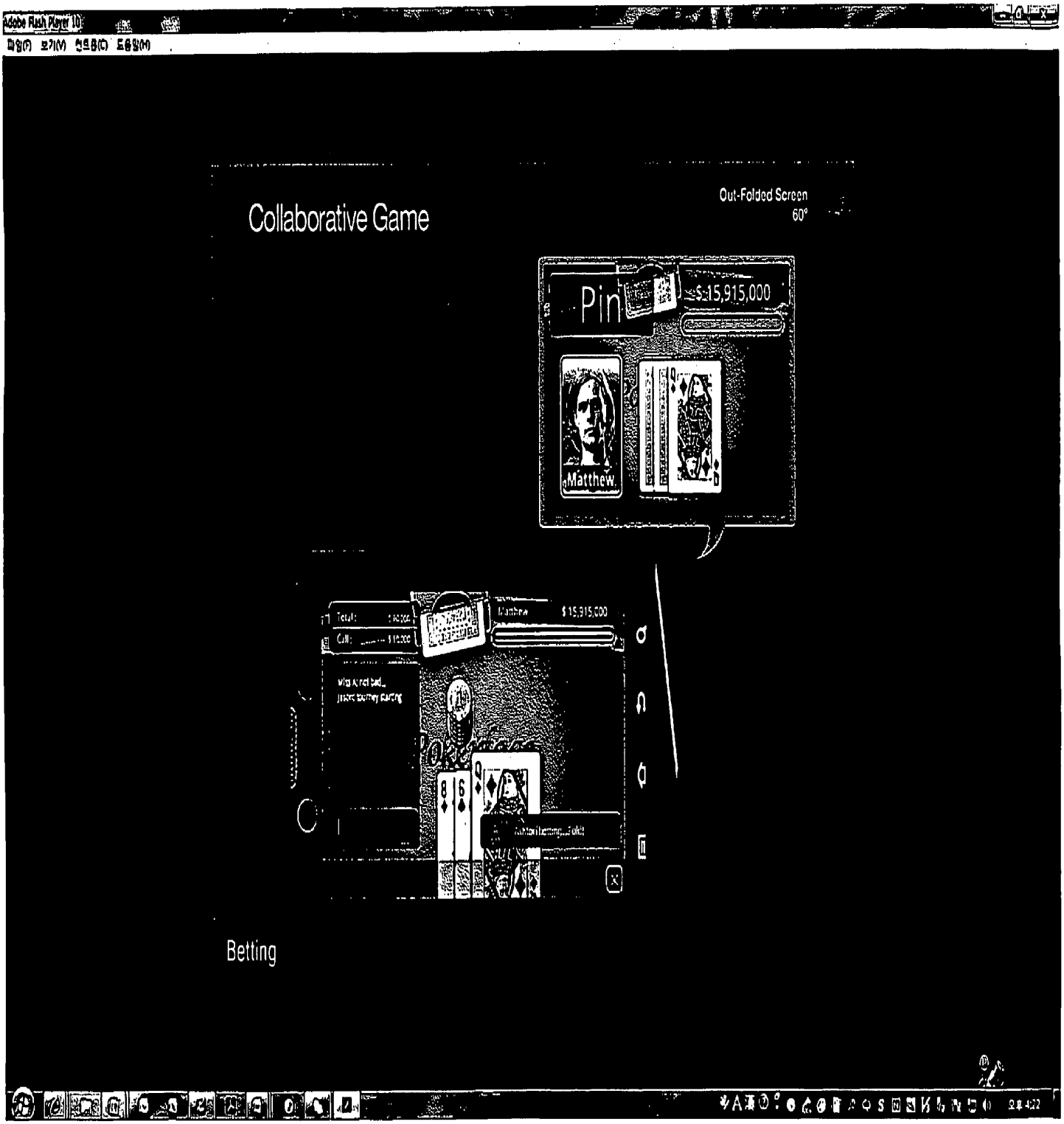


Betting

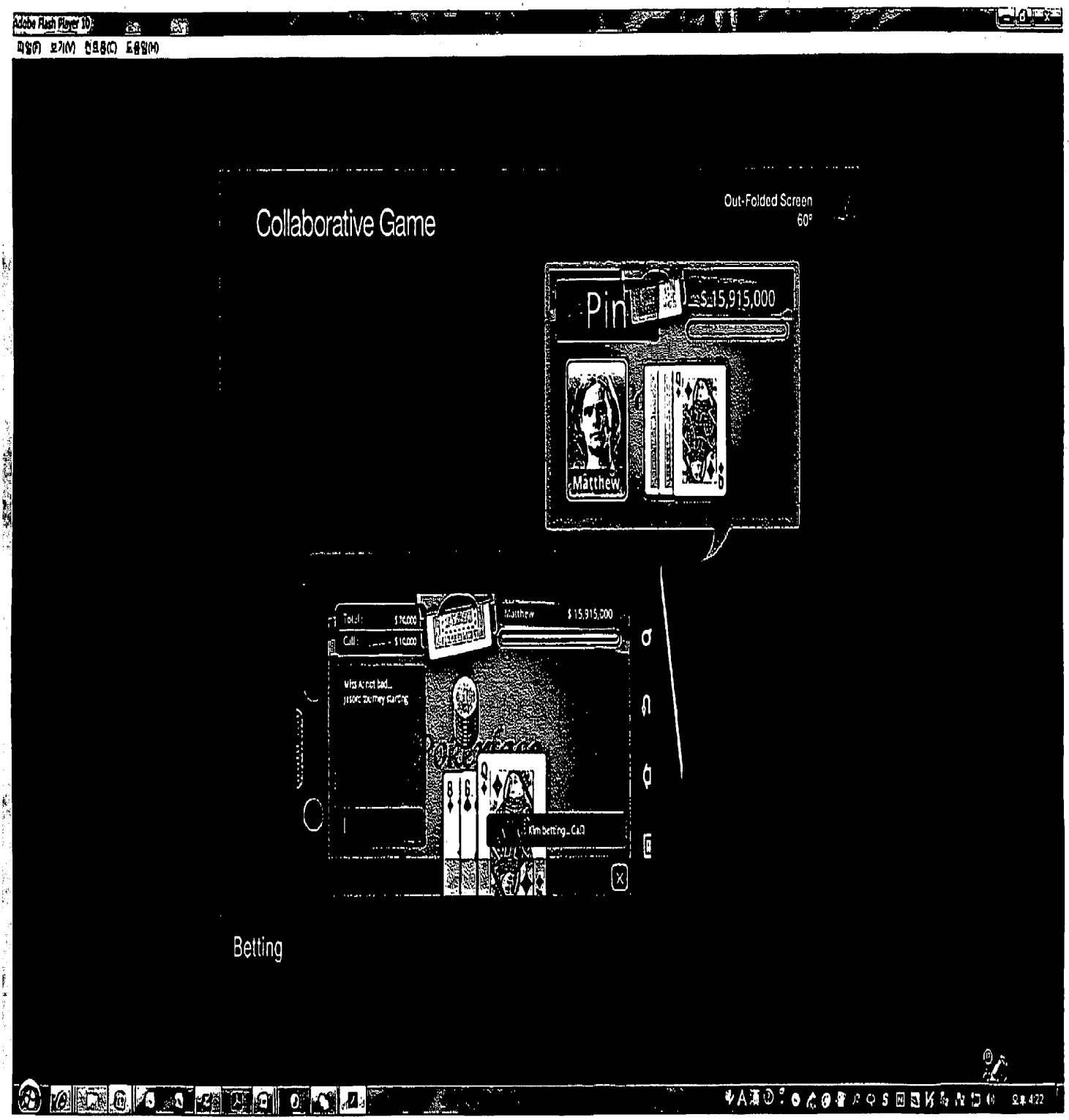
Copied from 13370939 on 05/11/2012



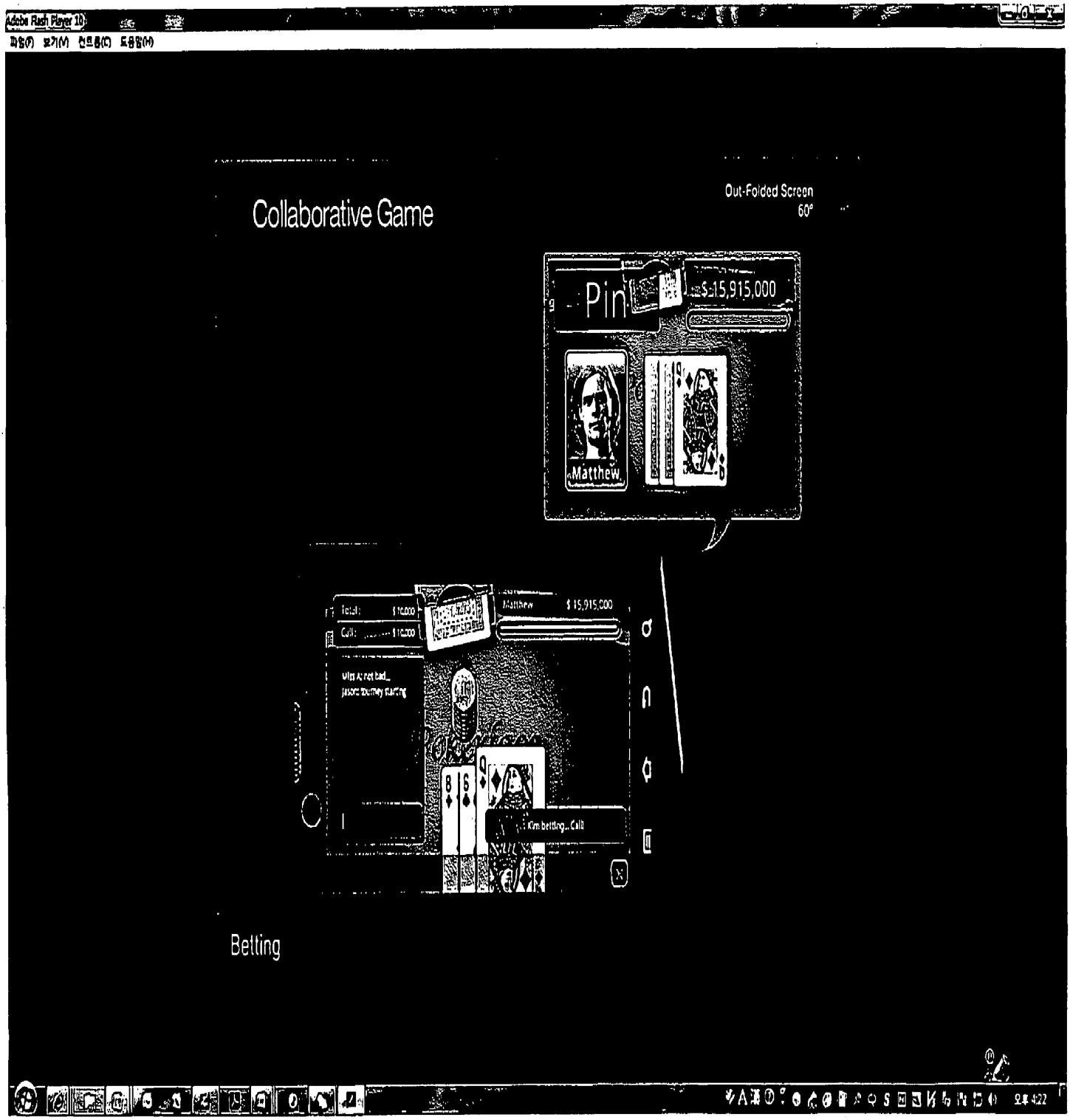
Copied from 13370939 on 05/11/2012



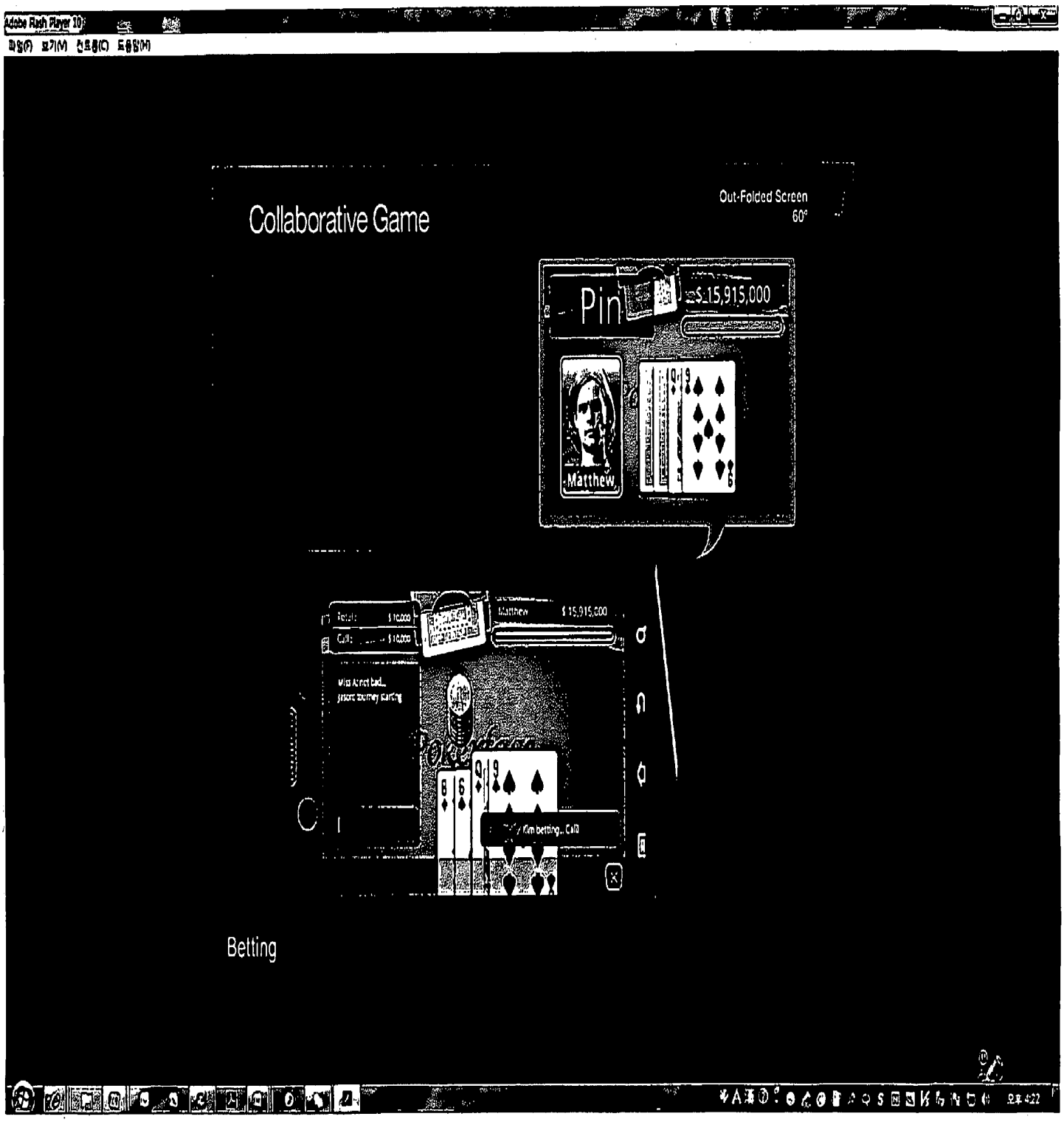
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



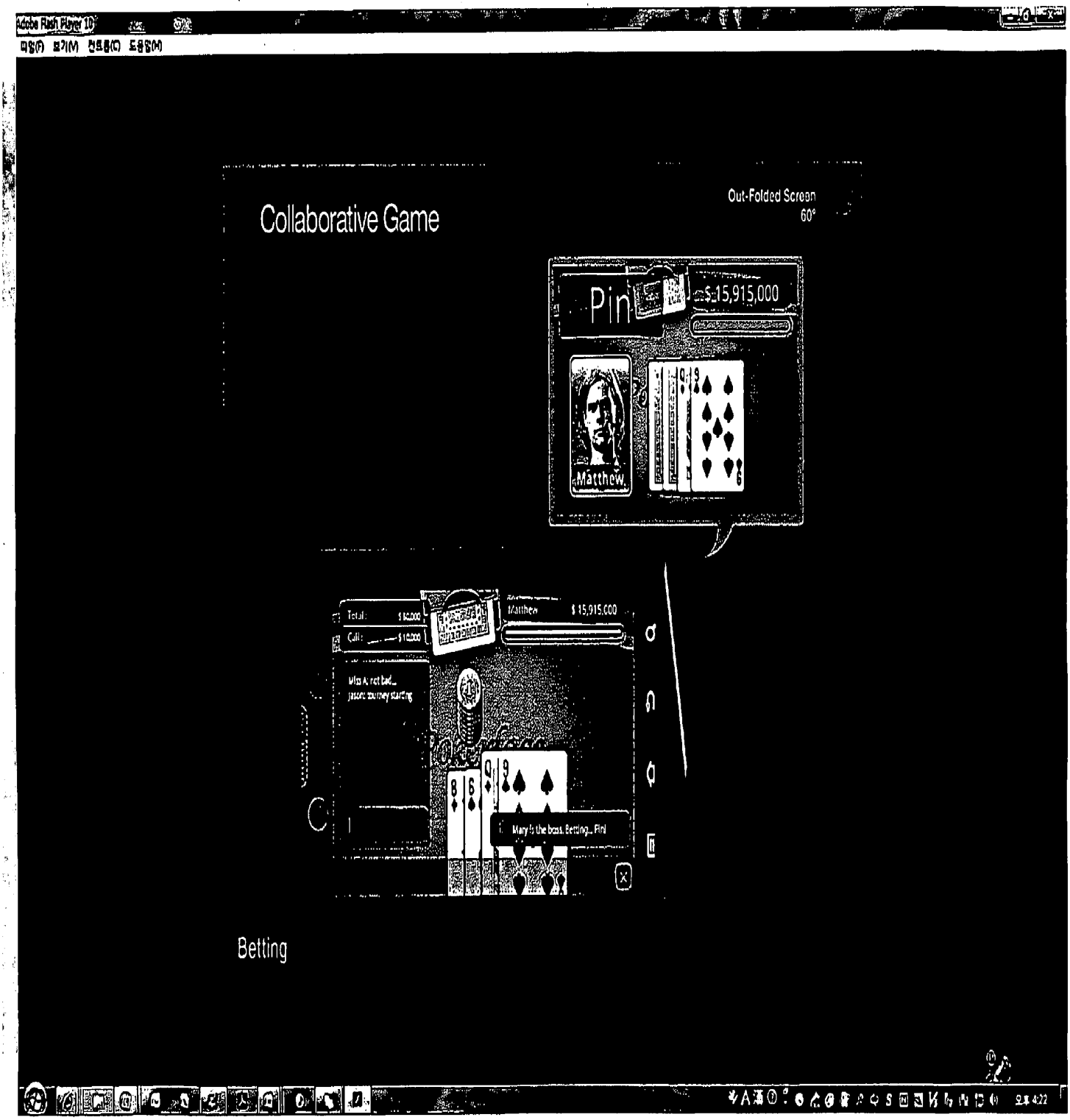
Copied from 13370939 on 05/11/2012



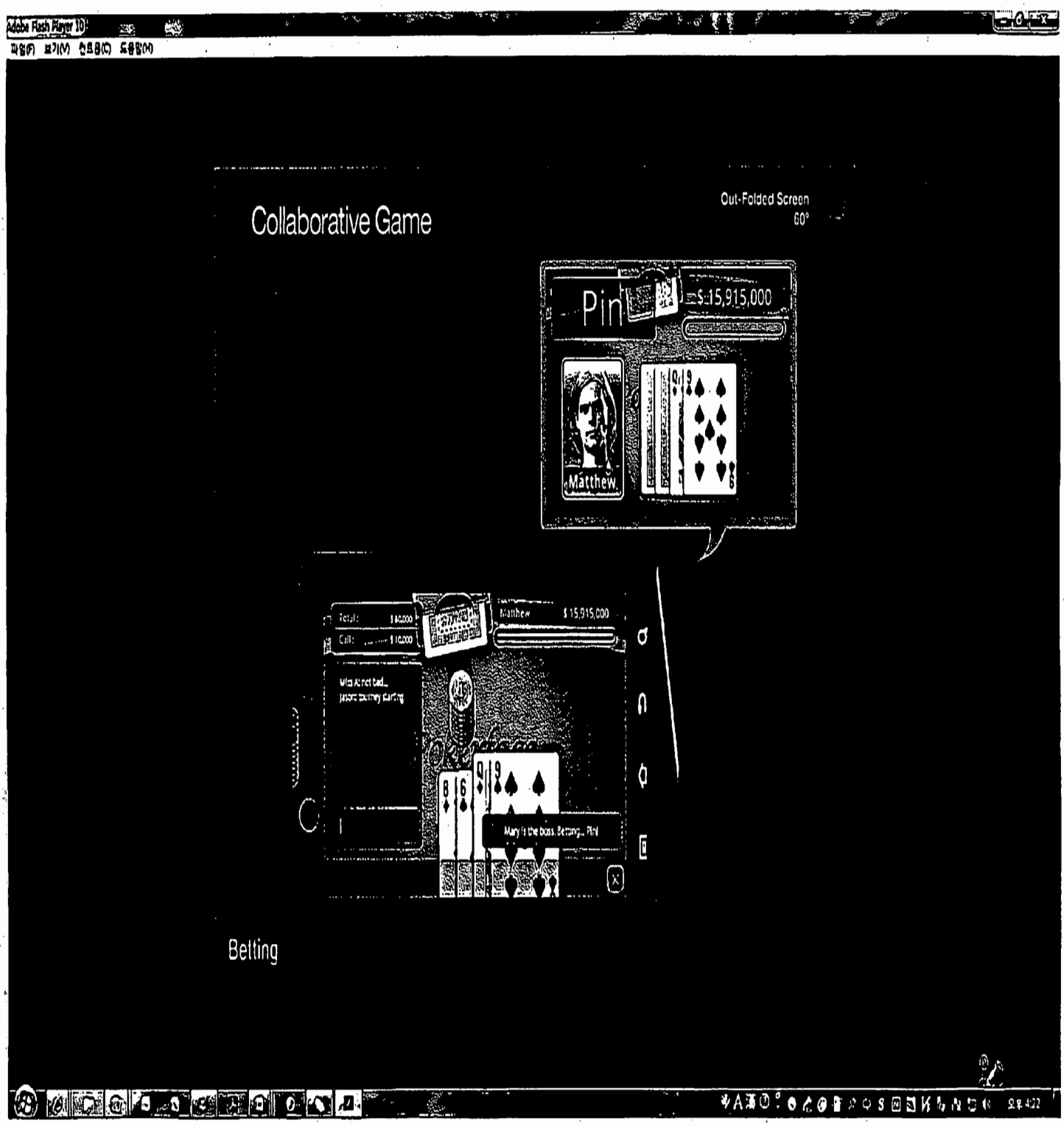
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

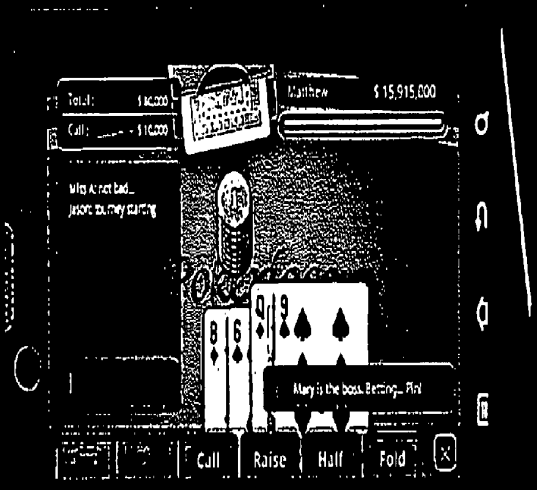


Copied from 13370939 on 05/11/2012

Collaborative Game

Out-Folded Screen
60°



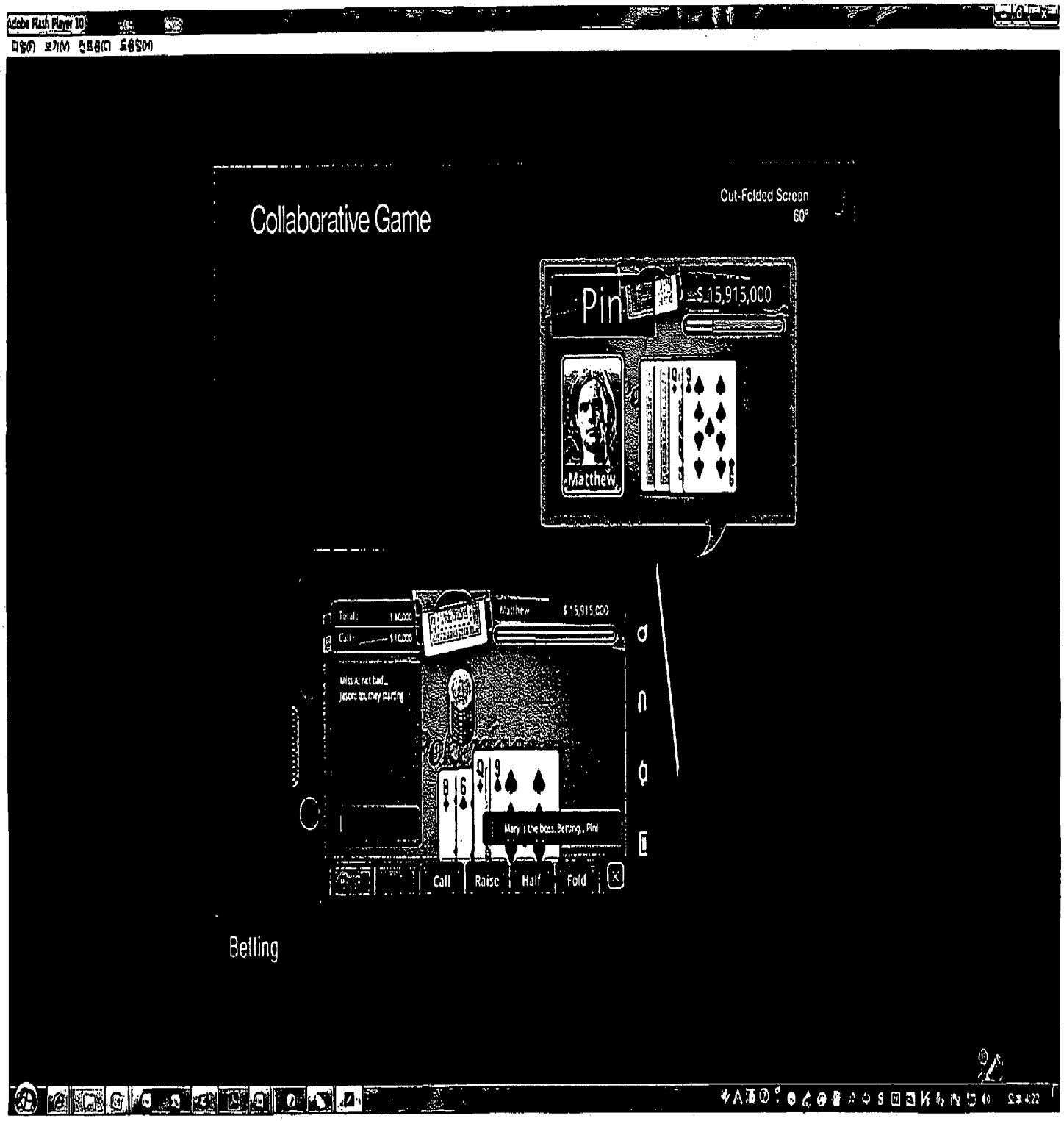


Betting

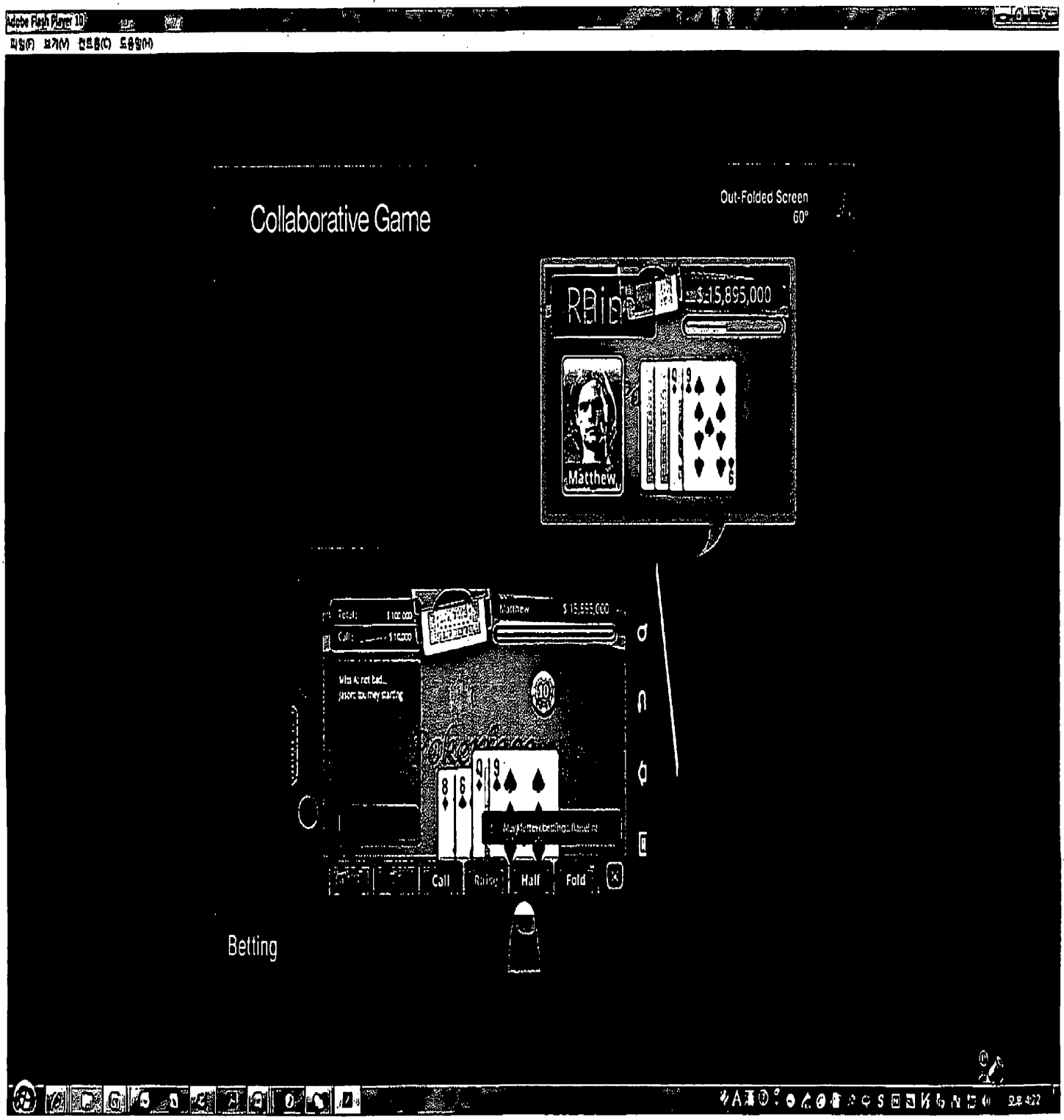
Copied from 13370939 on 05/11/2012



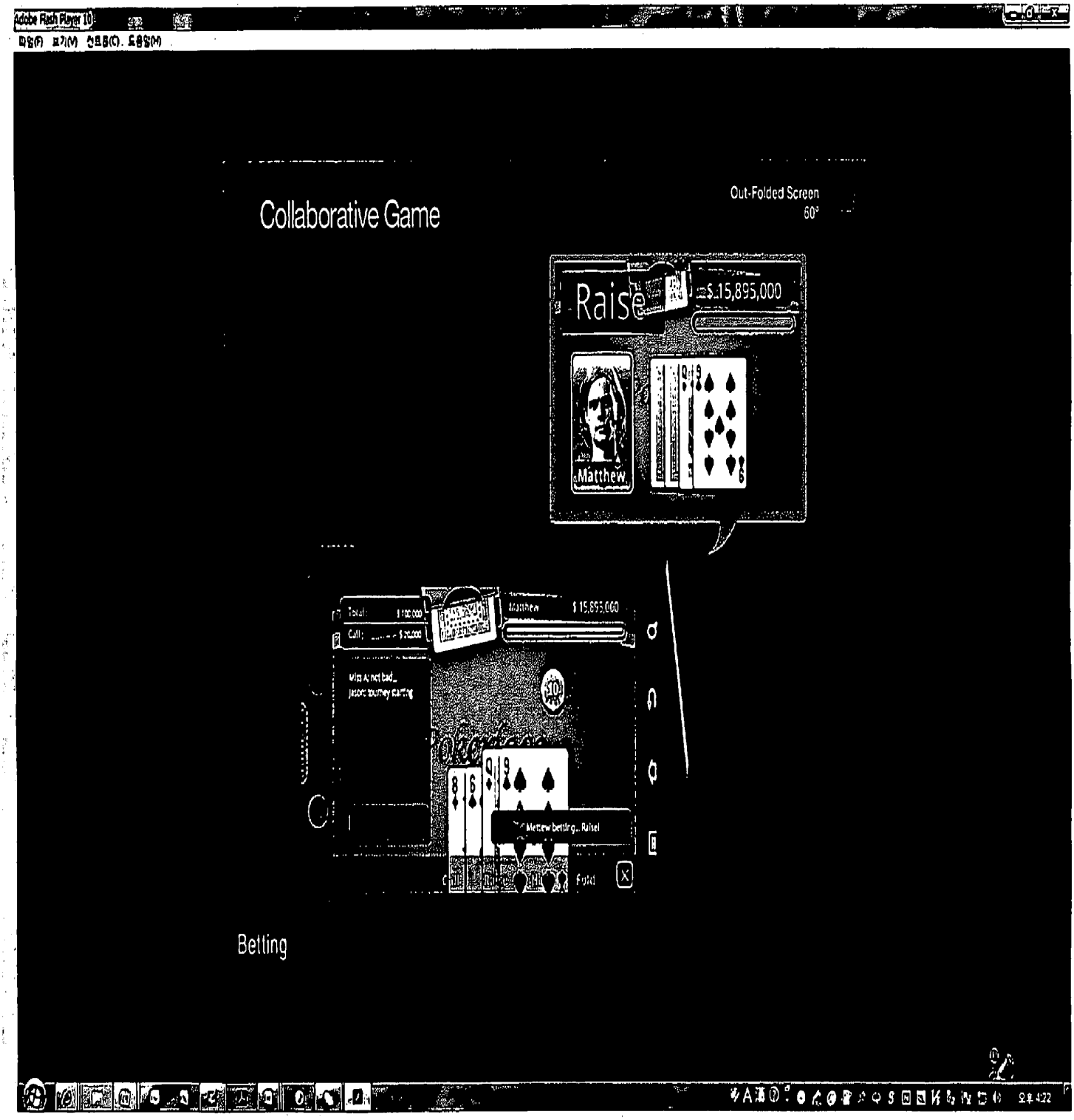
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



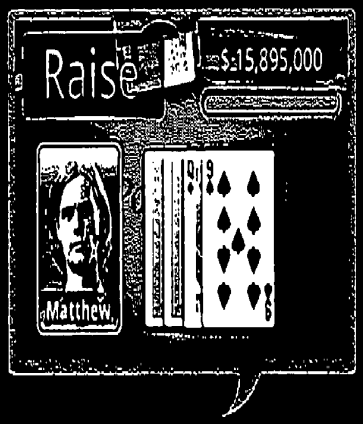
Copied from 13370939 on 05/11/2012

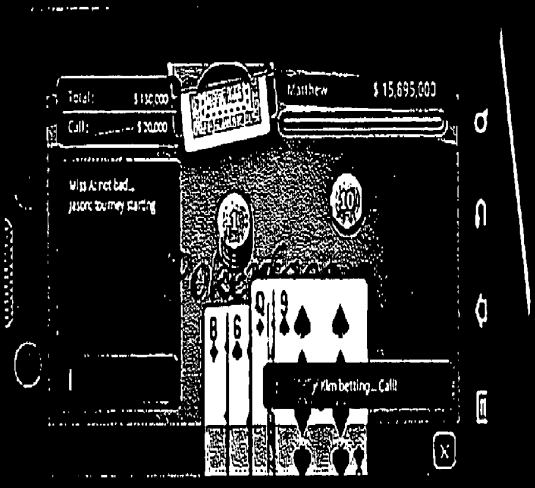


Copied from 13370939 on 05/11/2012

Collaborative Game

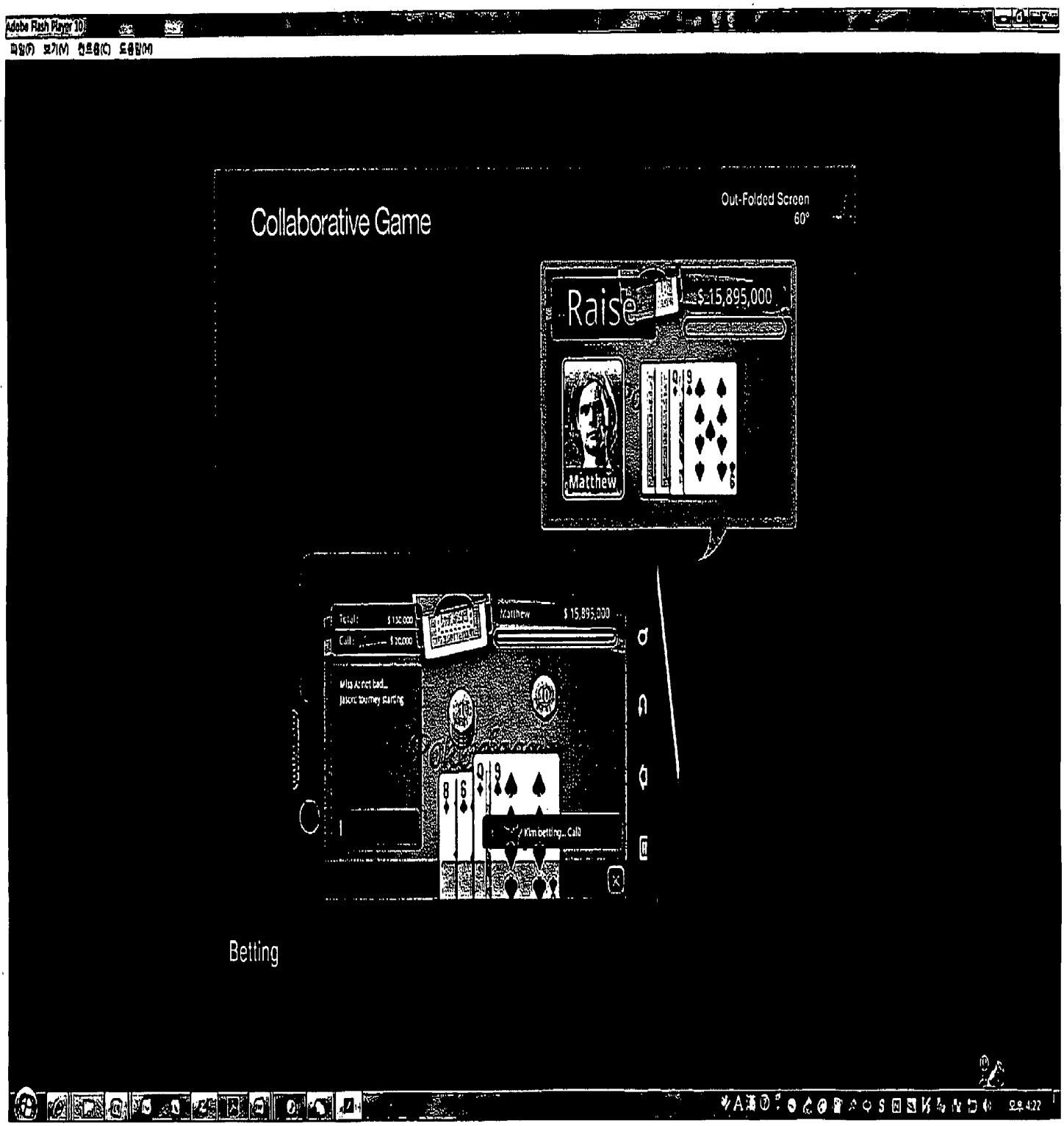
Out-Folded Screen
60°





Betting

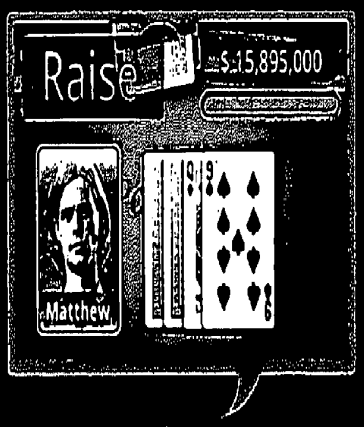
Copied from 13370939 on 05/11/2012

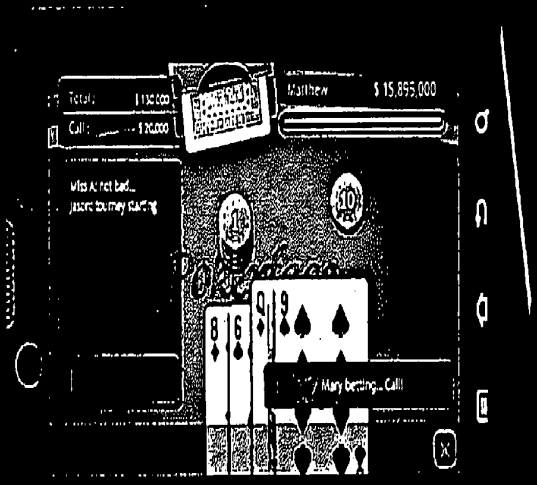


Copied from 13370939 on 05/11/2012

Collaborative Game

Out-Folded Screen
60°



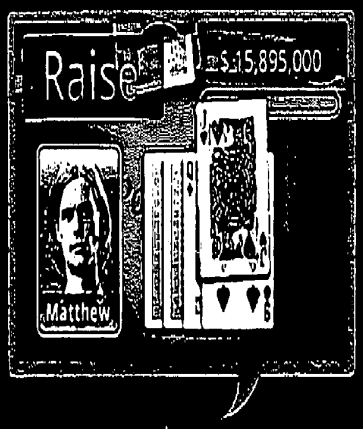


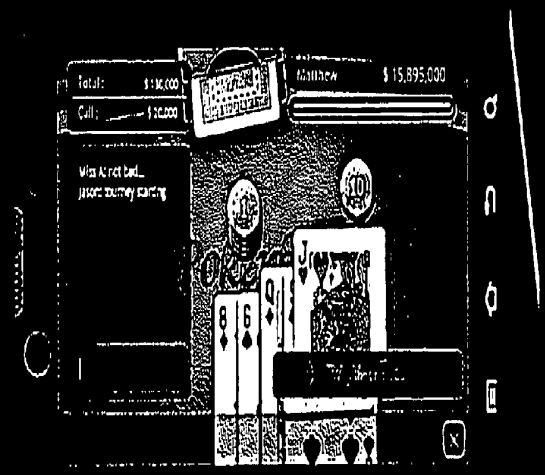
Betting

Copied from 13370939 on 05/11/2012

Collaborative Game

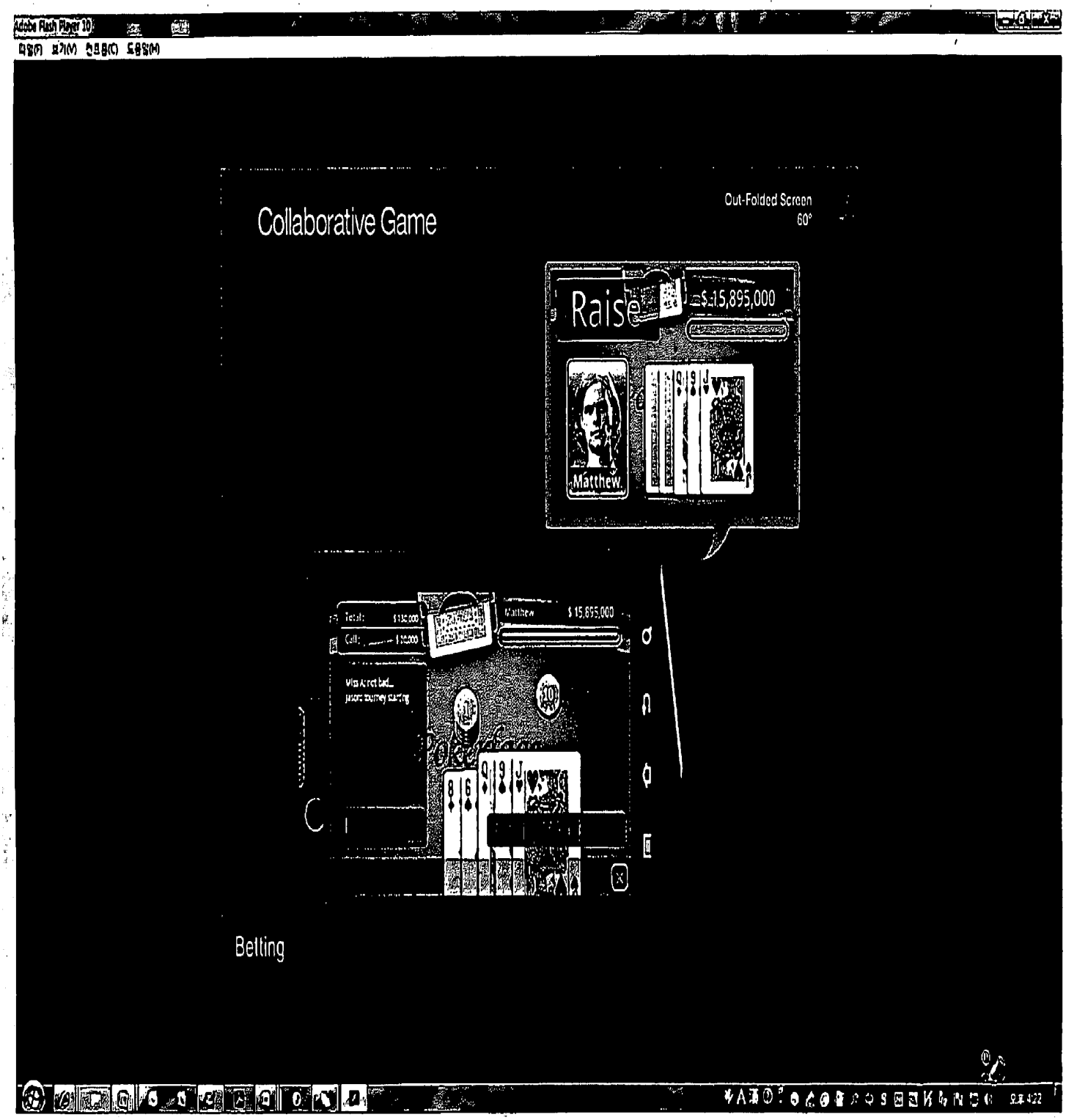
Out-Folded Screen
60°



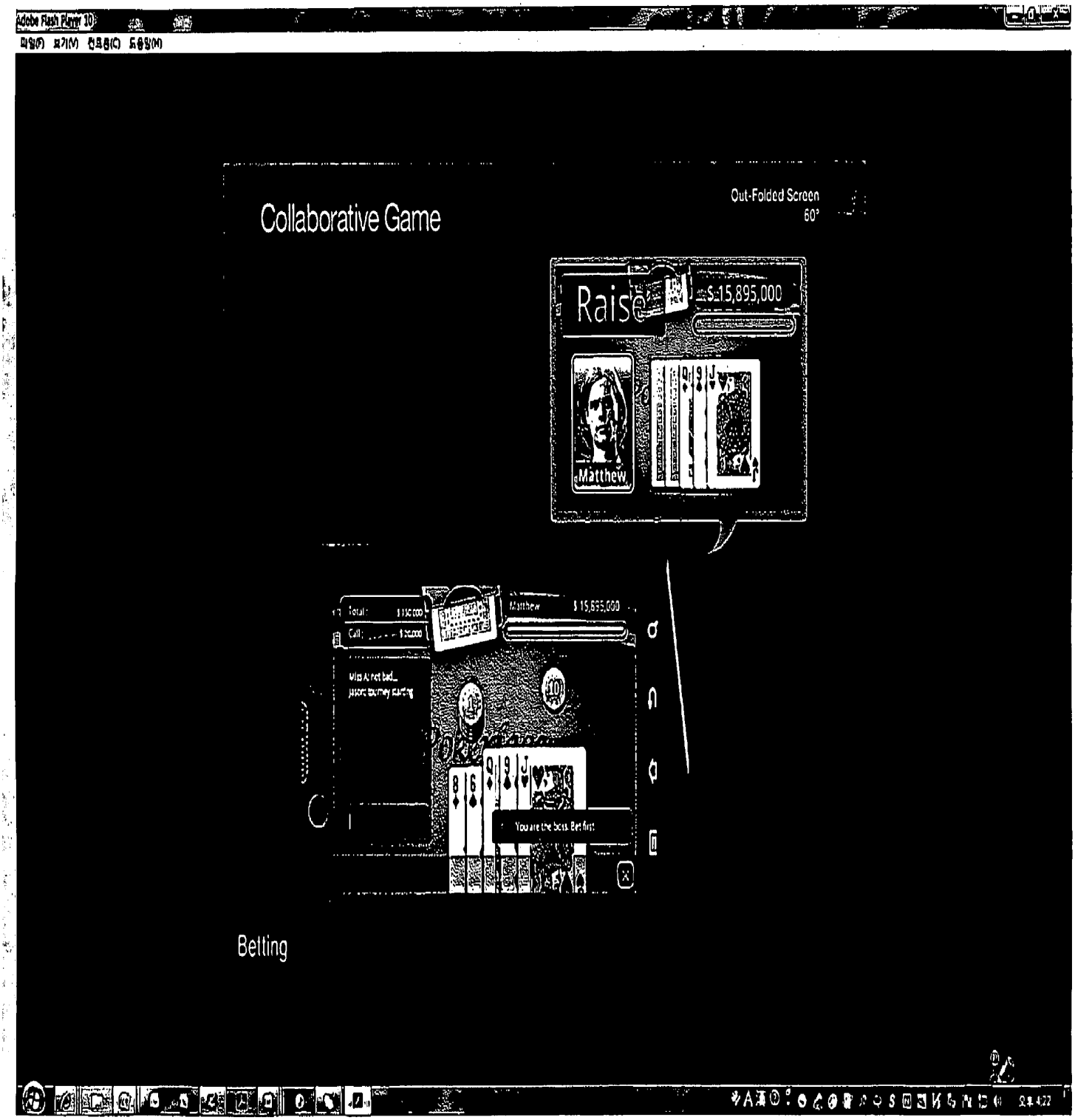


Betting

Copied from 13370939 on 05/11/2012



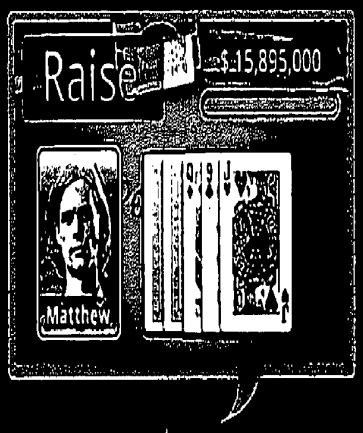
Copied from 13370939 on 05/11/2012

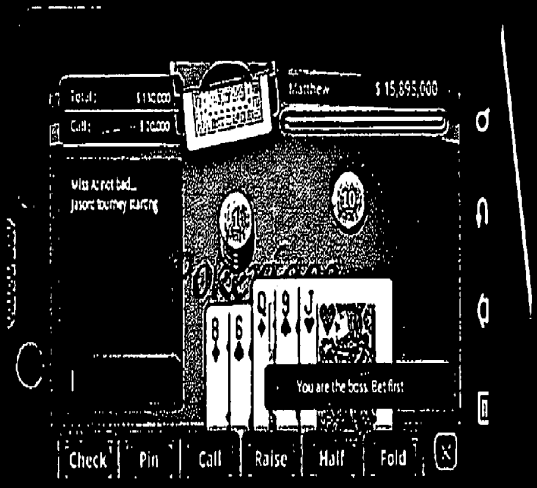


Copied from 13370939 on 05/11/2012

Collaborative Game

Out-Folded Screen



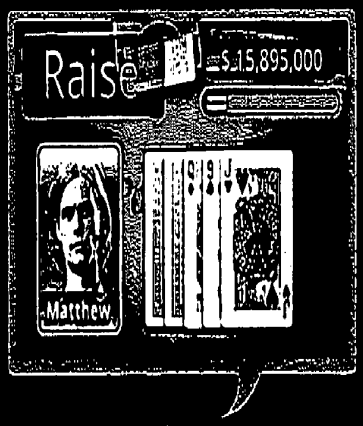


Betting

Copied from 13370939 on 05/11/2012

Collaborative Game

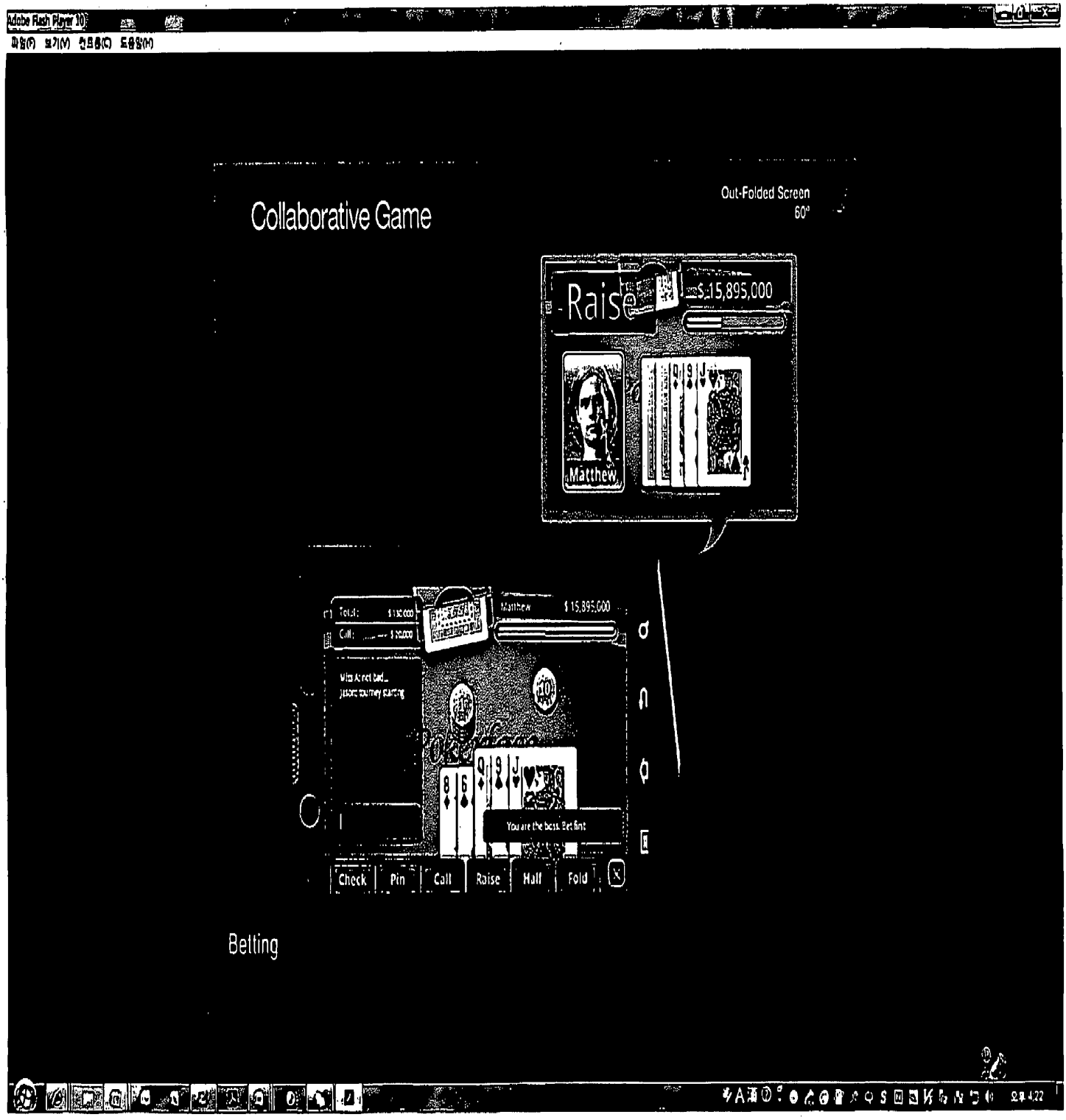
Out-Folded Screen
60°





Betting

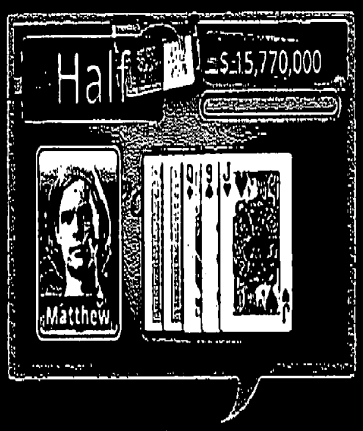
Copied from 13370939 on 05/11/2012

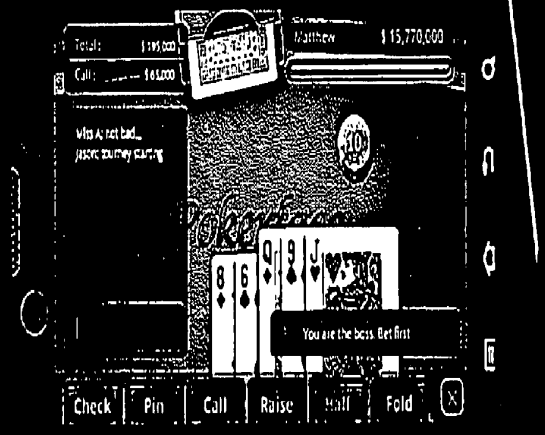


Copied from 13370939 on 05/11/2012

Collaborative Game

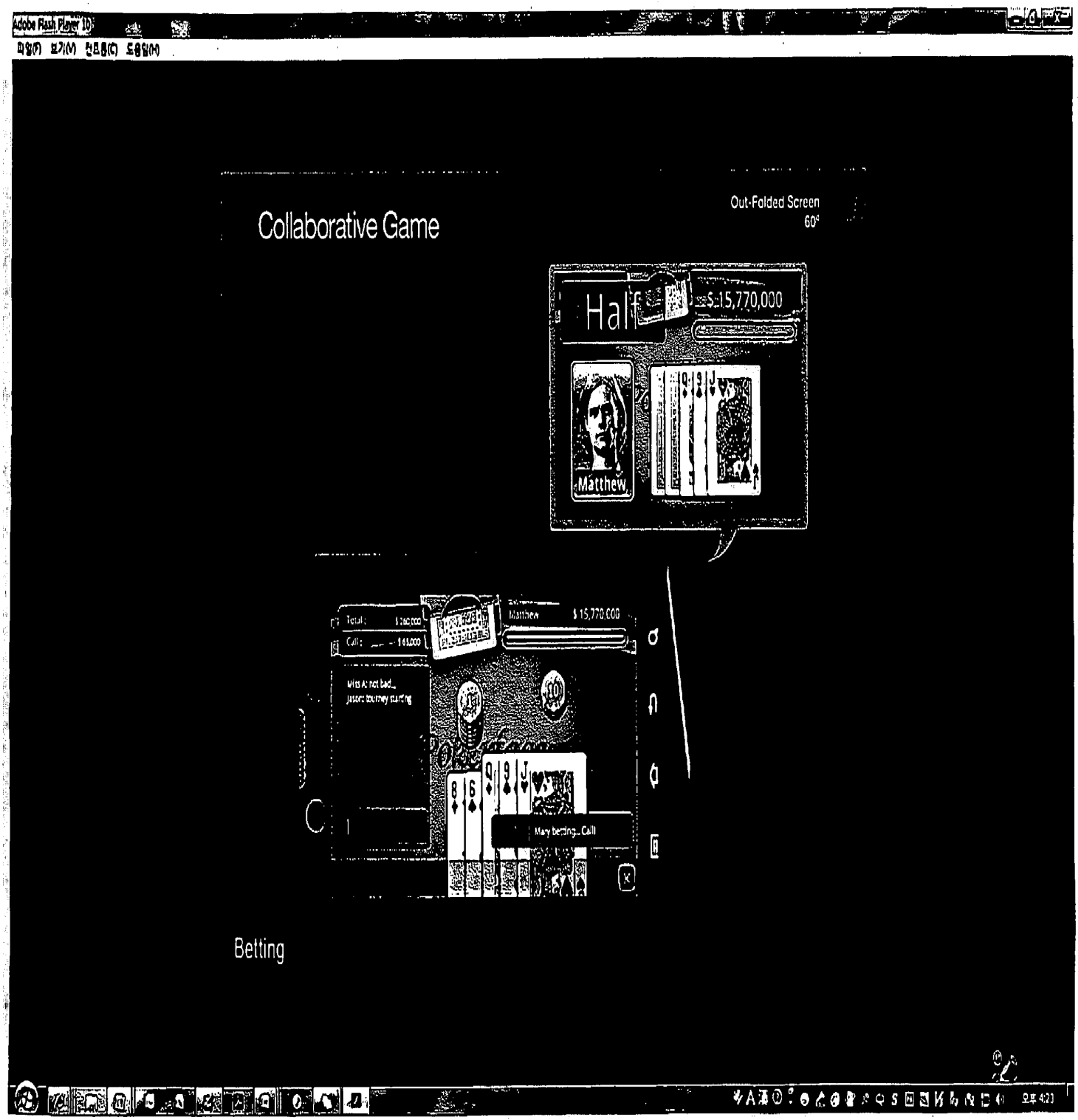
Out-Folded Screen
60°



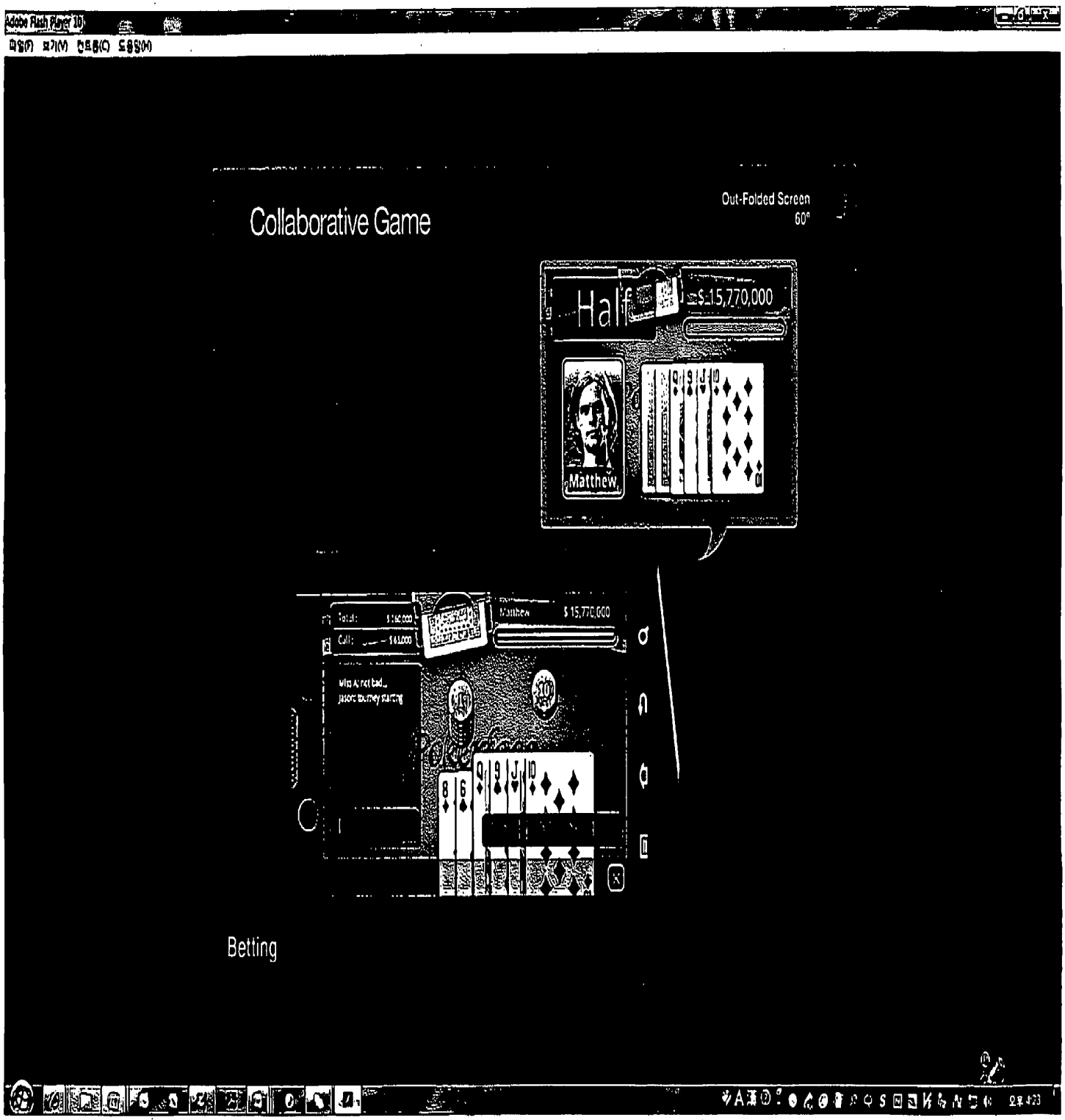


Betting

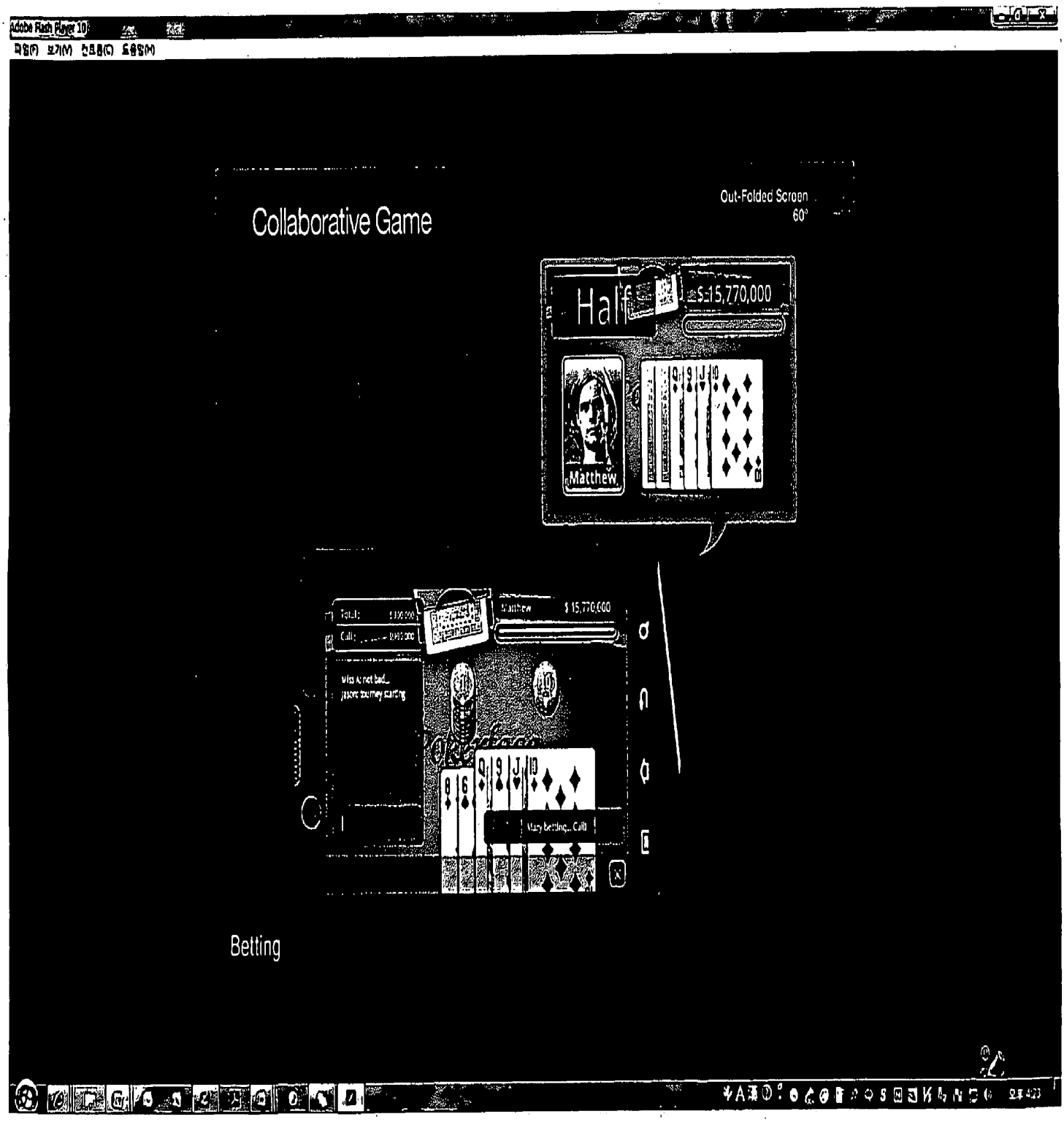
Copied from 13370939 on 05/11/2012



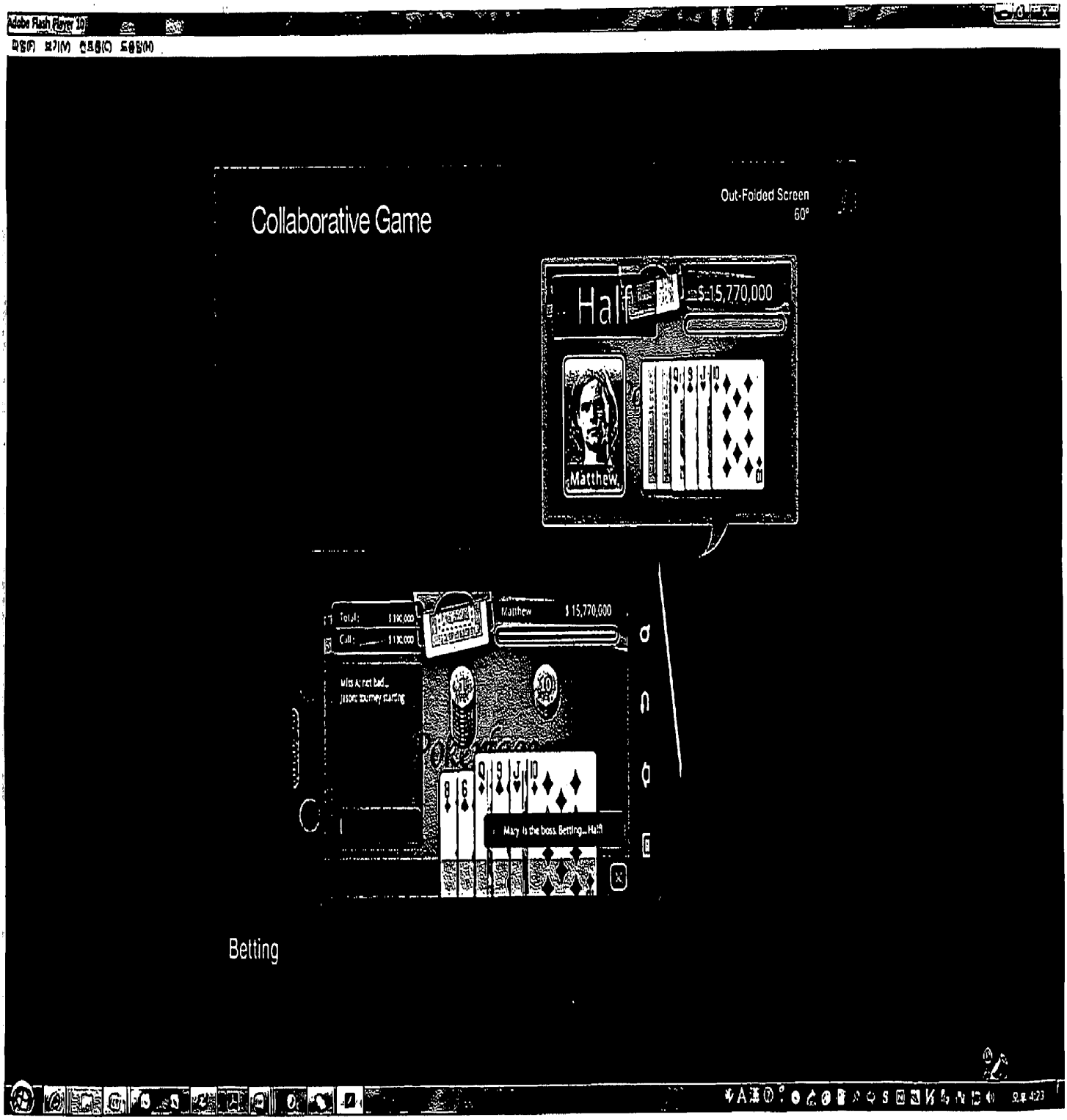
Copied from 13370939 on 05/11/2012



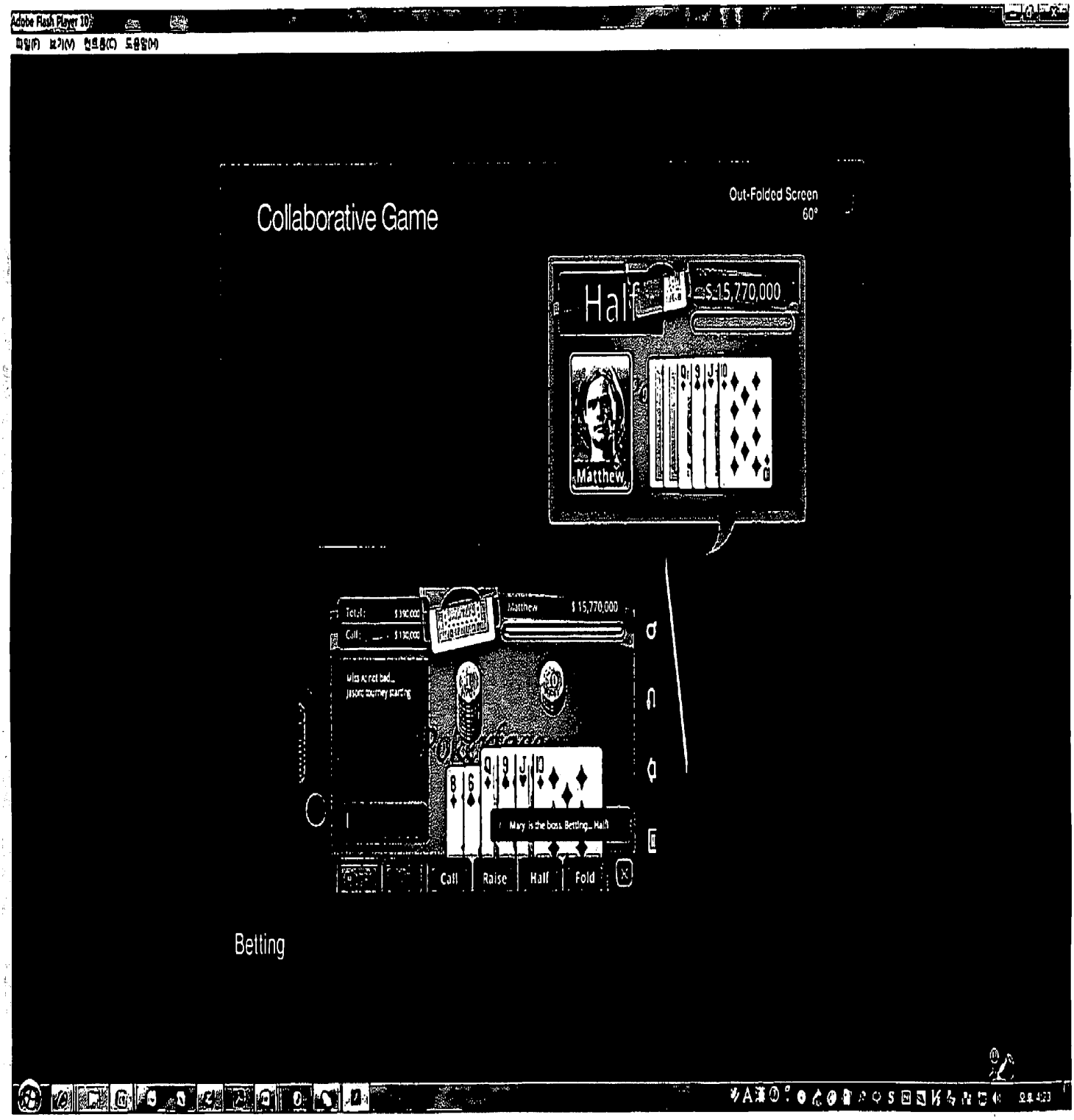
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

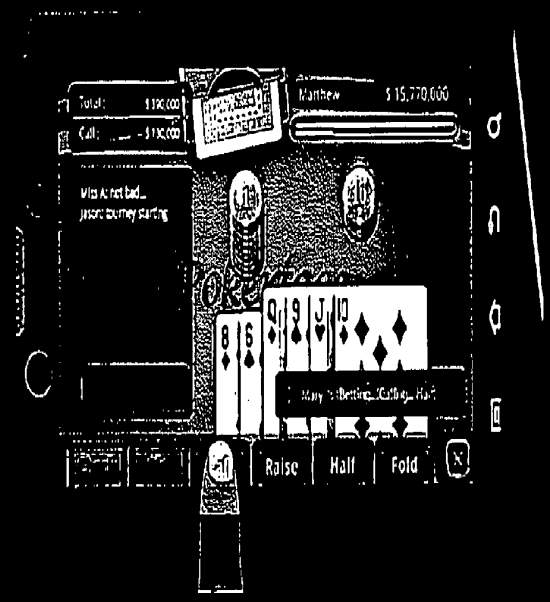
Adobe Flash Player 10

파일(F) 보기(V) 컨트롤(C) 도움말(H)

Collaborative Game

Out-Folded Screen
60°



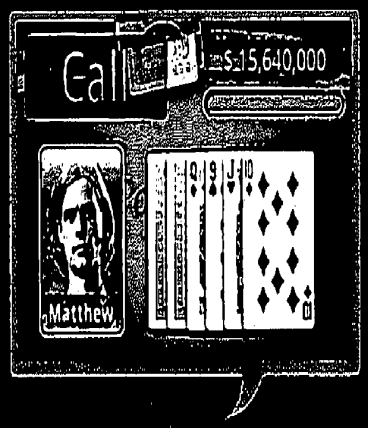


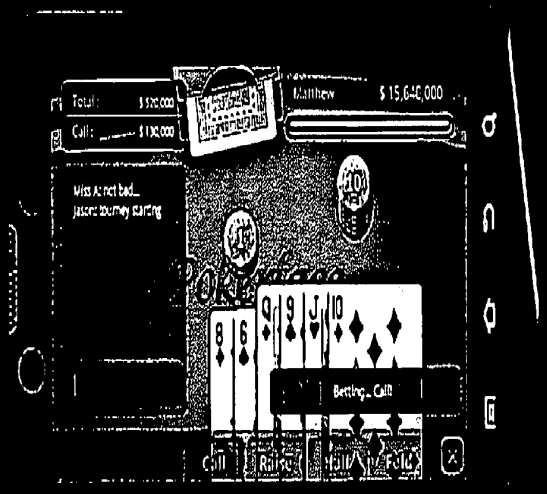
Betting

Copied from 13370939 on 05/11/2012

Collaborative Game

Out-Folded Screen
60°



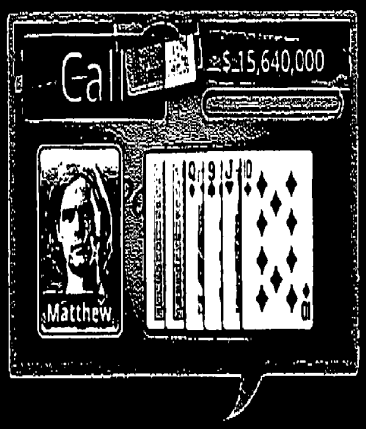


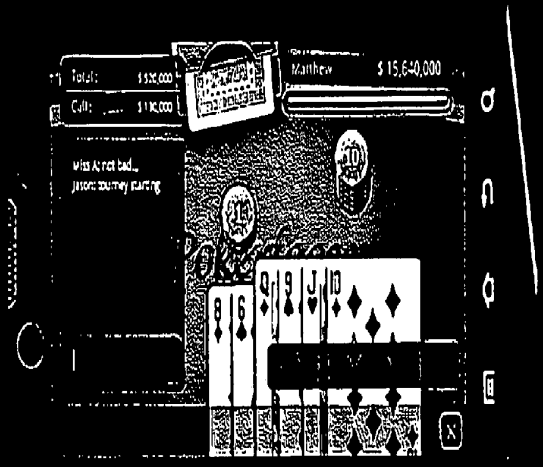
Betting

Copied from 13370939 on 05/11/2012

Collaborative Game

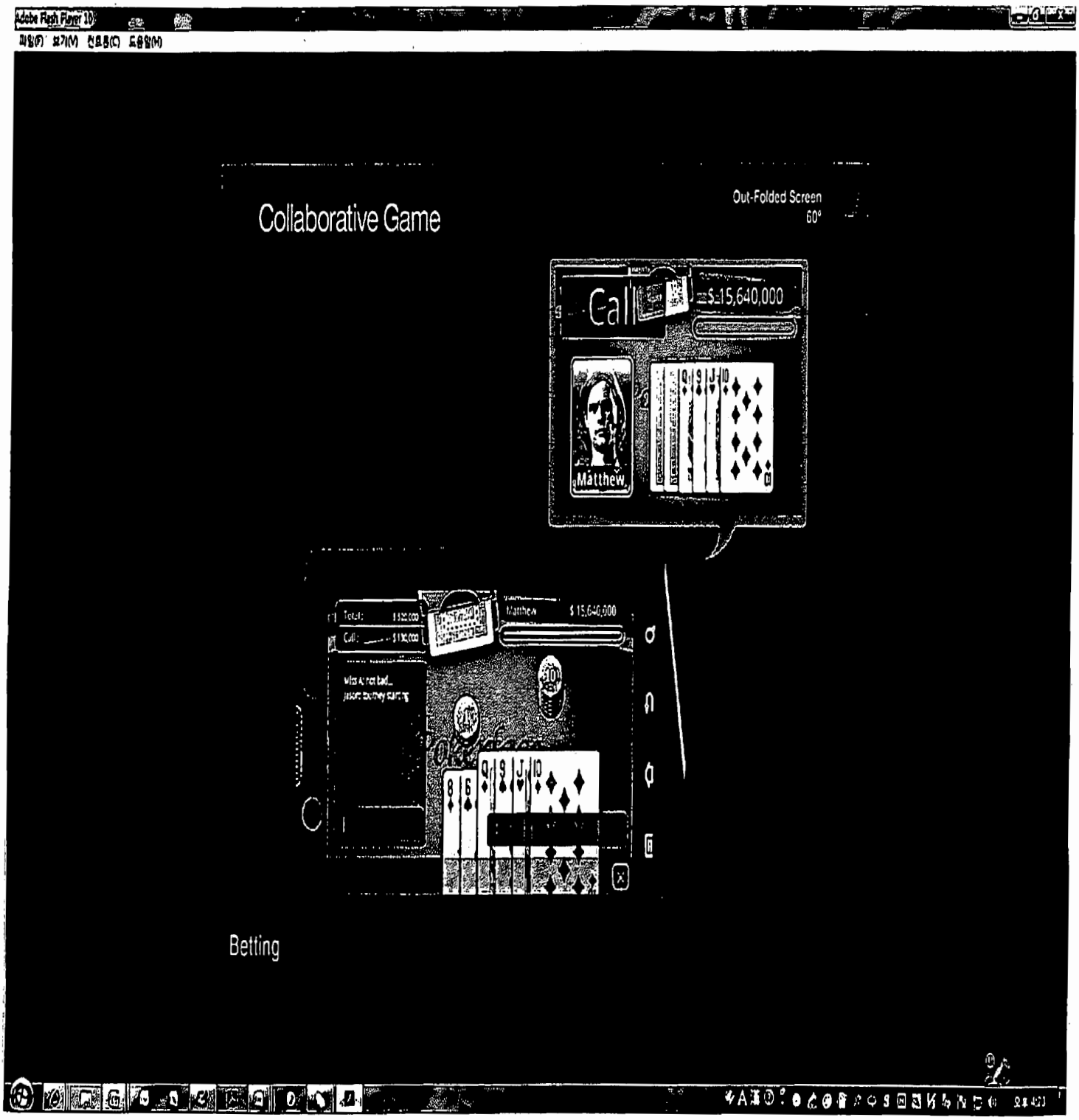
Out-Folded Screen
60°



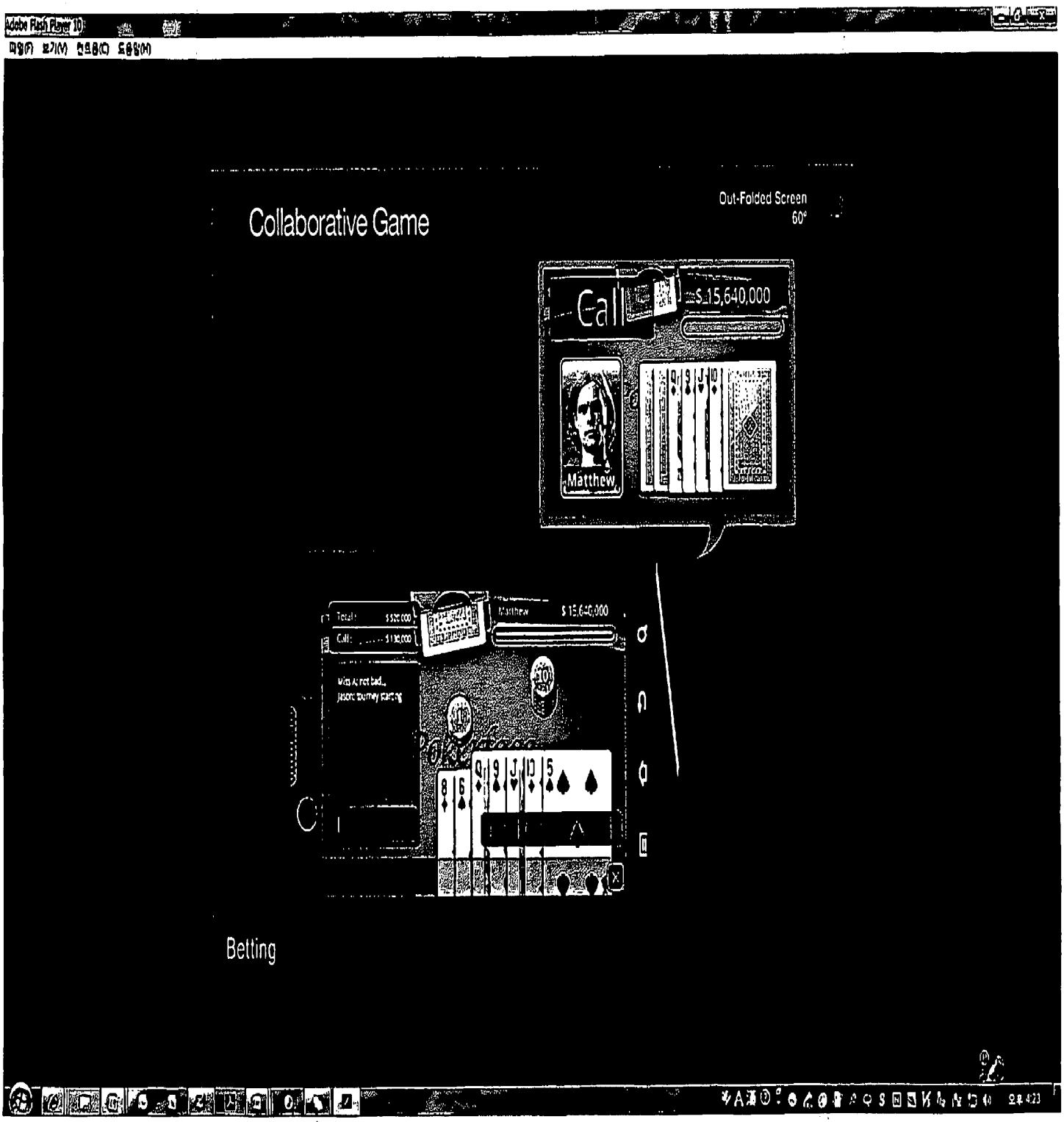


Betting

Copied from 13370939 on 05/11/2012



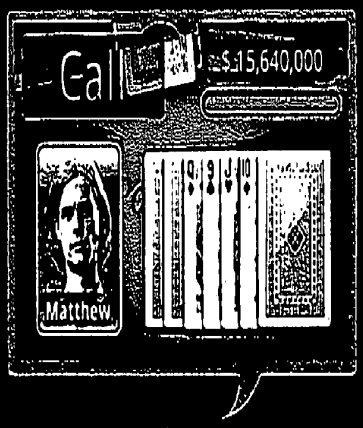
Copied from 13370939 on 05/11/2012

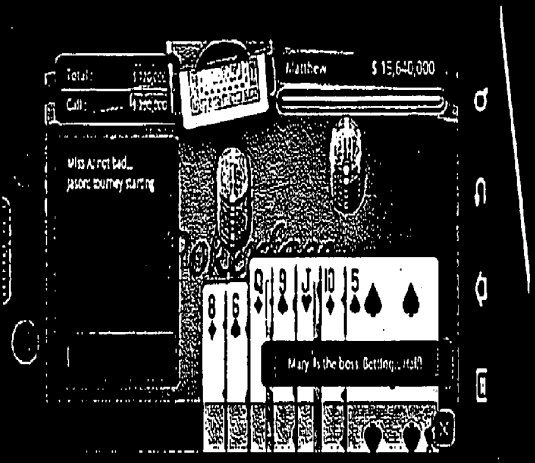


Copied from 13370939 on 05/11/2012

Collaborative Game

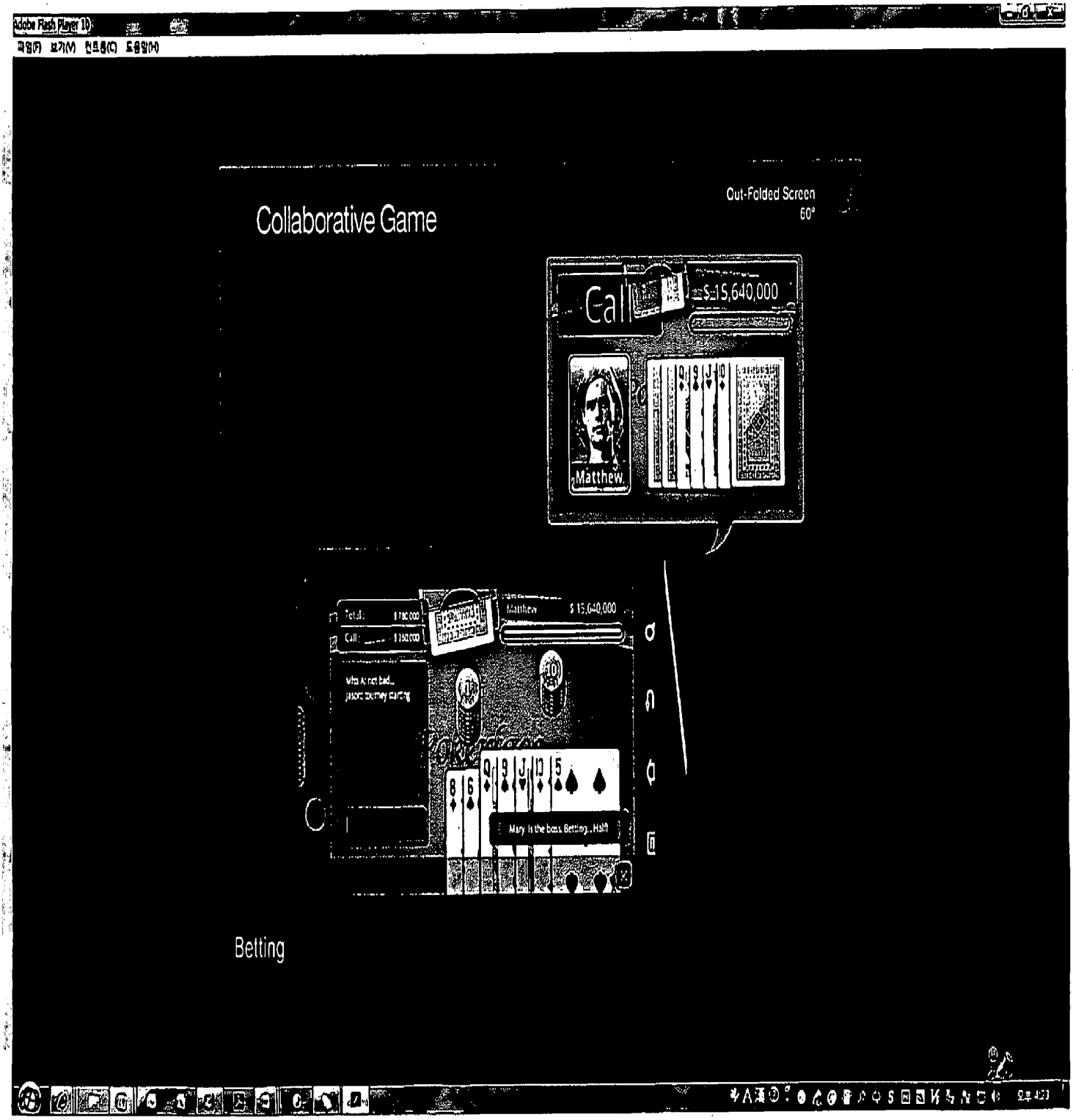
Out-Folded Screen
60°



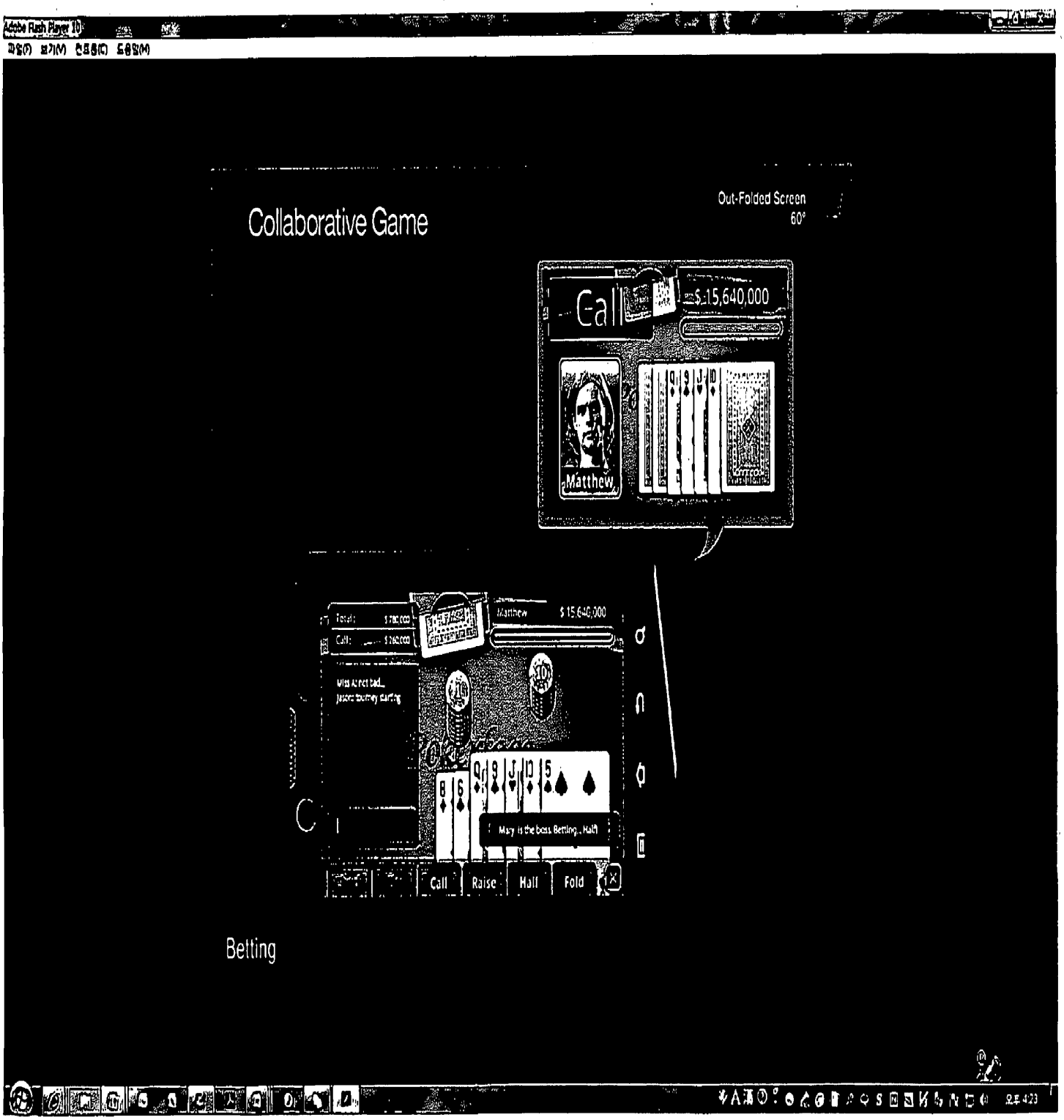


Betting

Copied from 13370939 on 05/11/2012



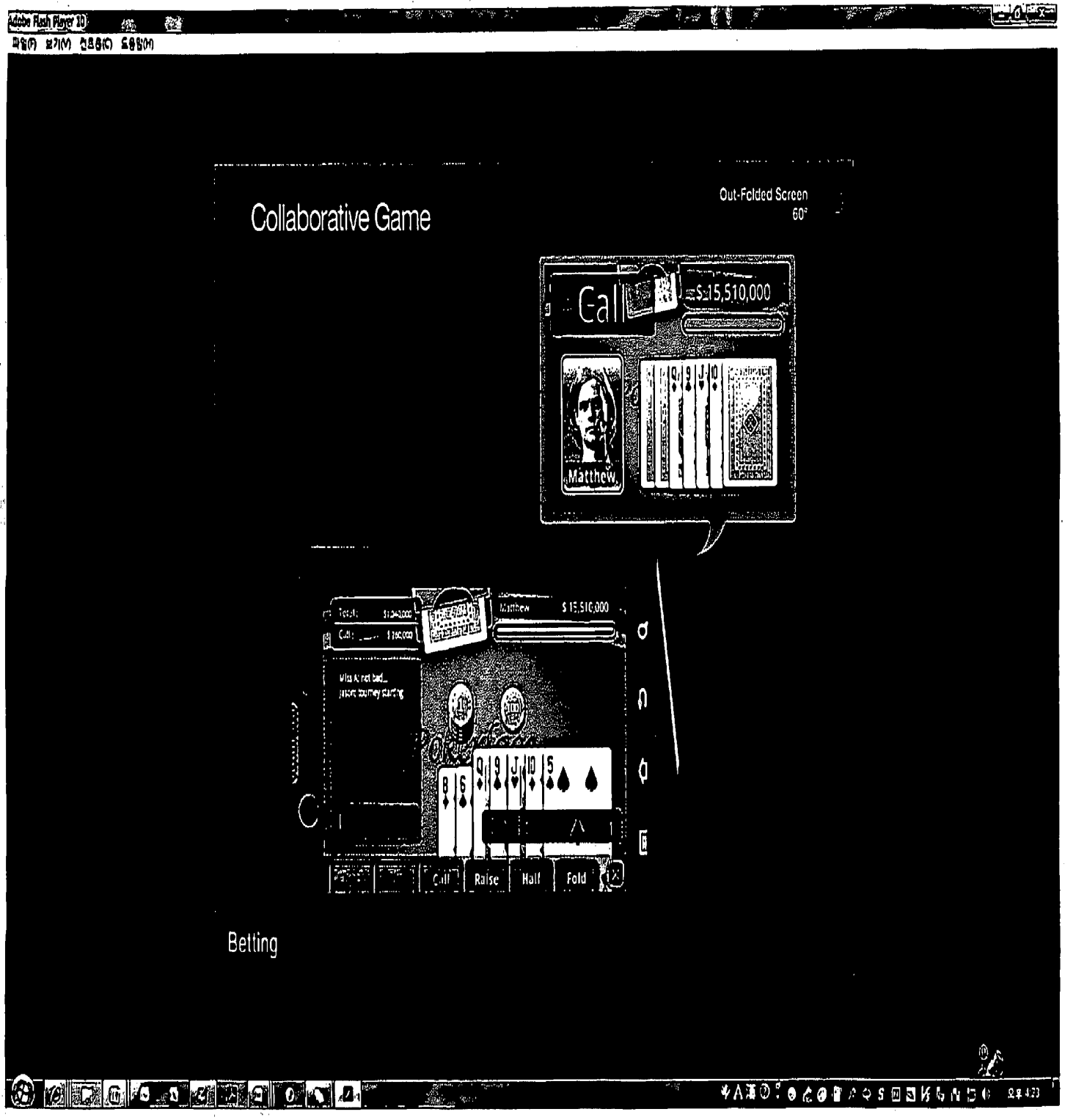
Copied from 13370939 on 05/11/2012



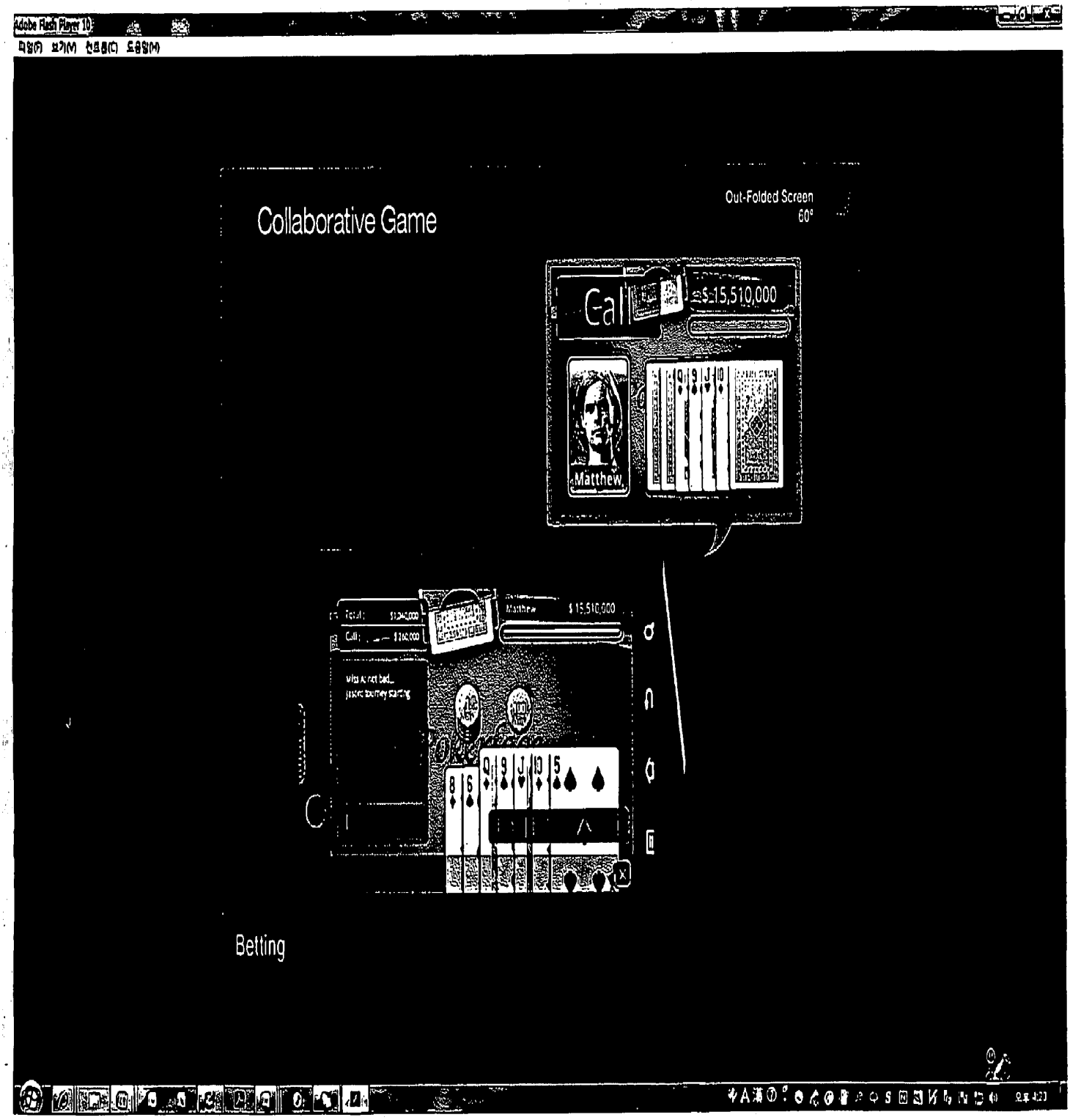
Copied from 13370939 on 05/11/2012



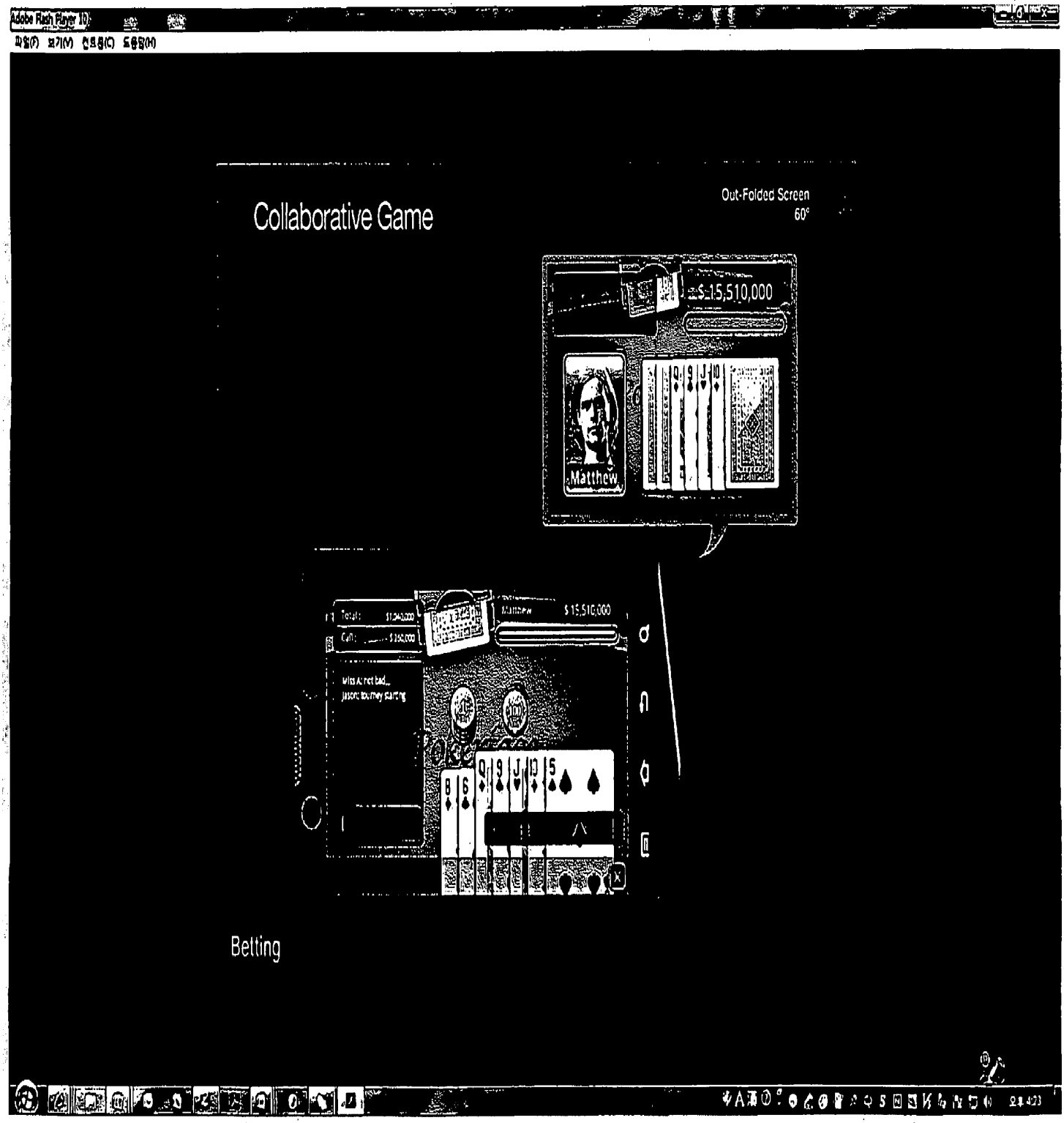
Copied from 13370939 on 05/11/2012



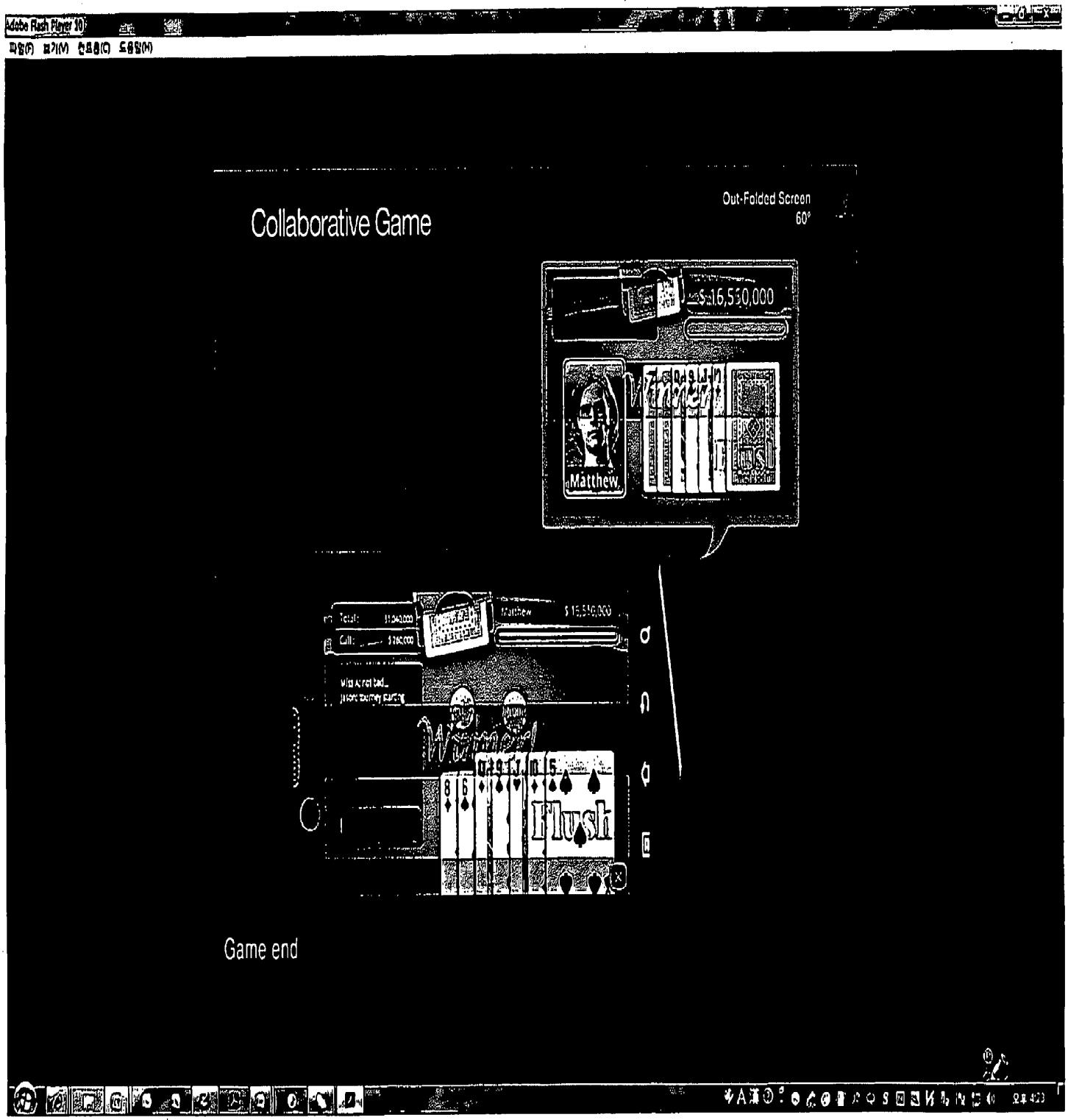
Copied from 13370939 on 05/11/2012



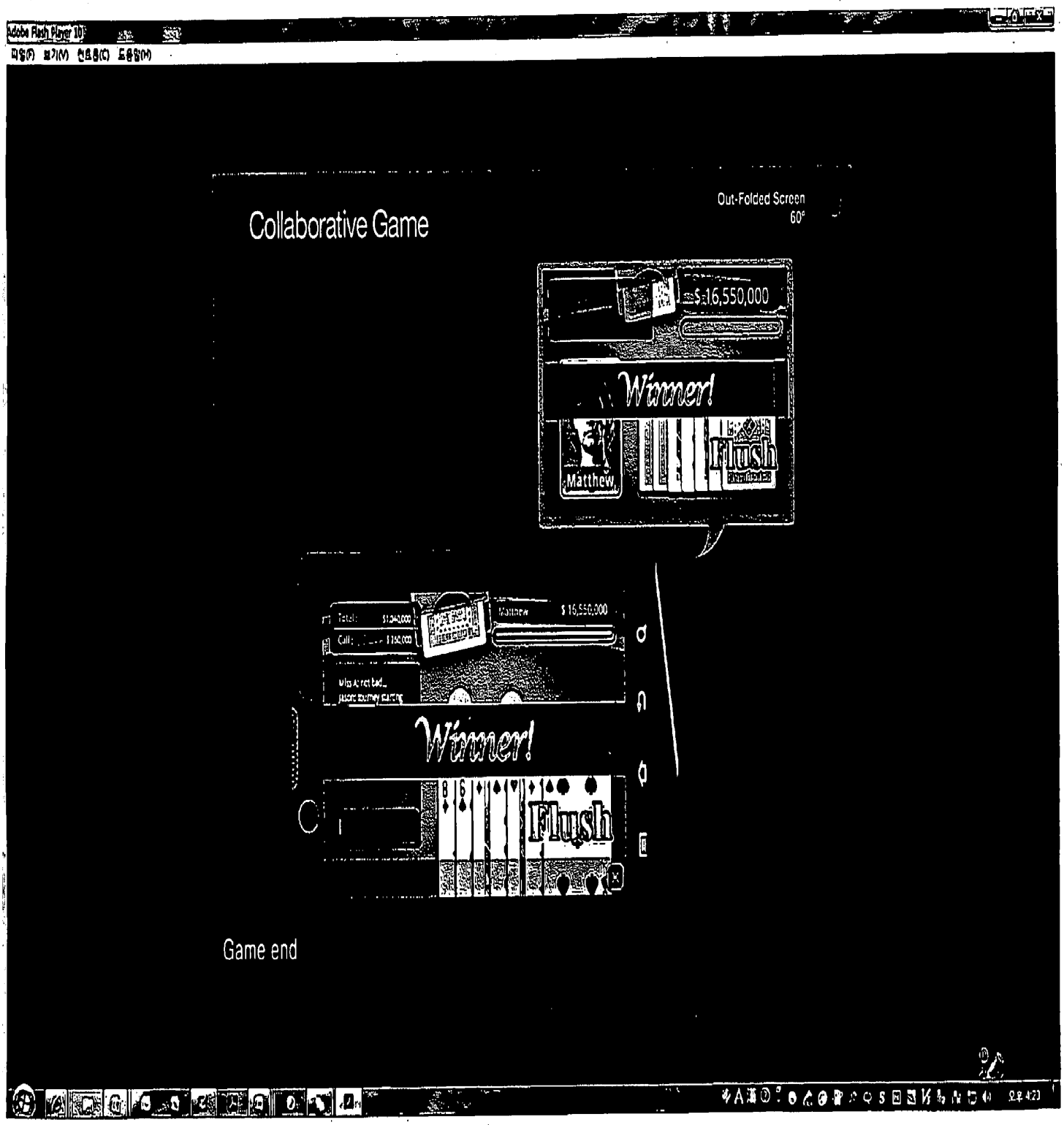
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



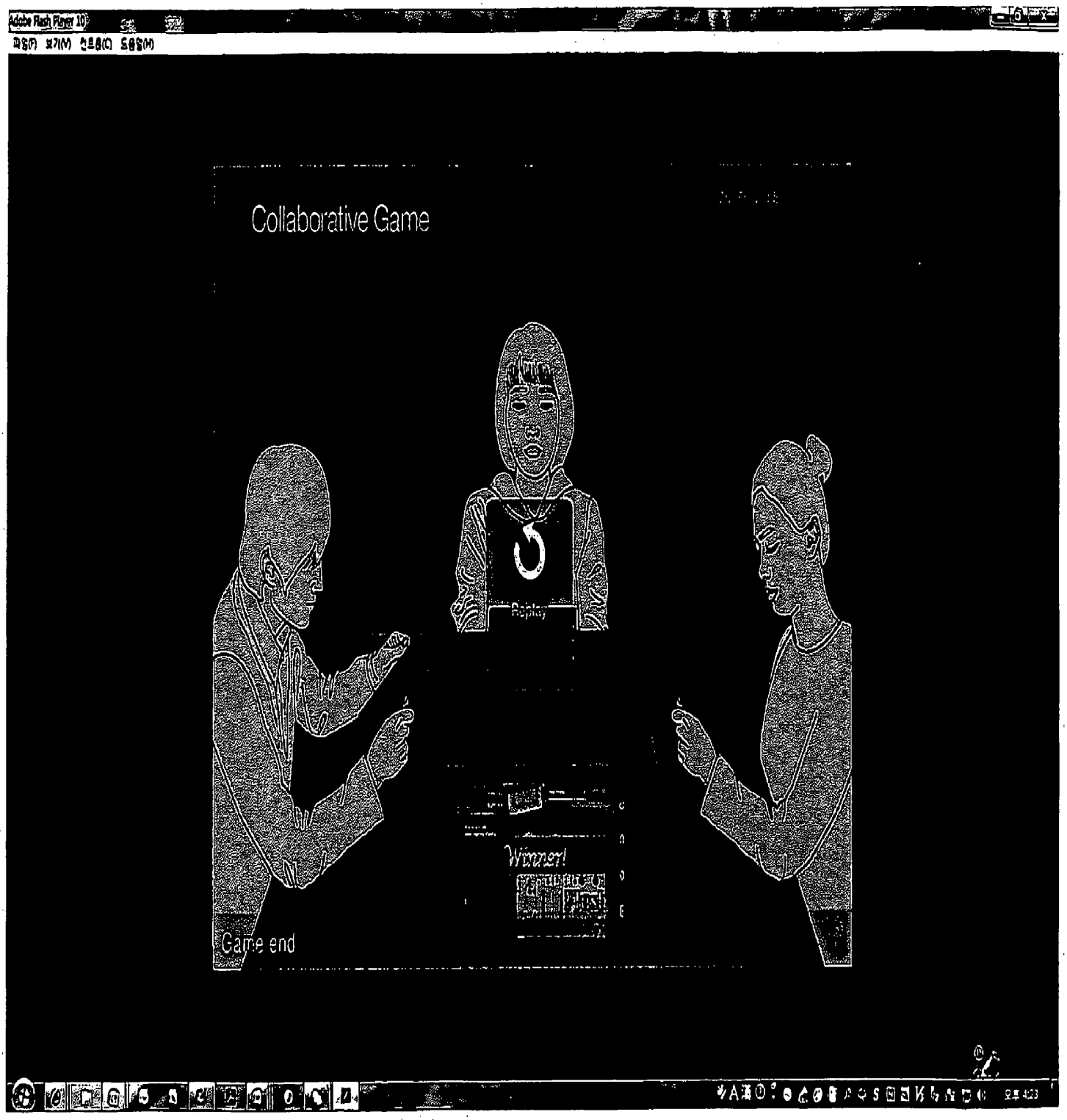
Copied from 13370939 on 05/11/2012



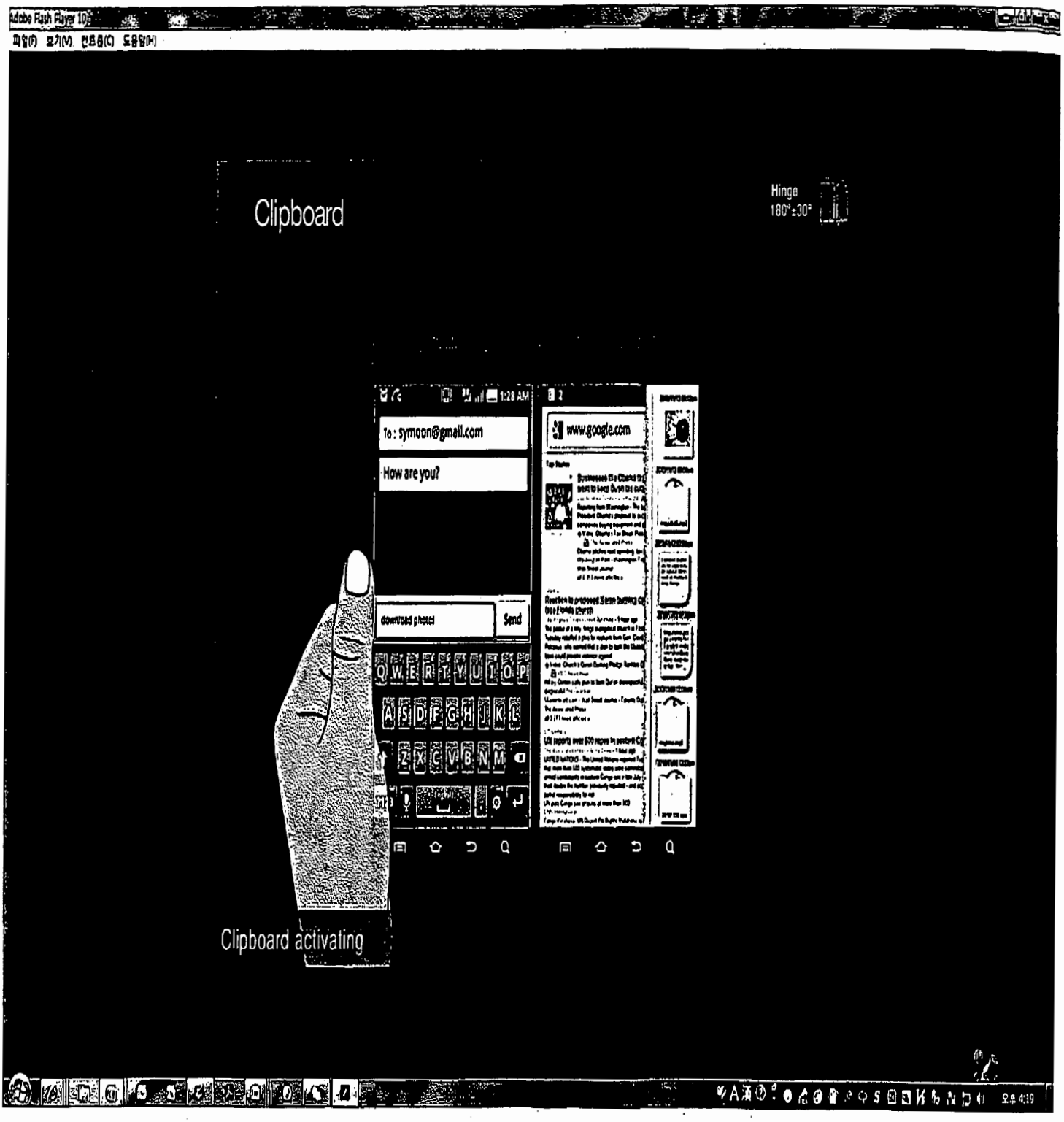
Copied from 13370939 on 05/11/2012



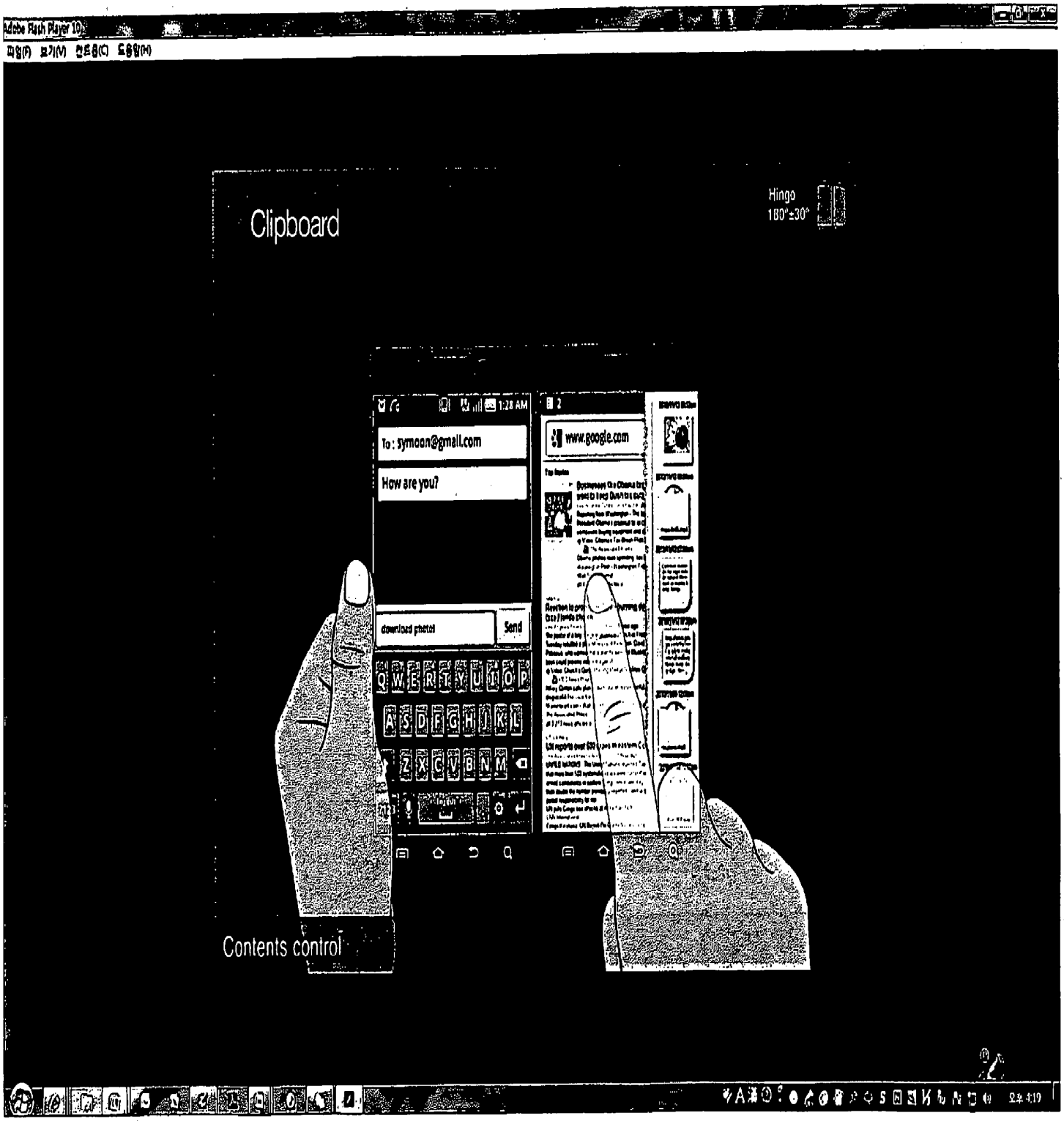
Copied from 13370939 on 05/11/2012



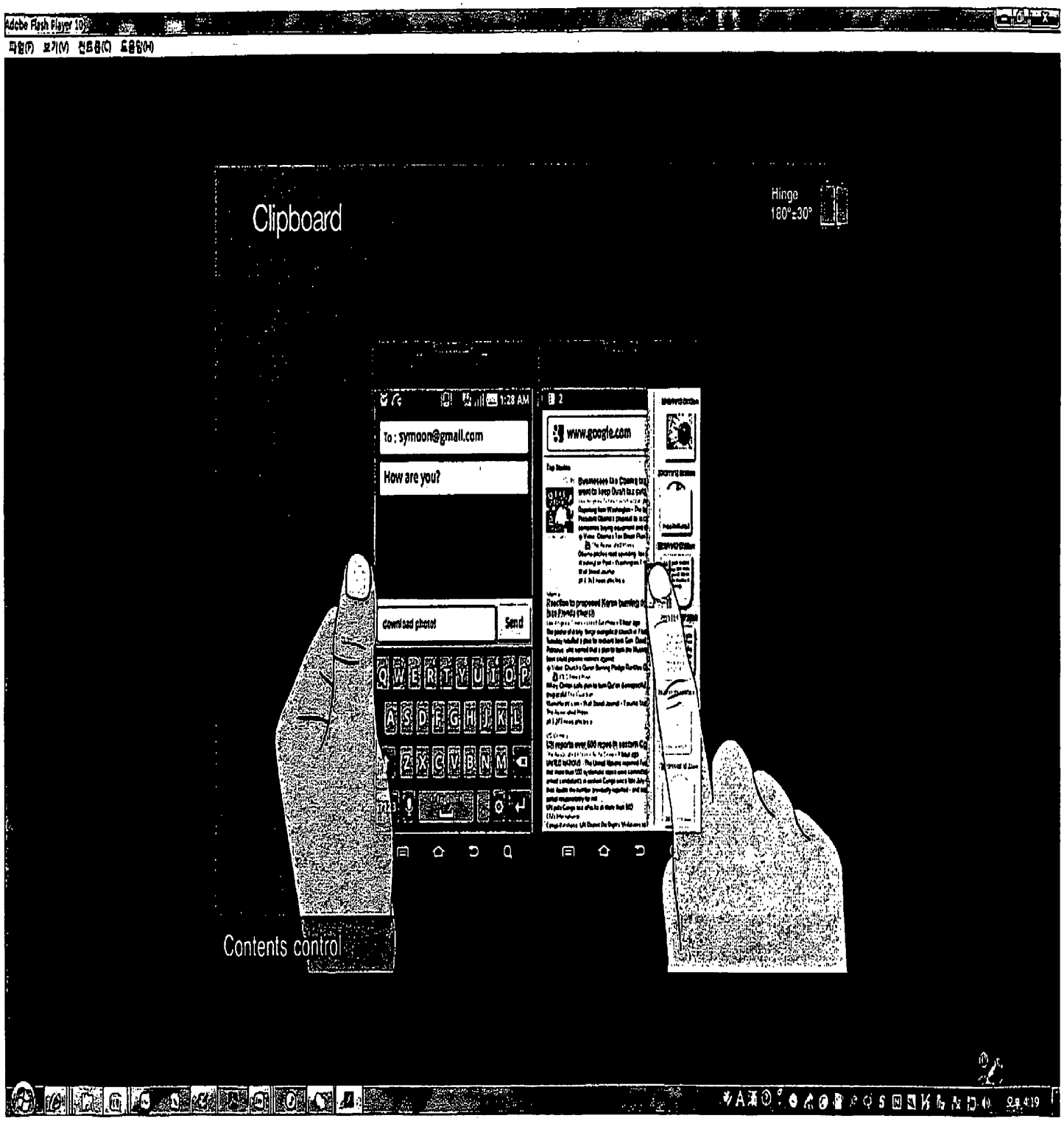
Copied from 13370939 on 05/11/2012



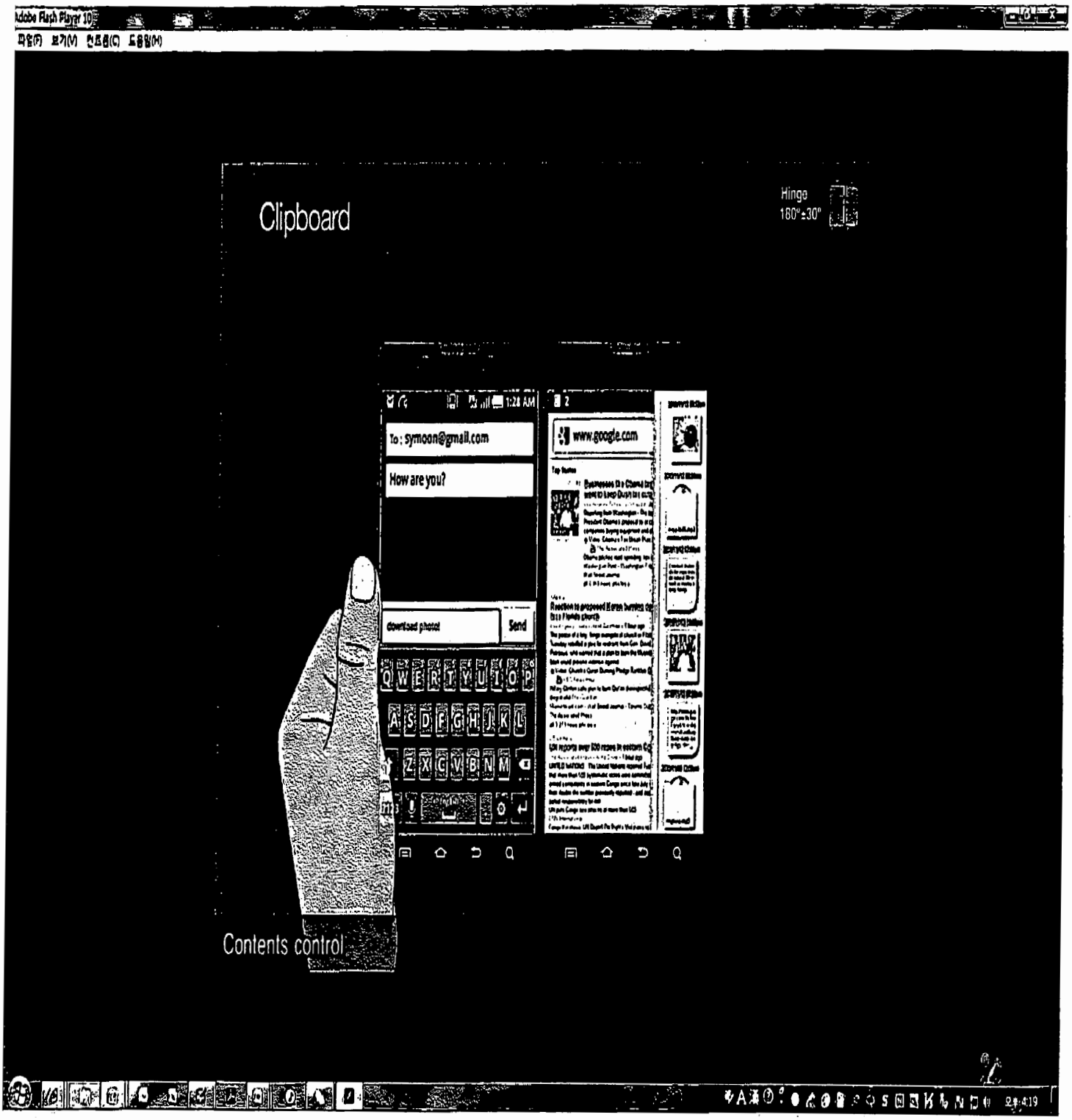
Copied from 13370939 on 05/11/2012



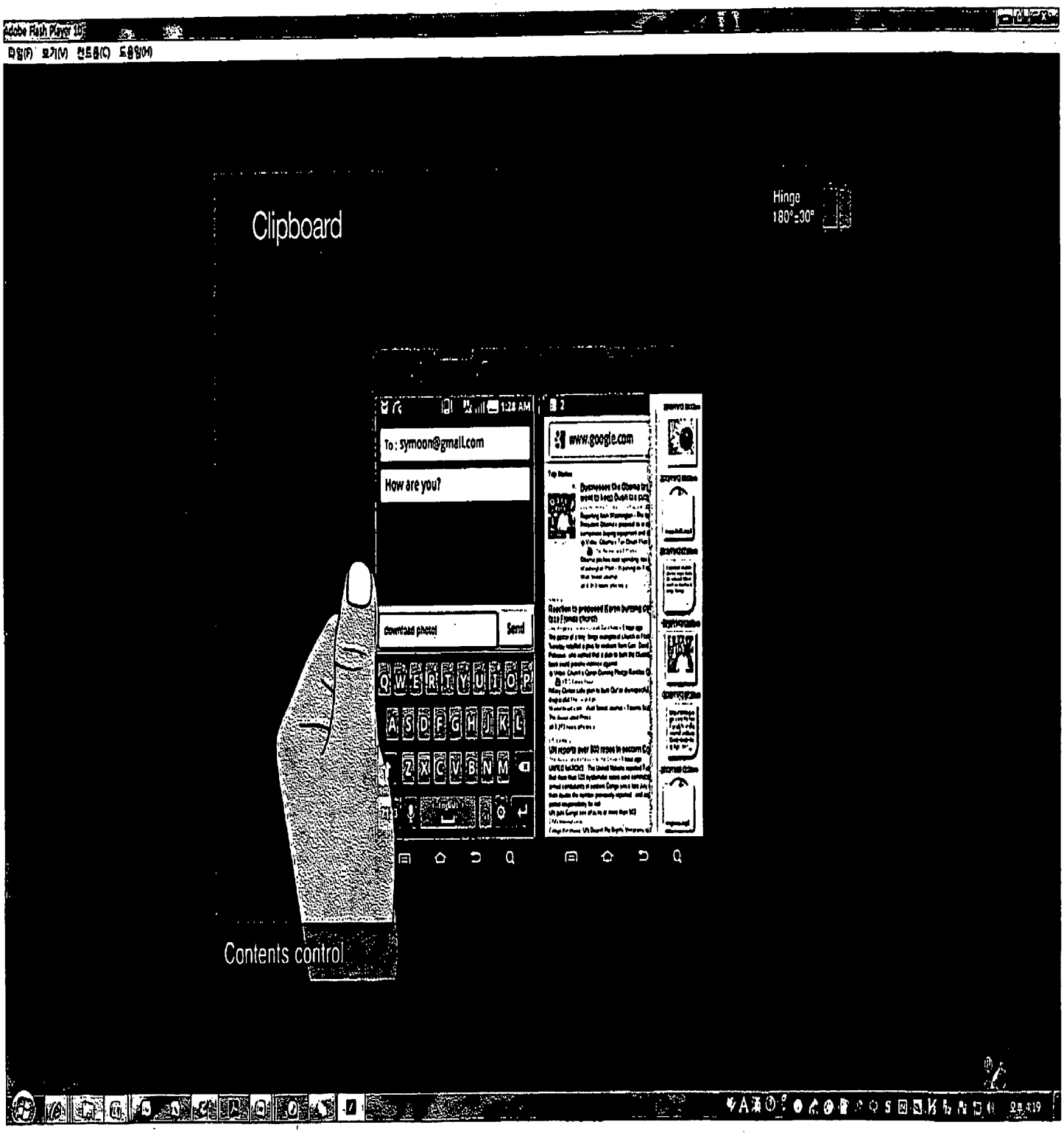
Copied from 13370939 on 05/11/2012



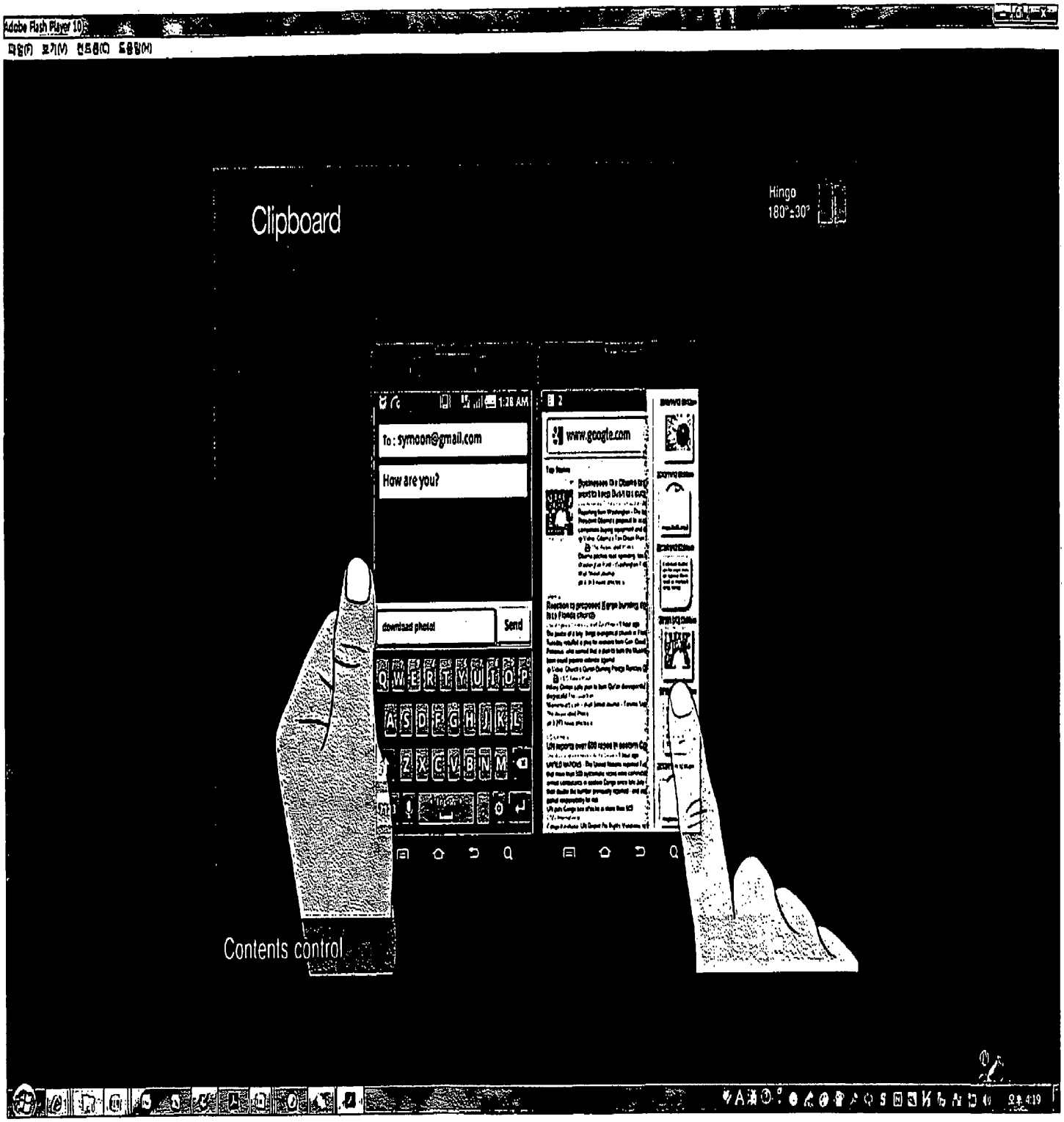
Copied from 13370939 on 05/11/2012



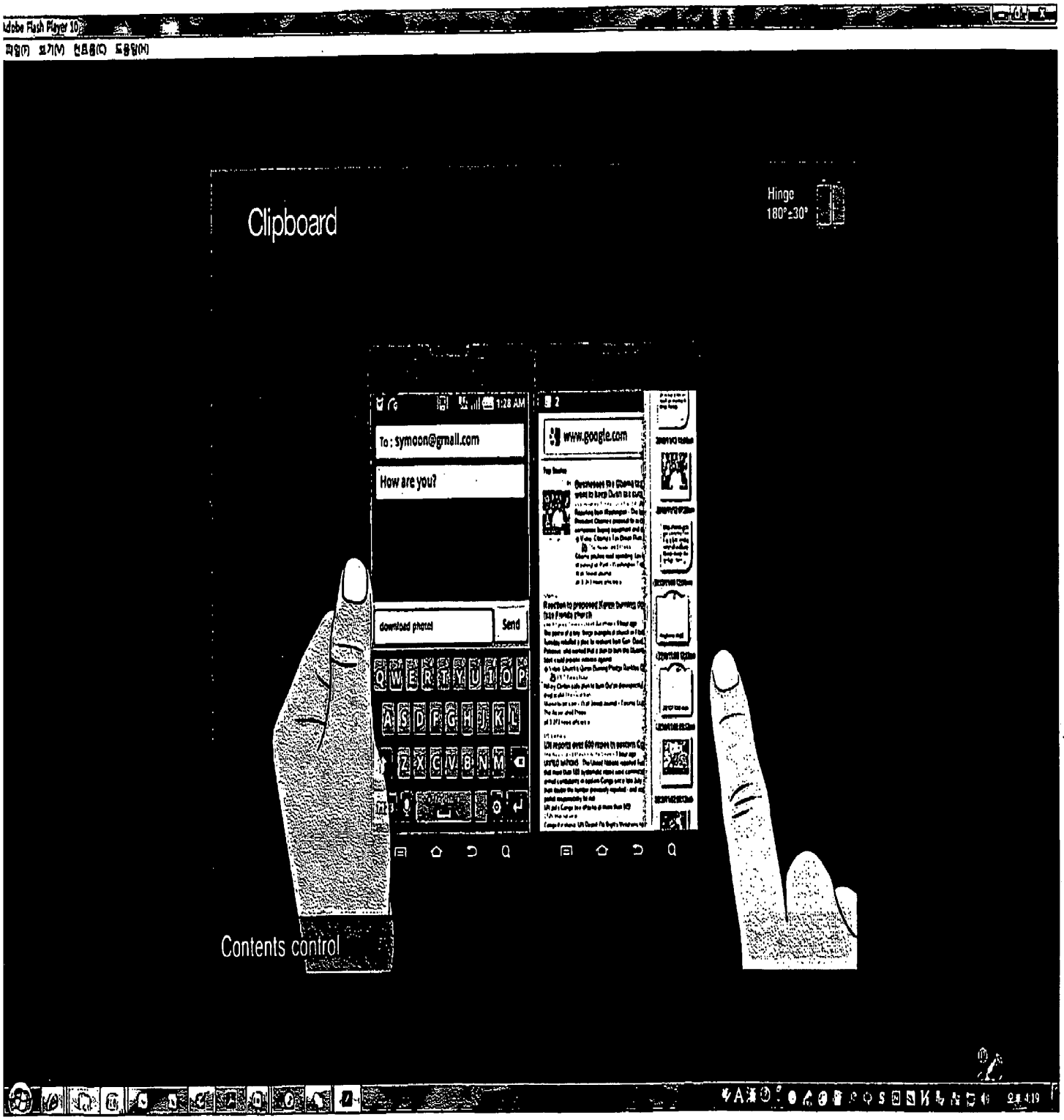
Copied from 13370939 on 05/11/2012



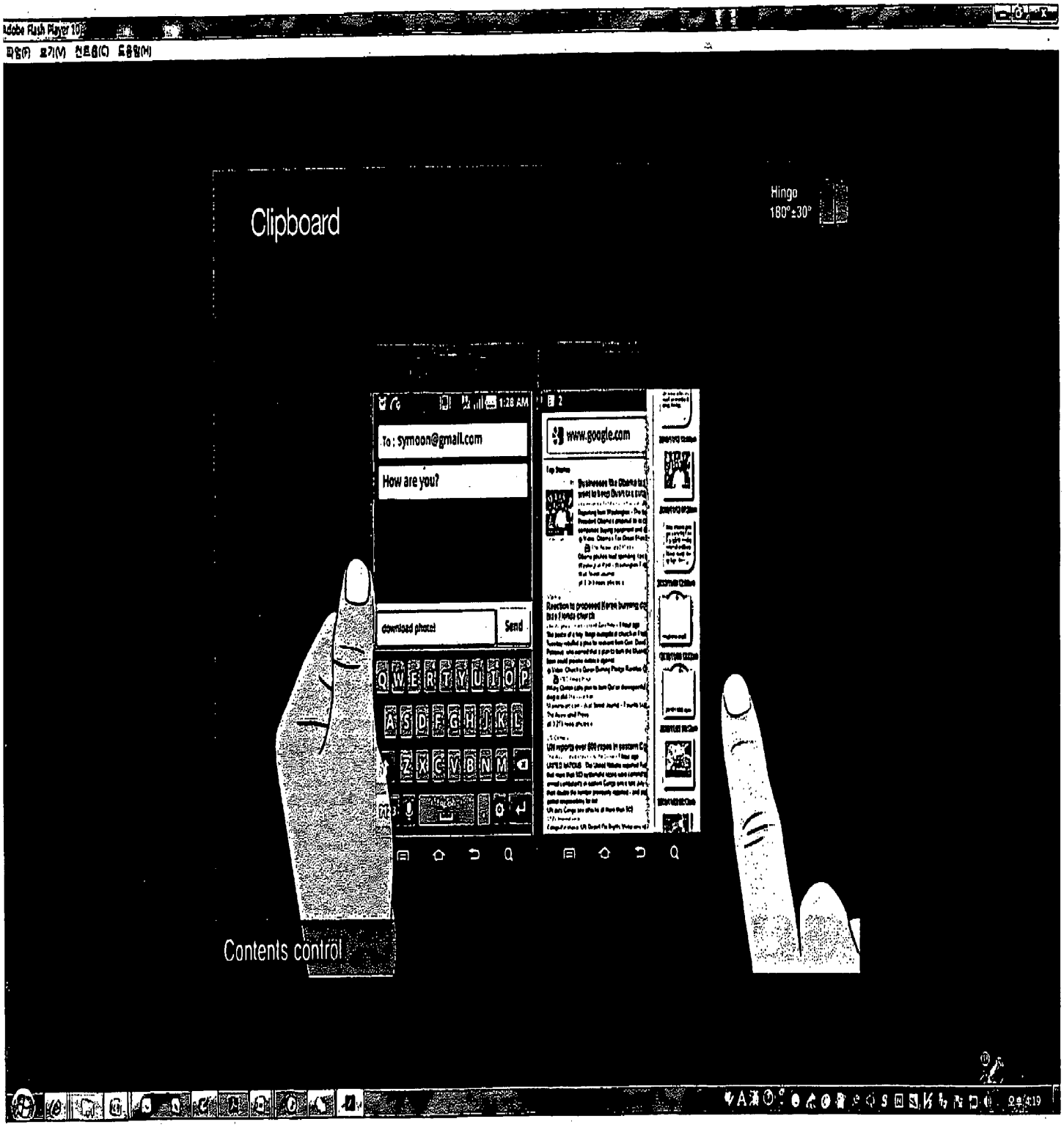
Copied from 13370939 on 05/11/2012



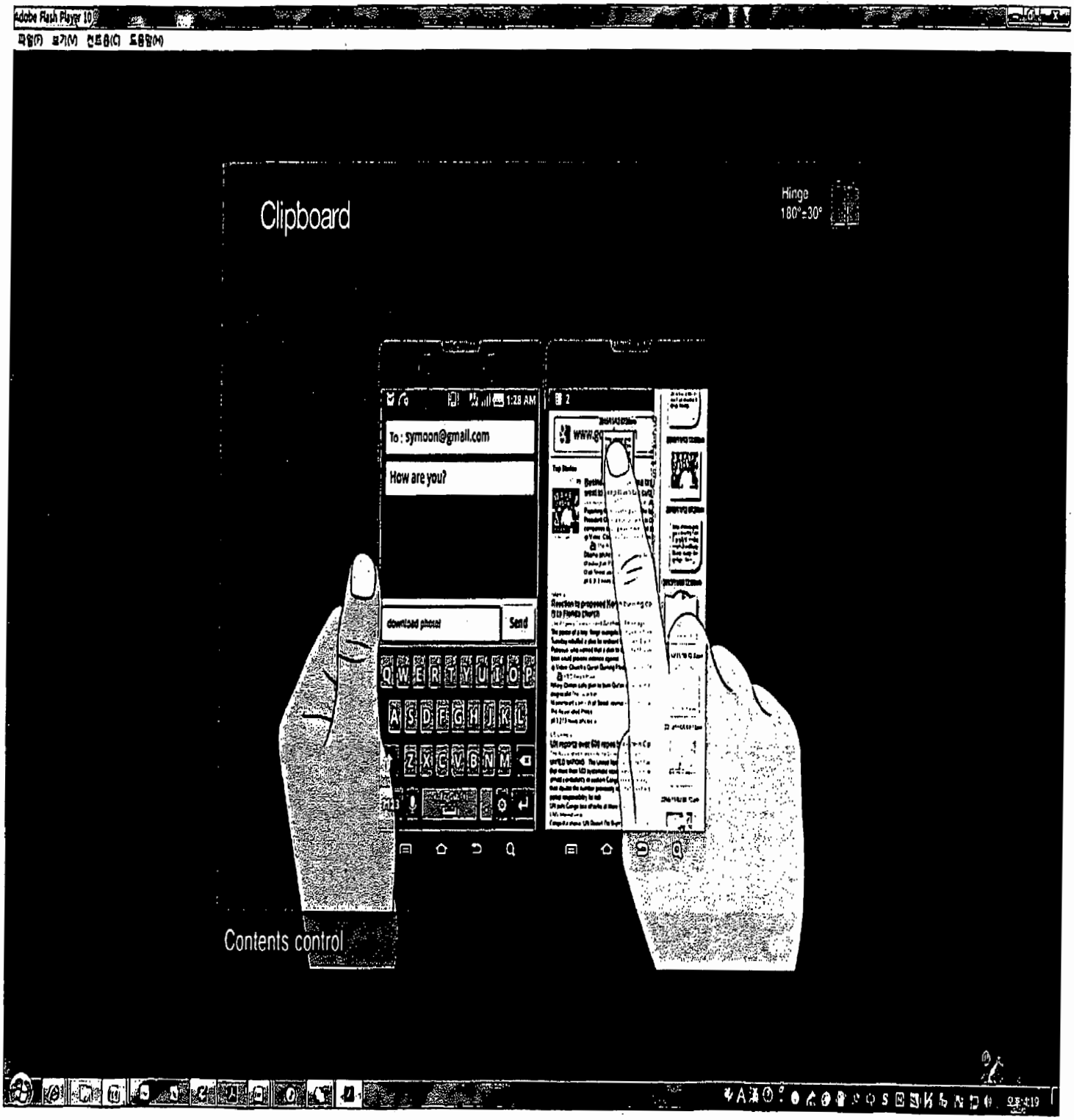
Copied from 13370939 on 05/11/2012



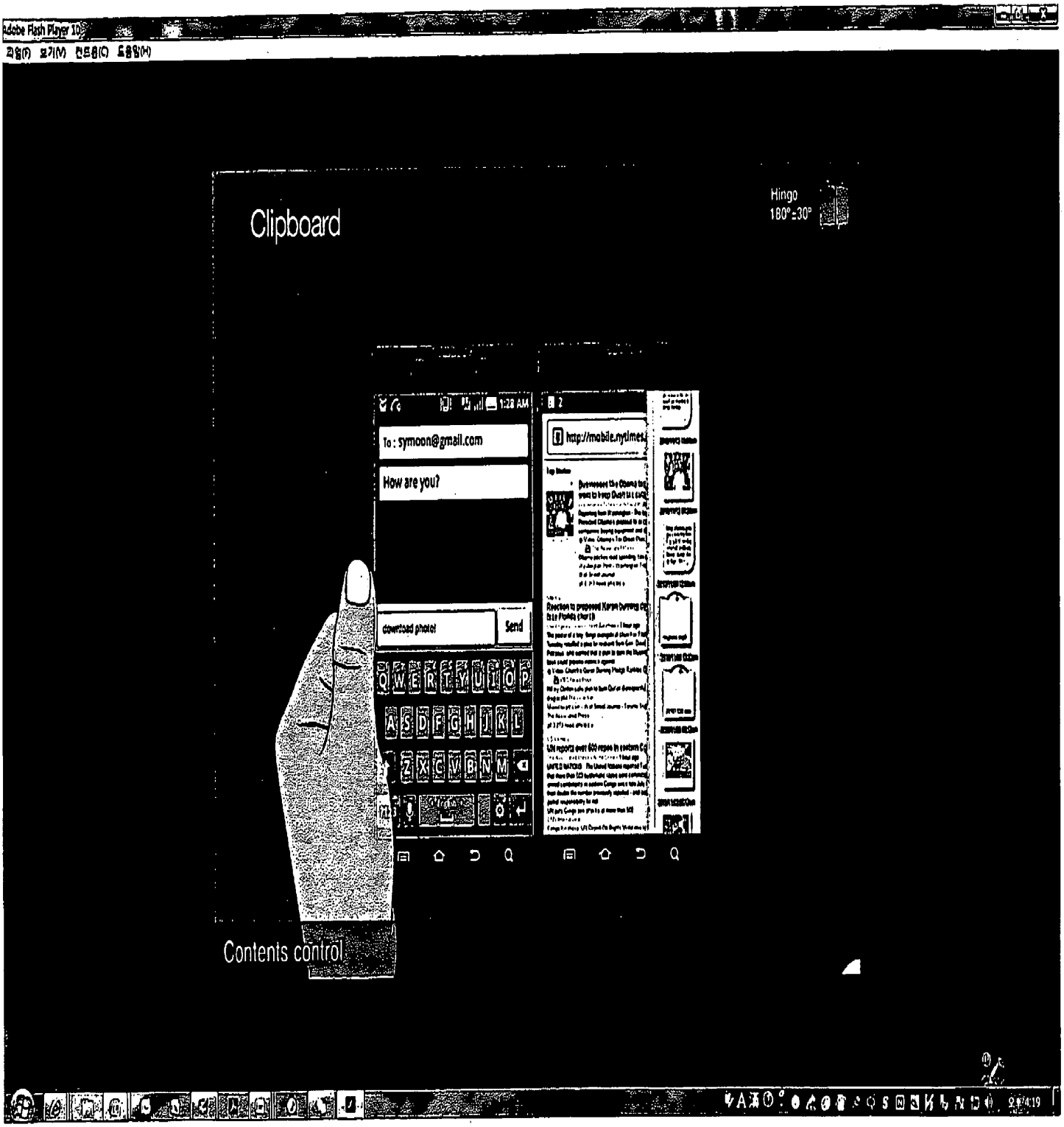
Copied from 13370939 on 05/11/2012



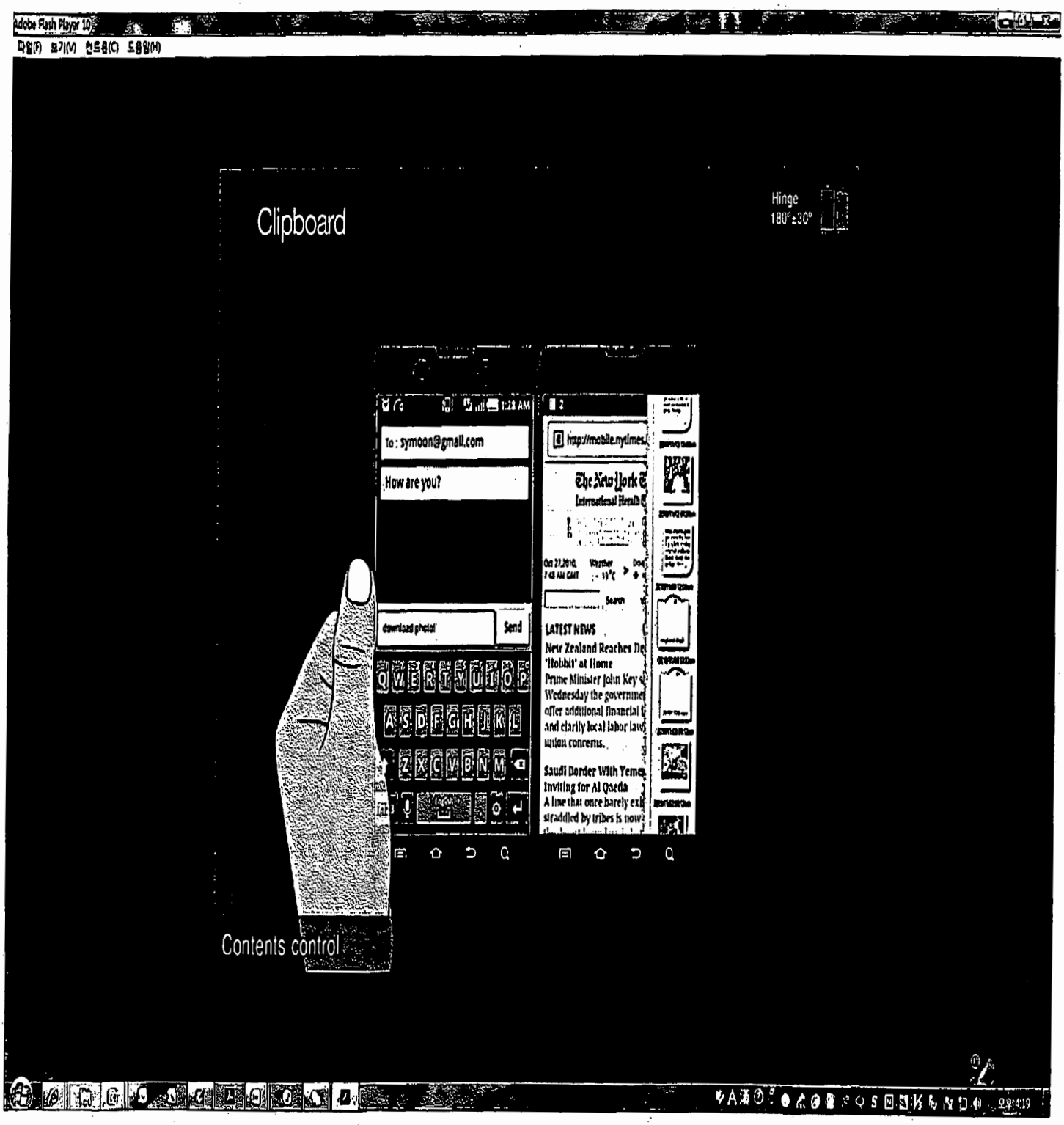
Copied from 13370939 on 05/11/2012



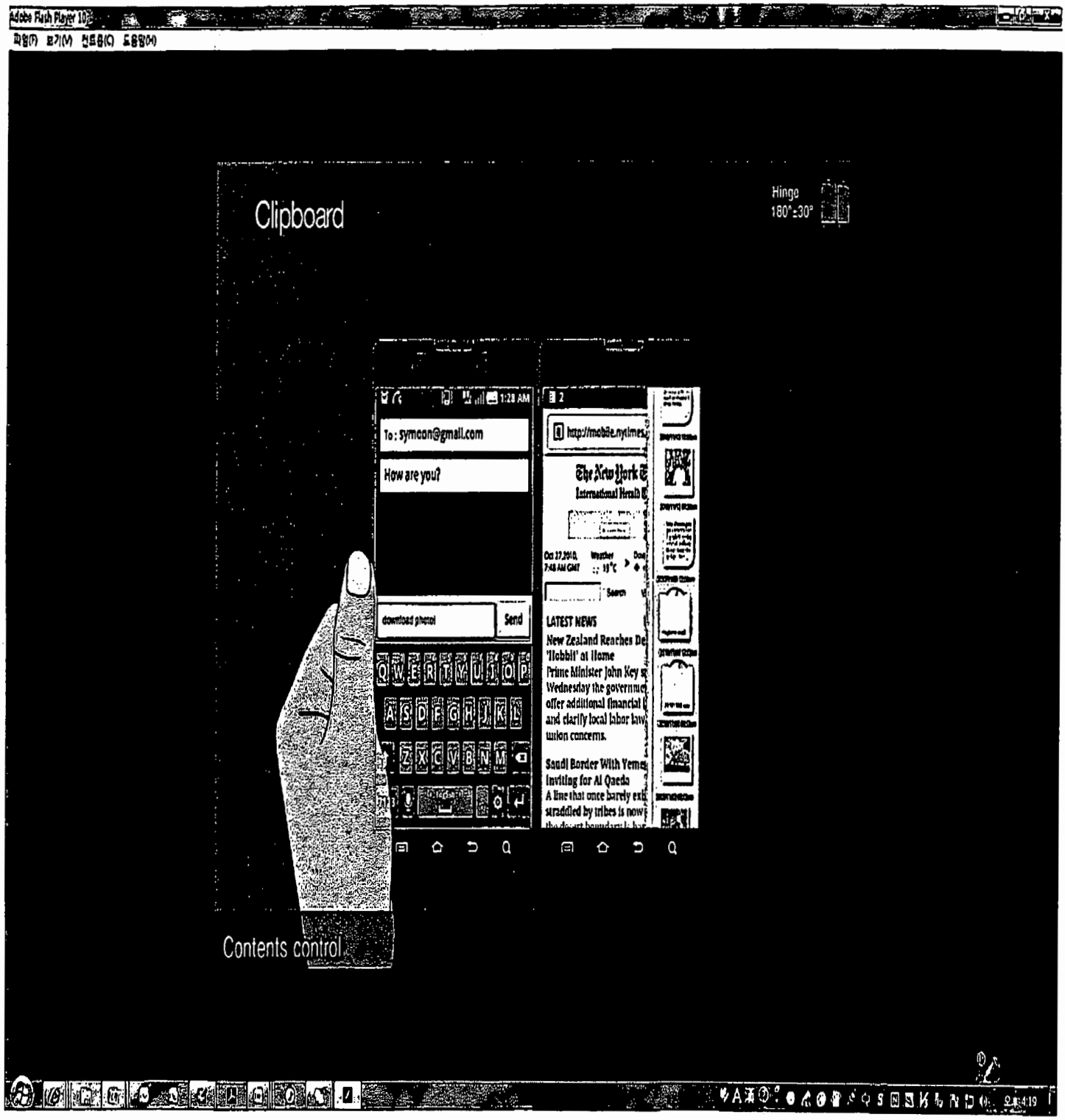
Copied from 13370939 on 05/11/2012



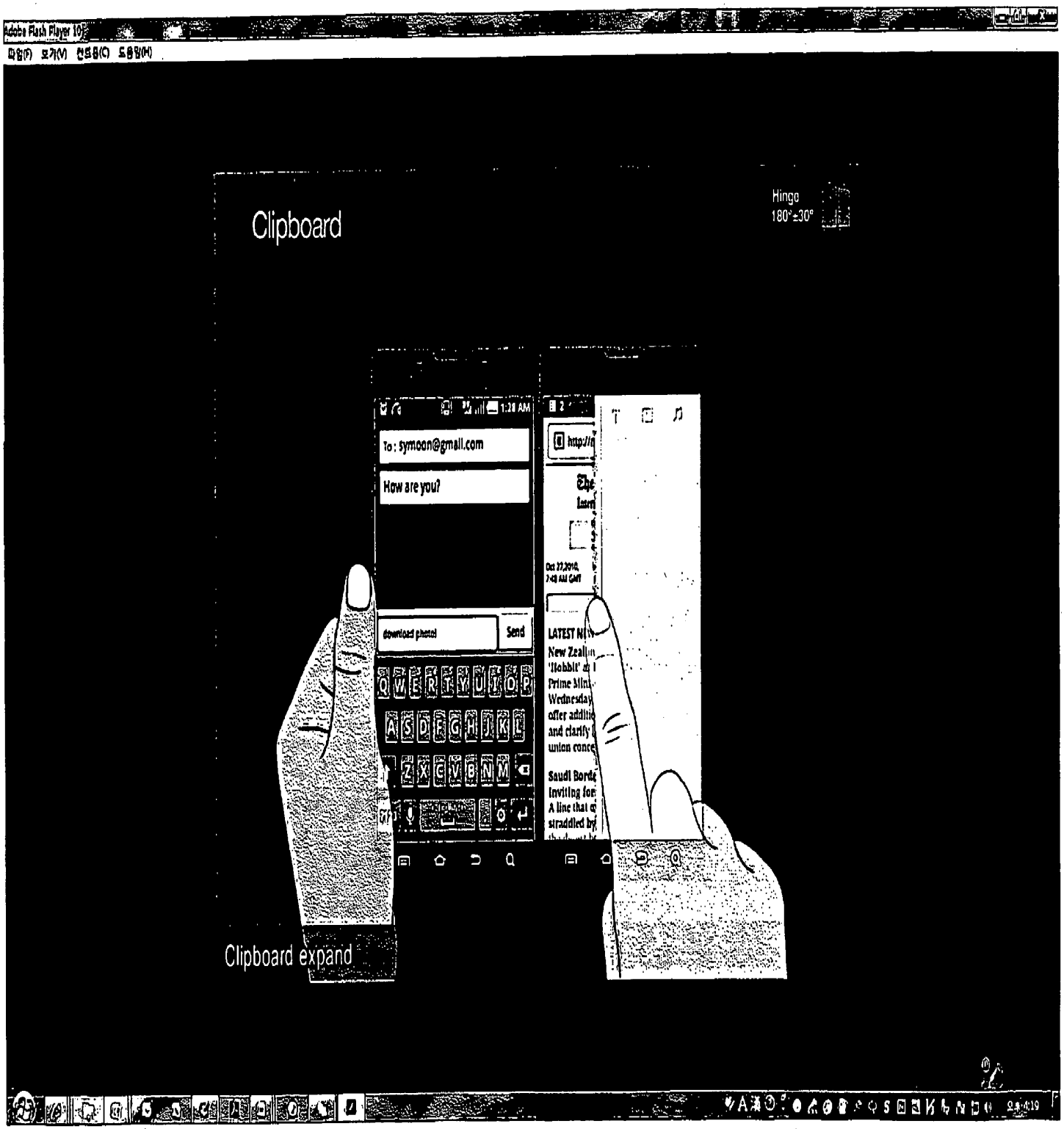
Copied from 13370939 on 05/11/2012



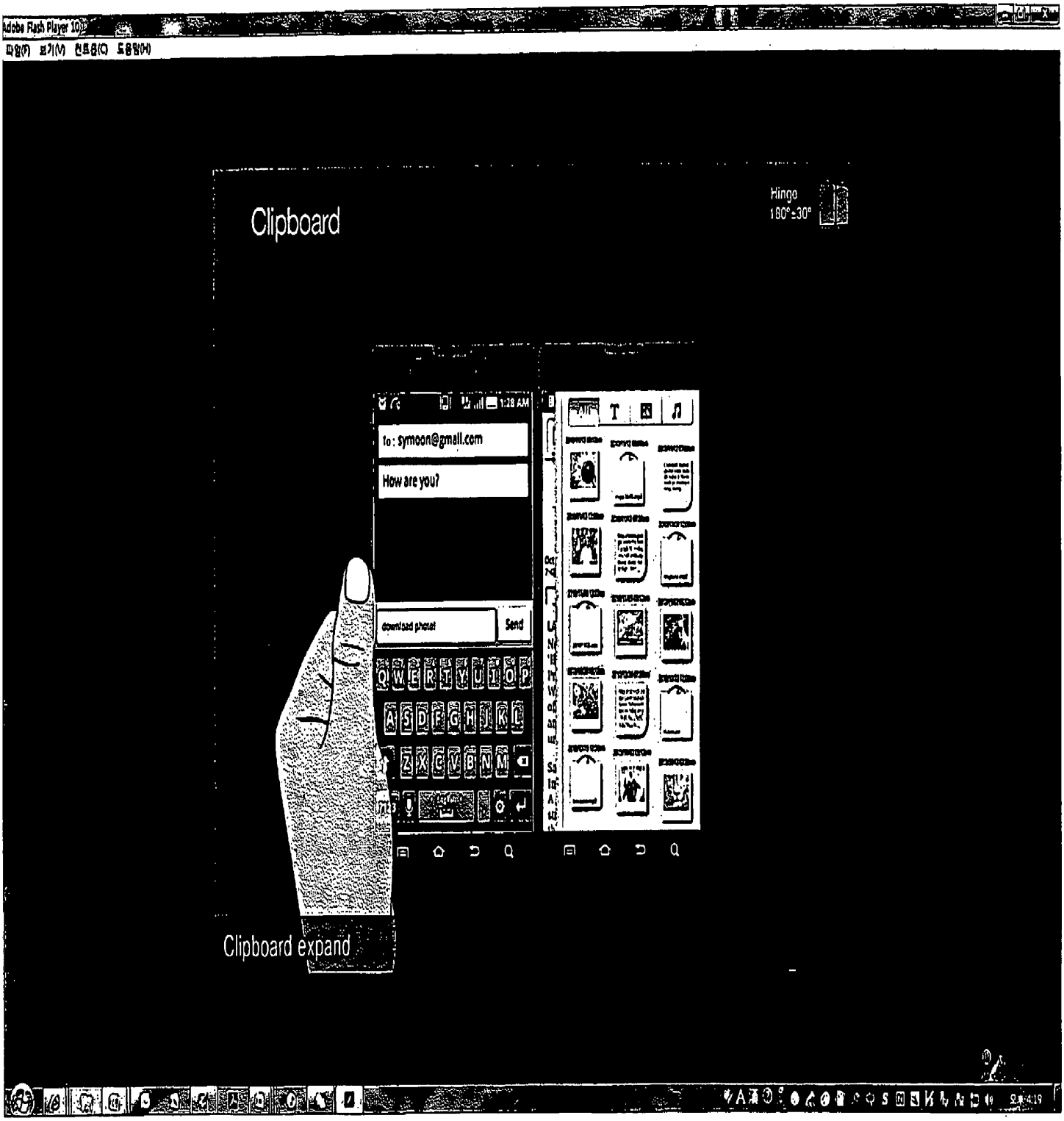
Copied from 13370939 on 05/11/2012



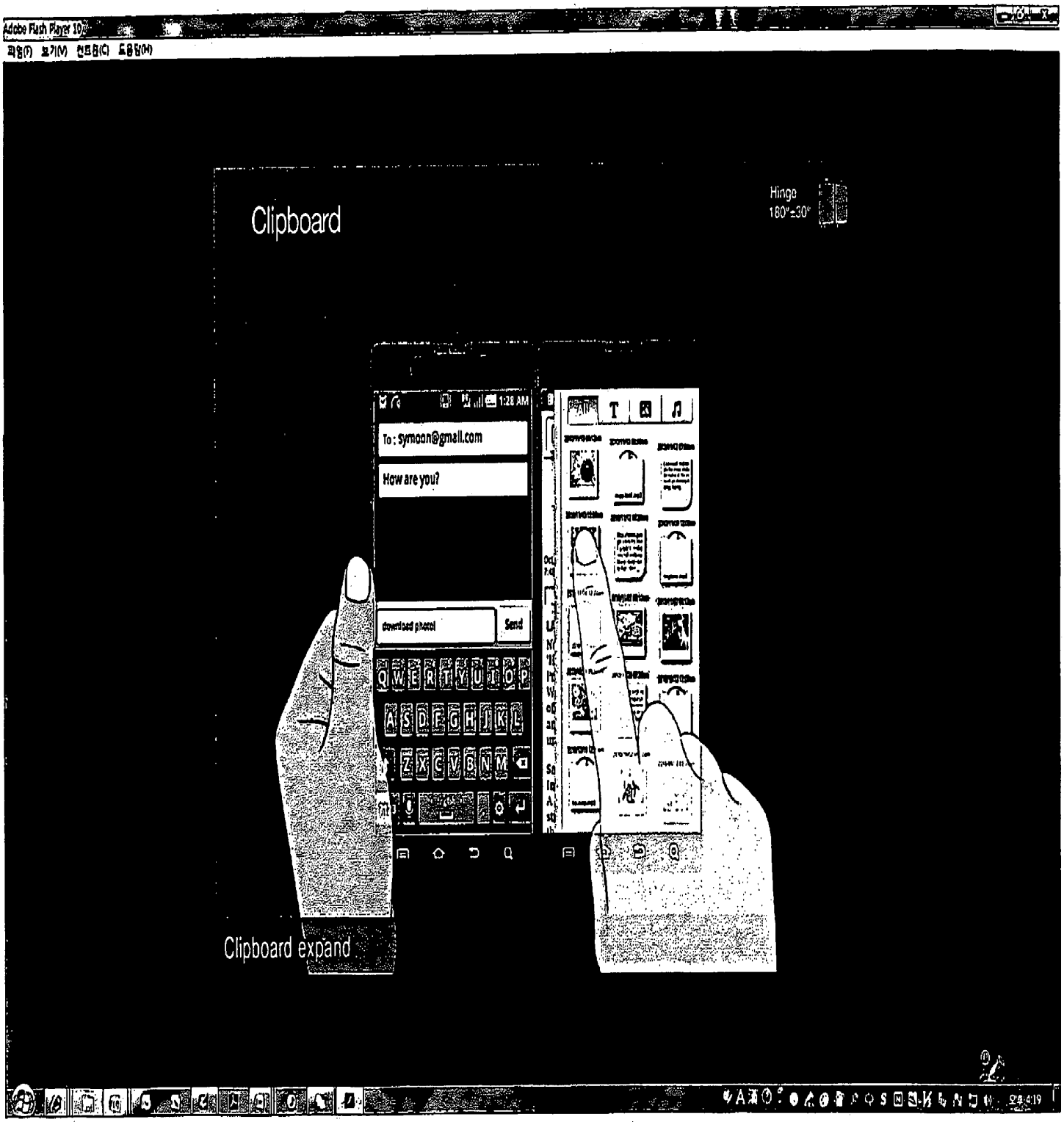
Copied from 13370939 on 05/11/2012



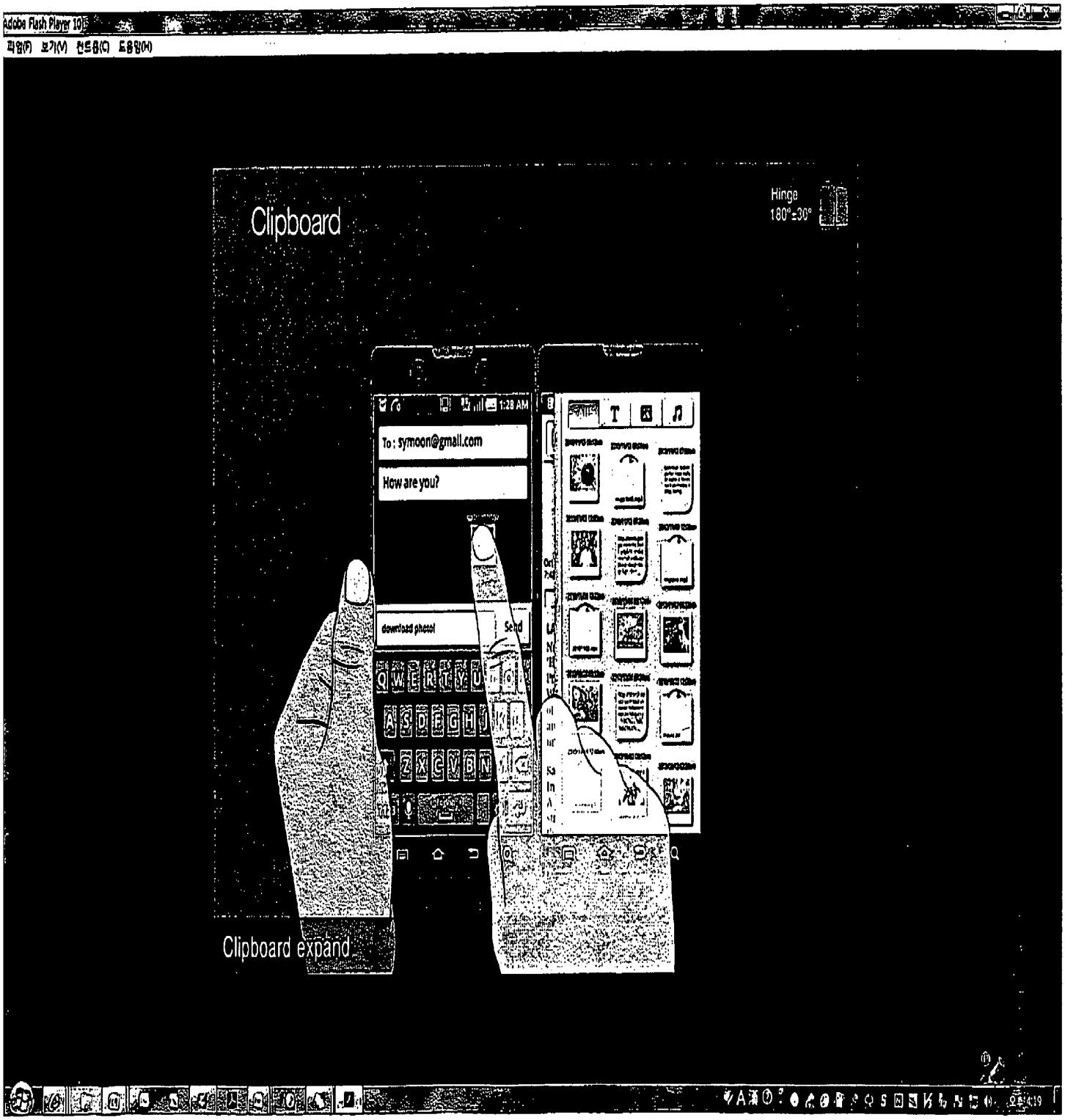
Copied from 13370939 on 05/11/2012



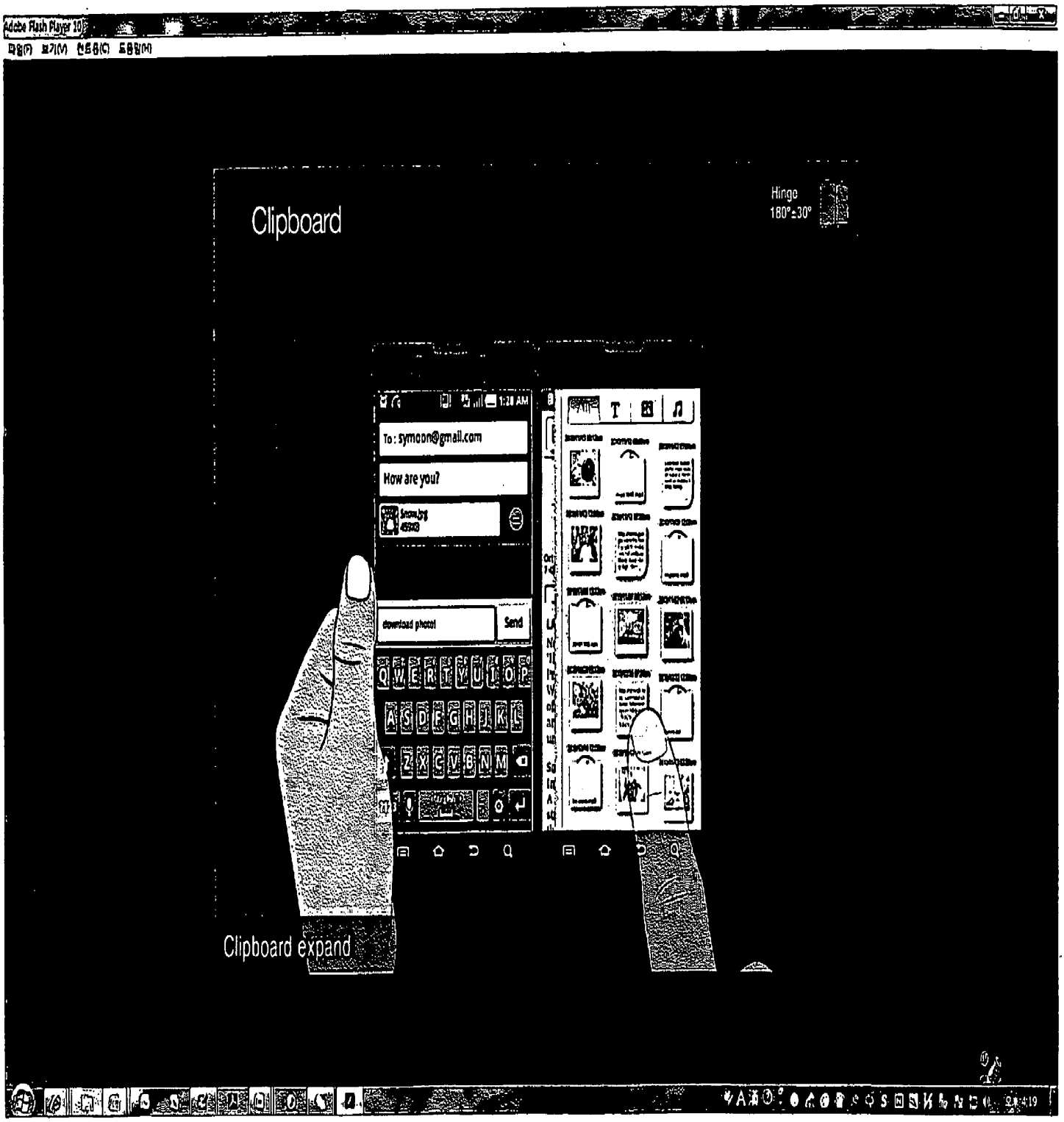
Copied from 13370939 on 05/11/2012



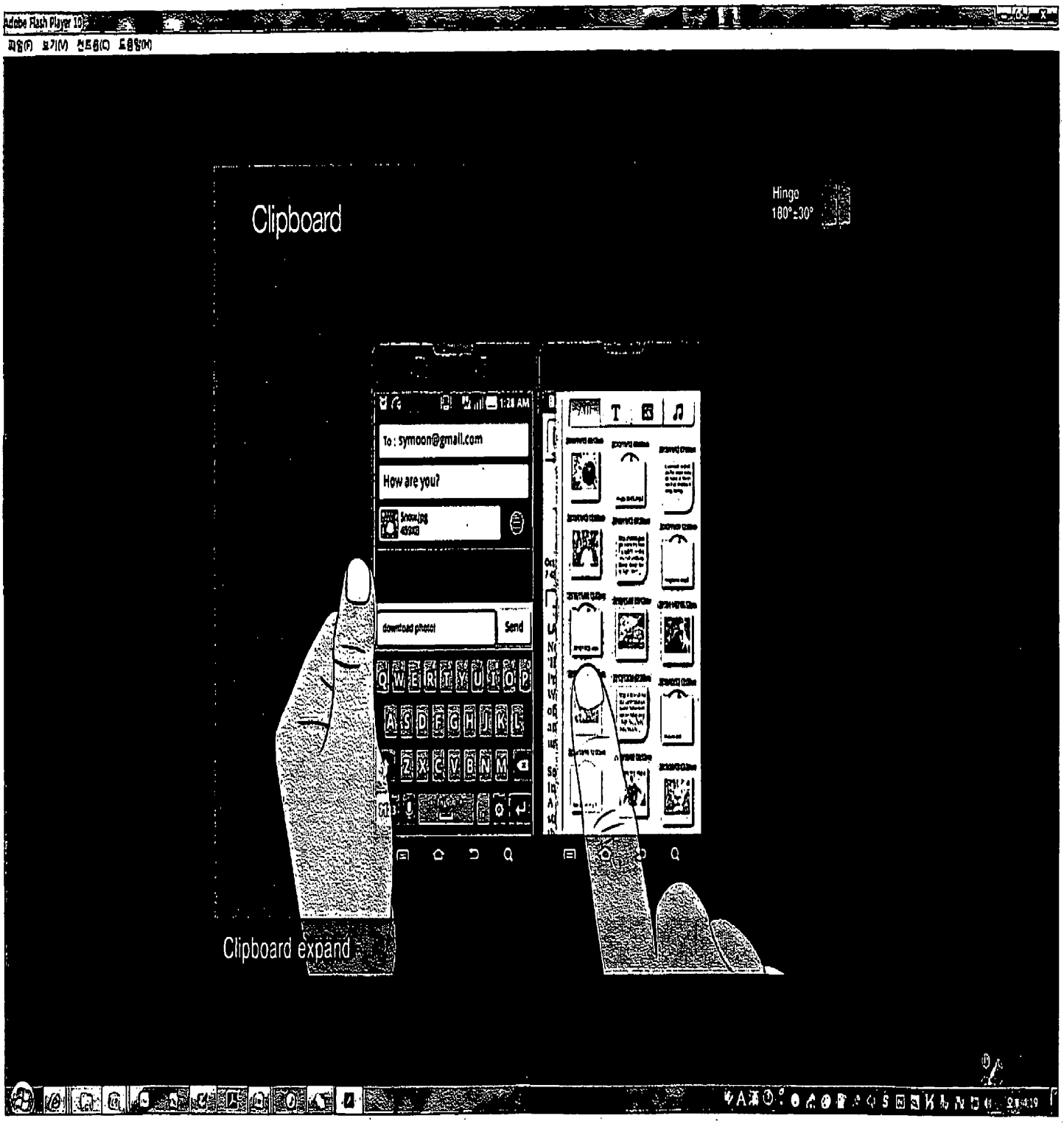
Copied from 13370939 on 05/11/2012



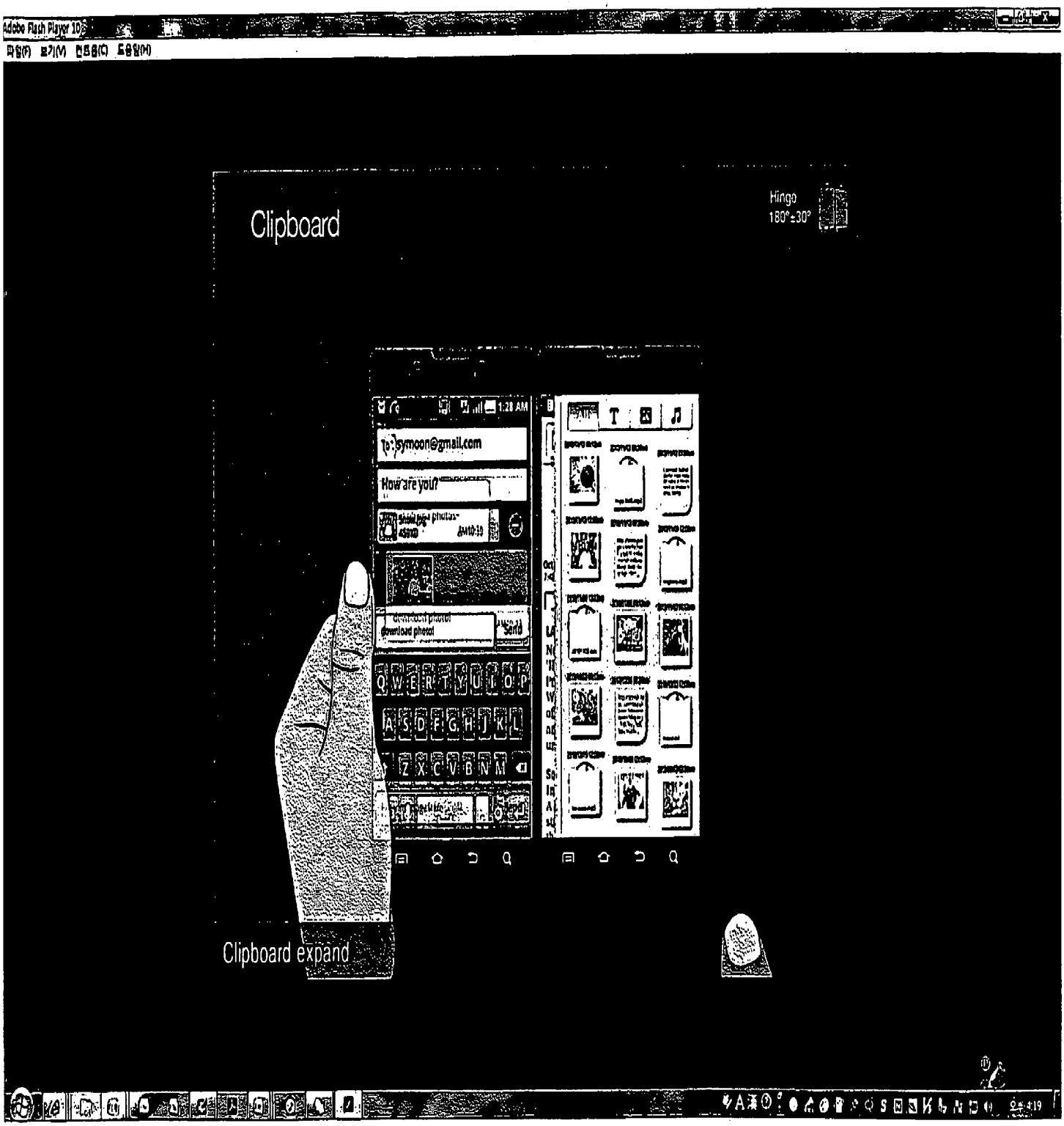
Copied from 13370939 on 05/11/2012



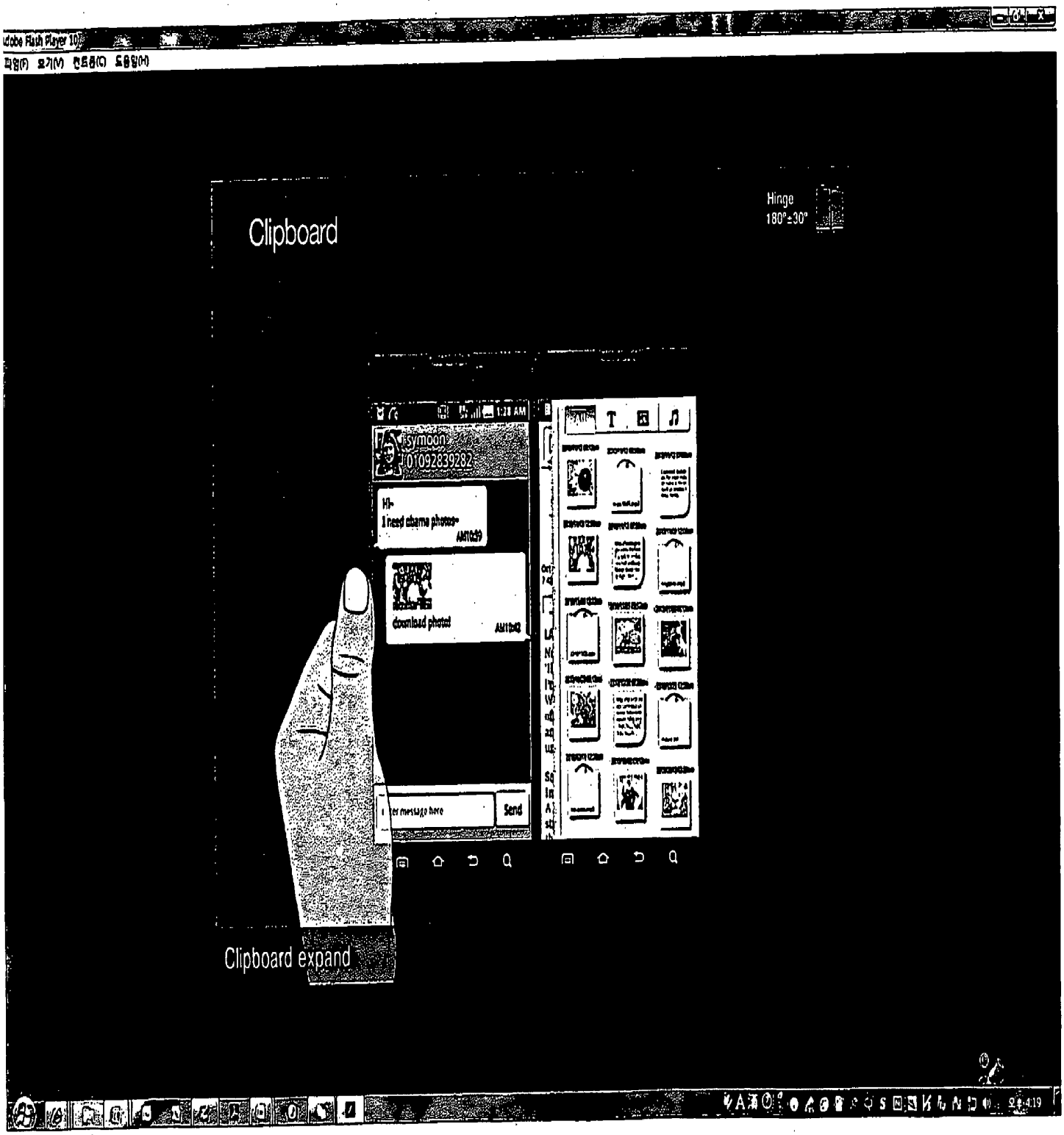
Copied from 13370939 on 05/11/2012



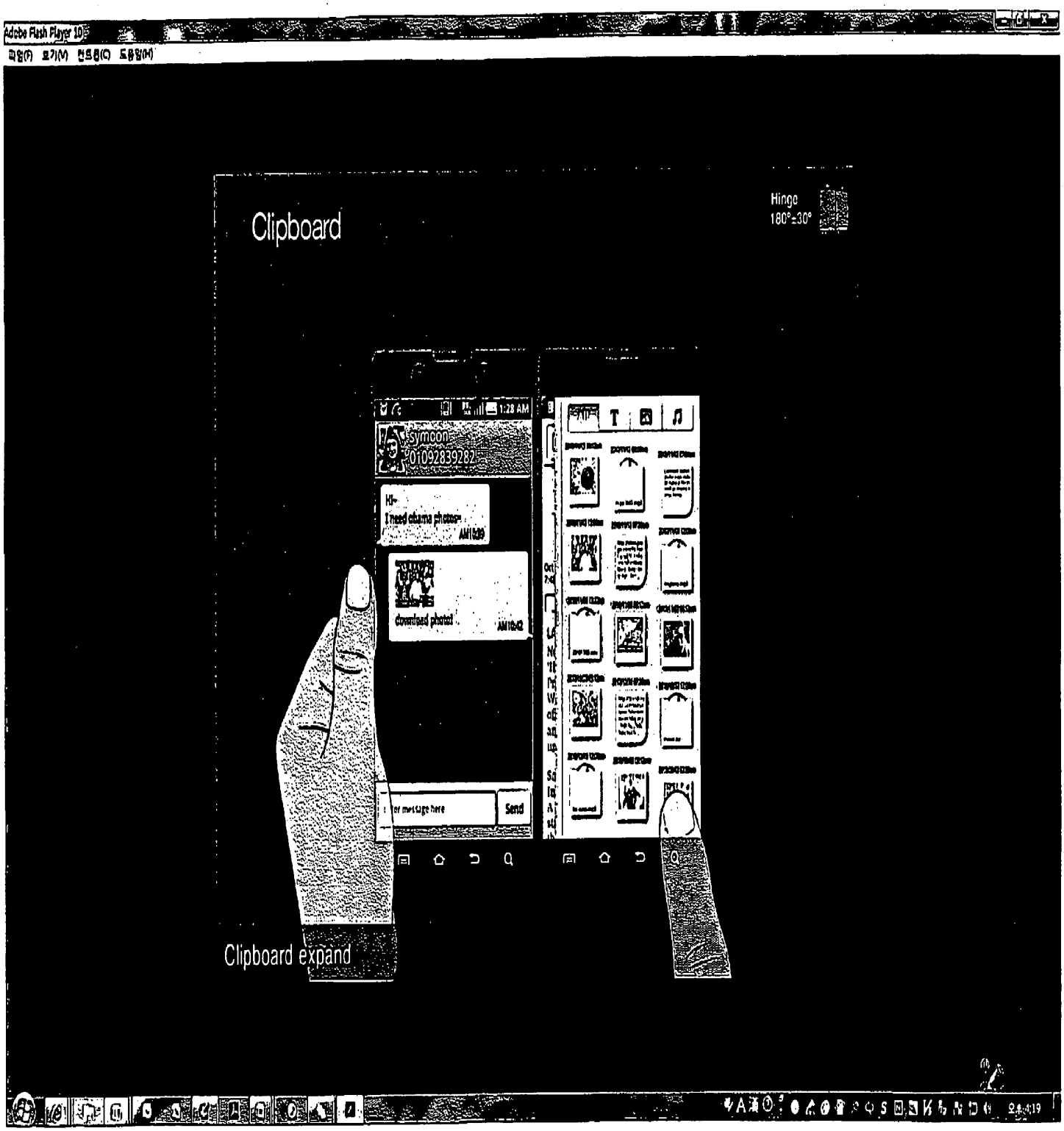
Copied from 13370939 on 05/11/2012



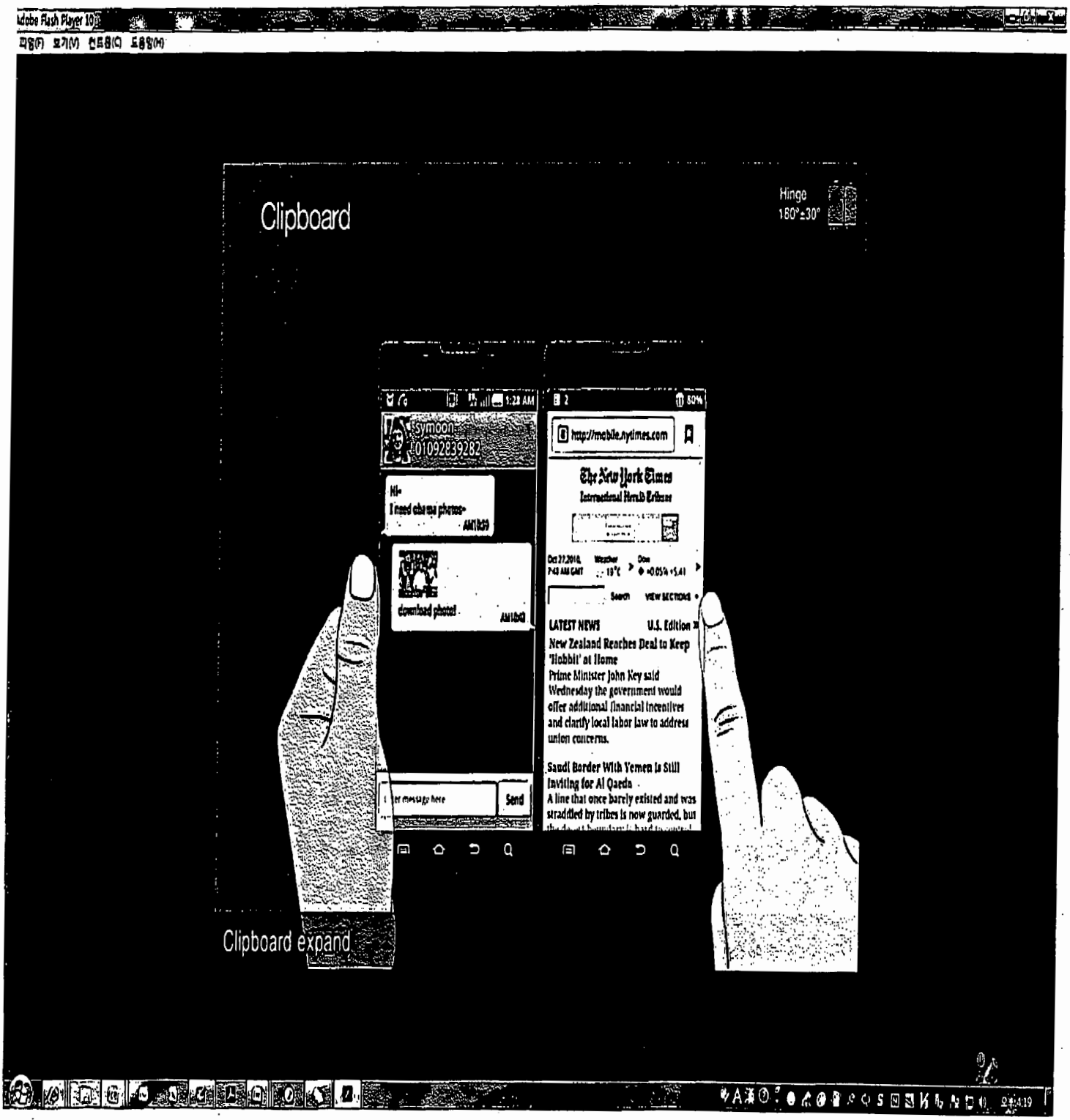
Copied from 13370939 on 05/11/2012



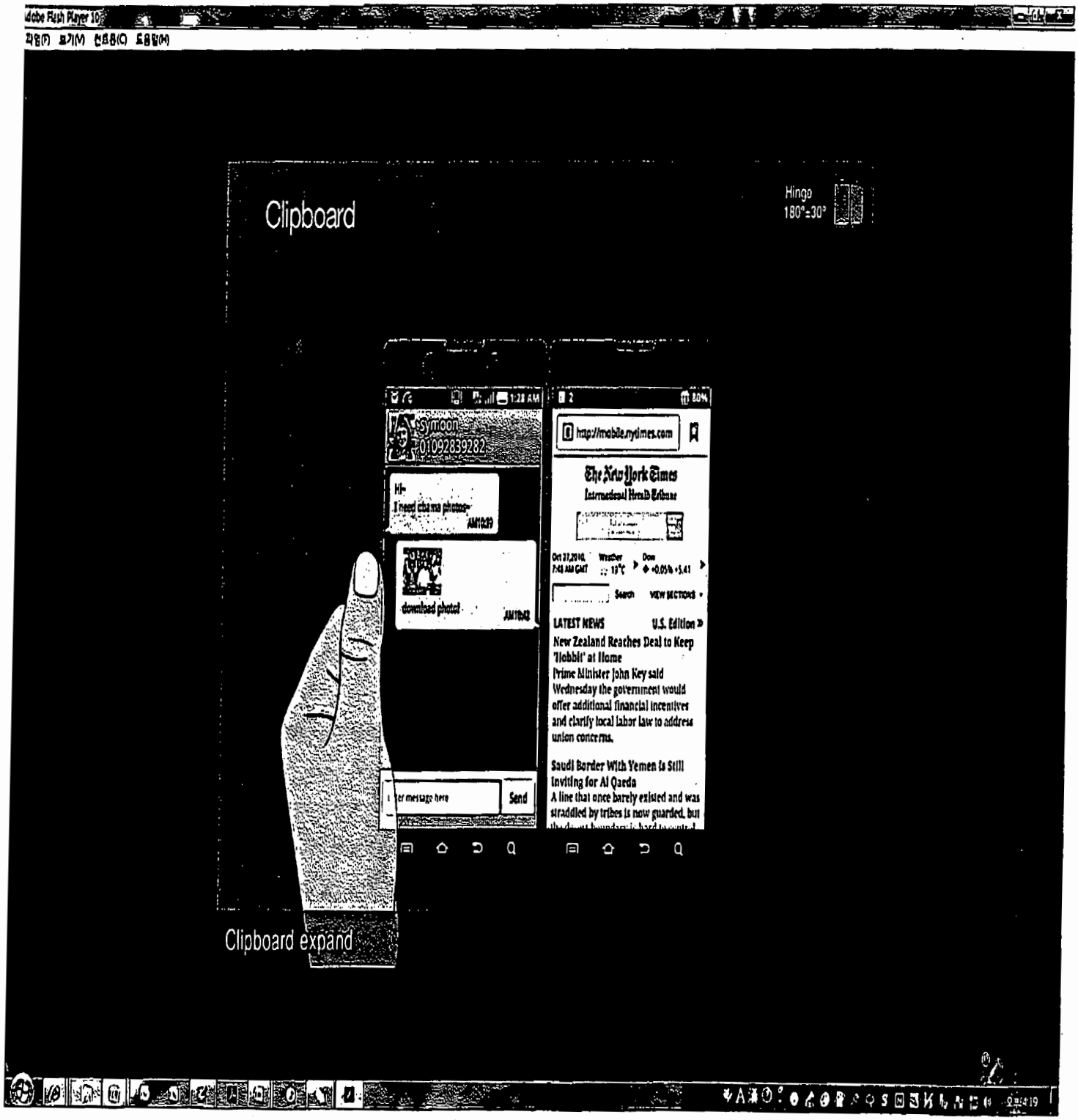
Copied from 13370939 on 05/11/2012



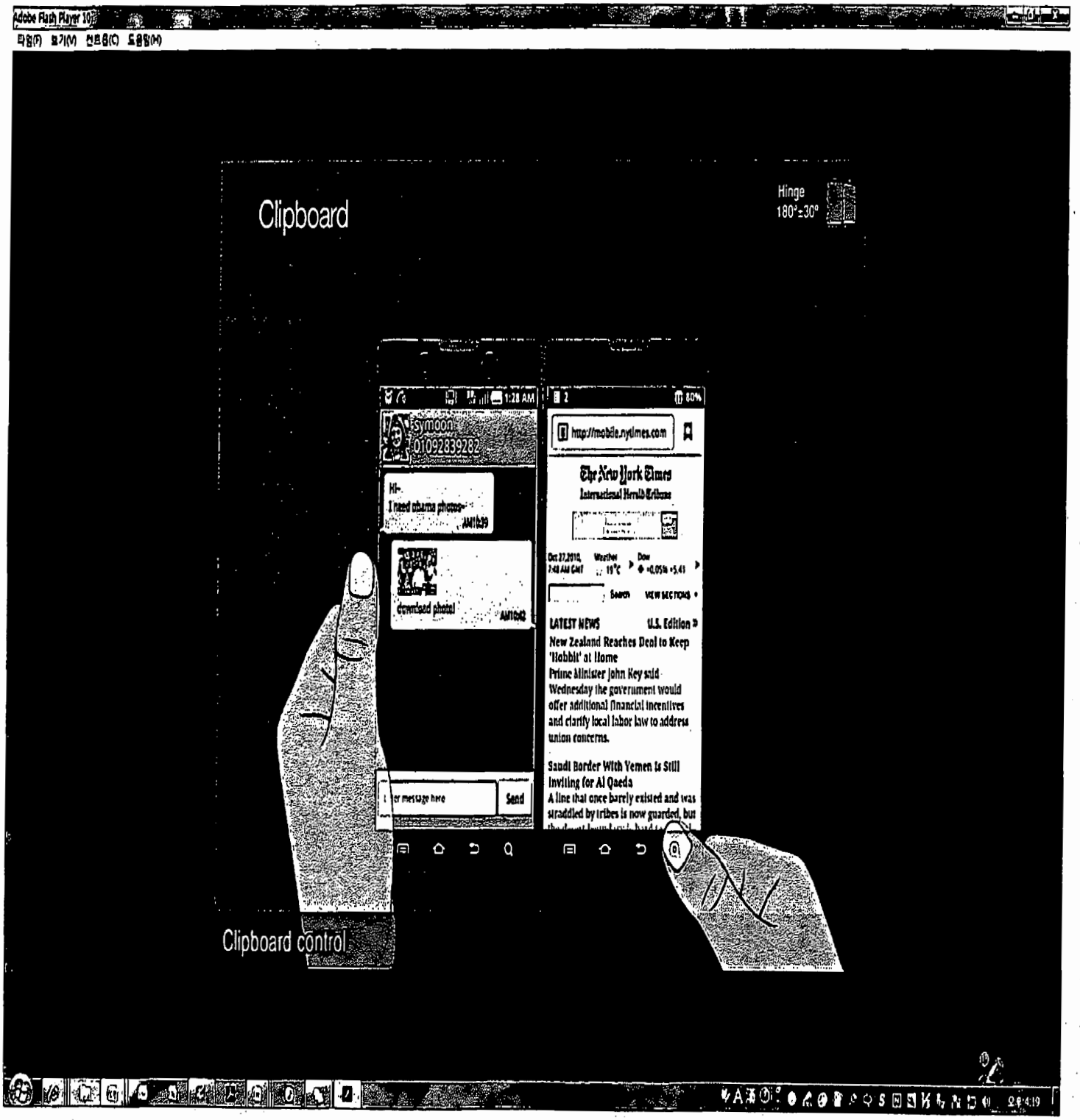
Copied from 13370939 on 05/11/2012



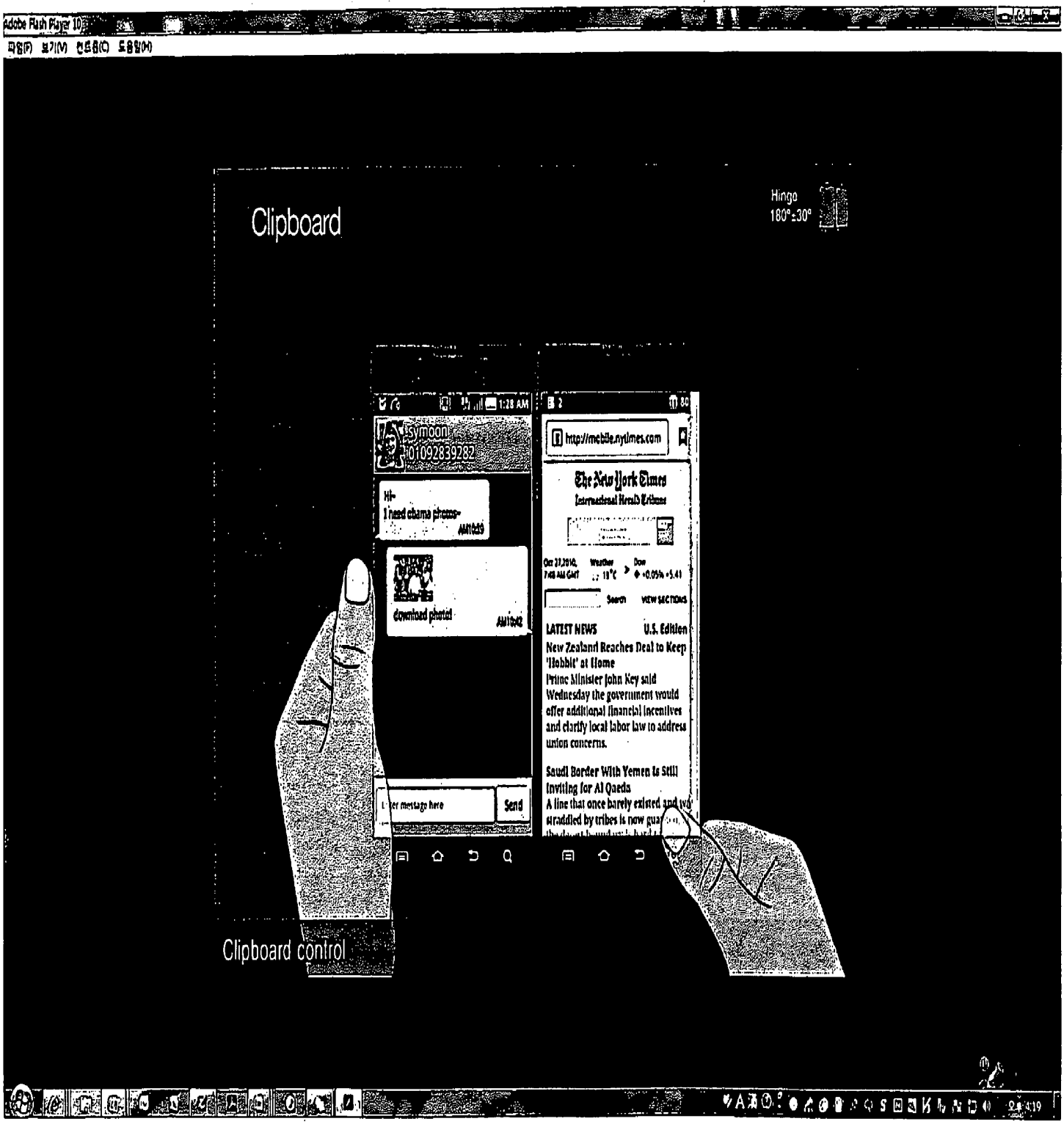
Copied from 13370939 on 05/11/2012



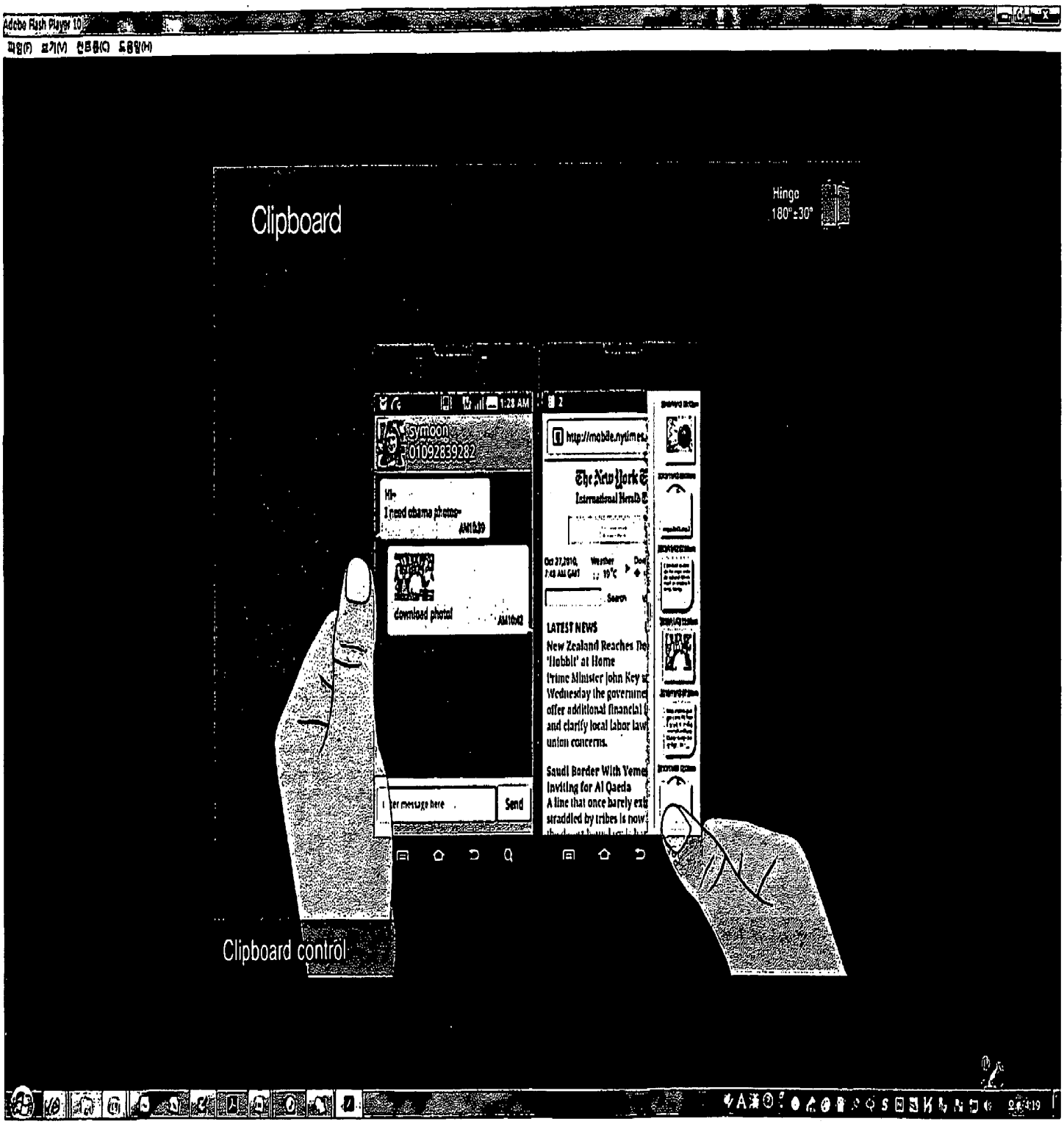
Copied from 13370939 on 05/11/2012



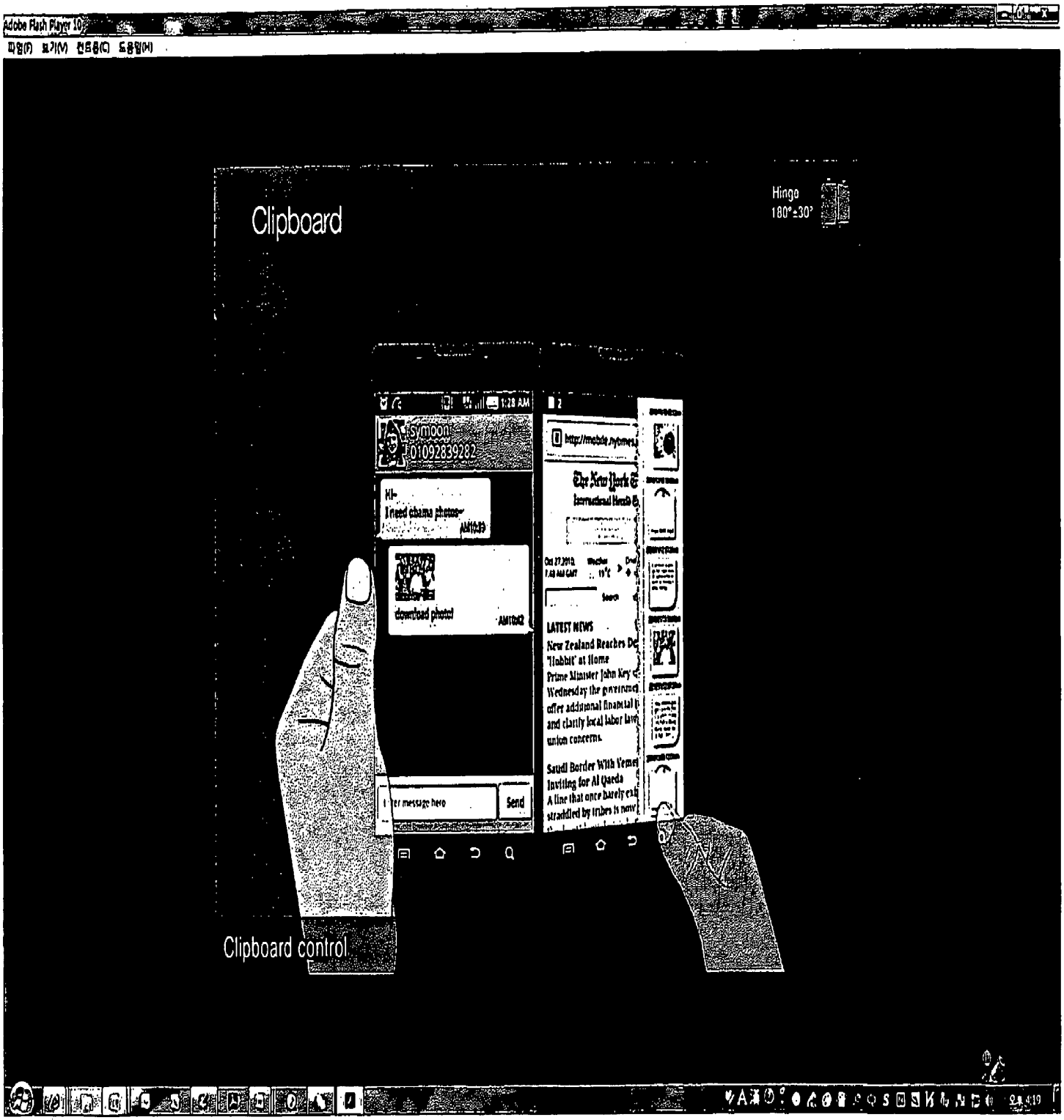
Copied from 13370939 on 05/11/2012



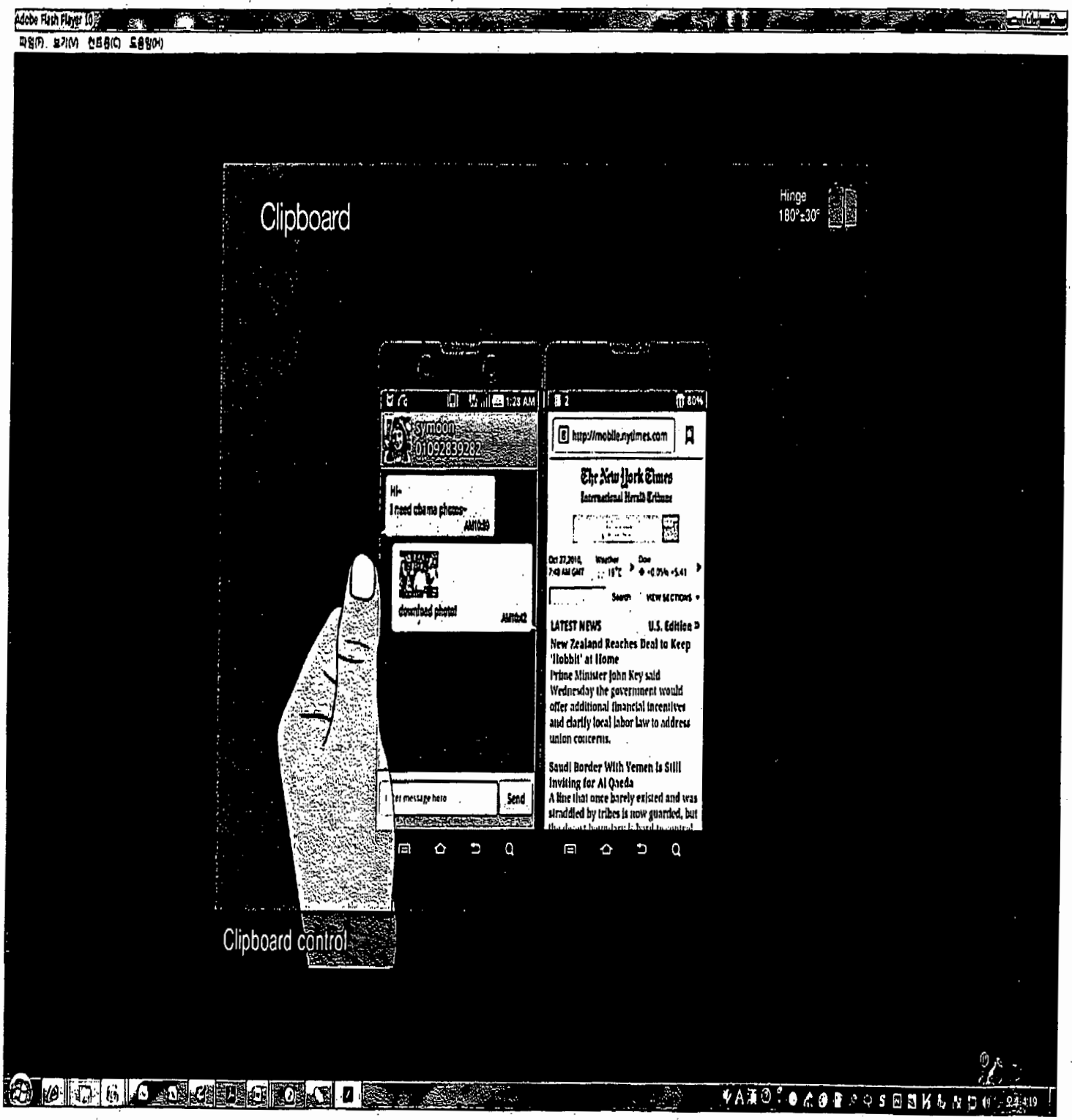
Copied from 13370939 on 05/11/2012



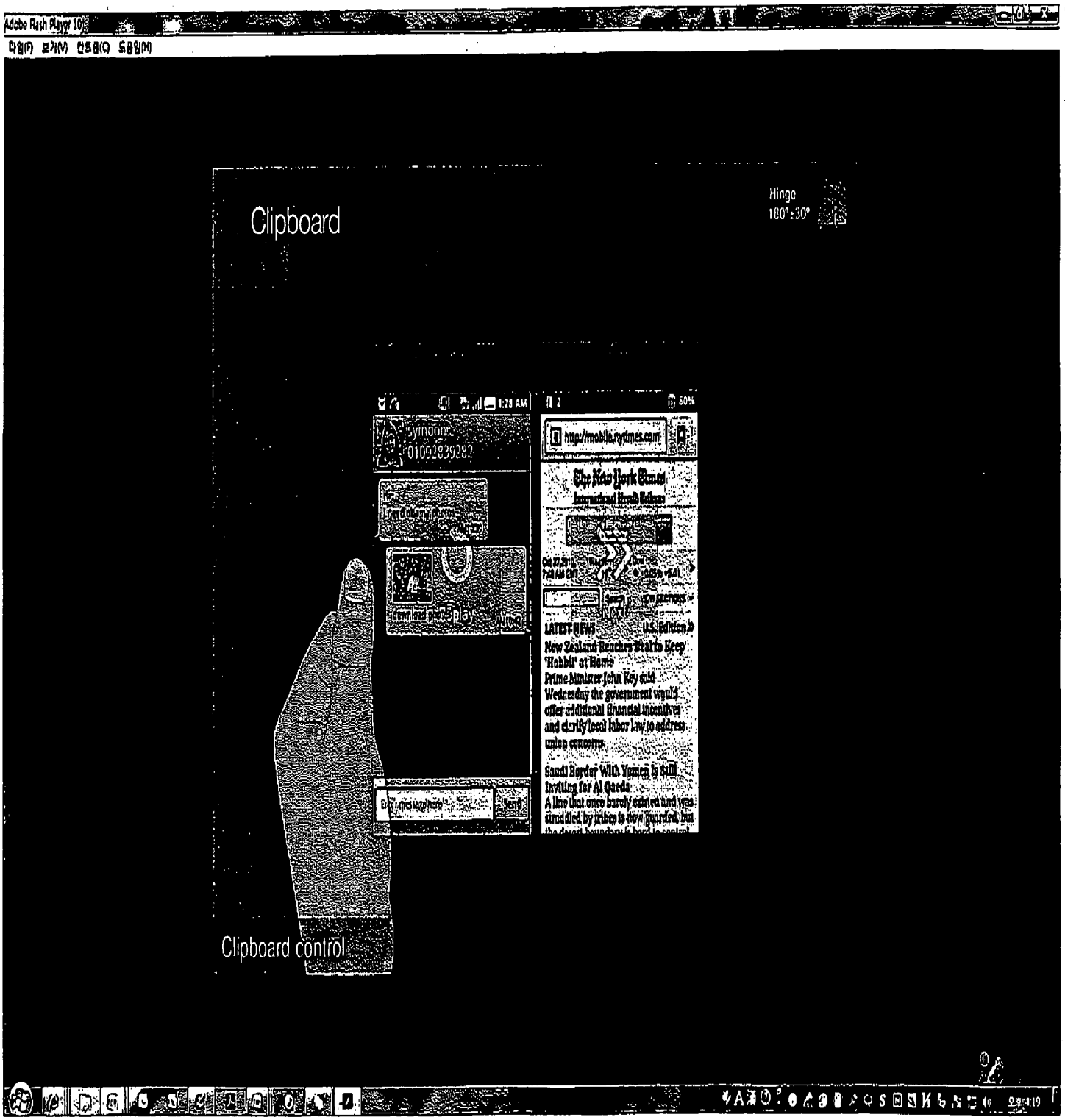
Copied from 13370939 on 05/11/2012



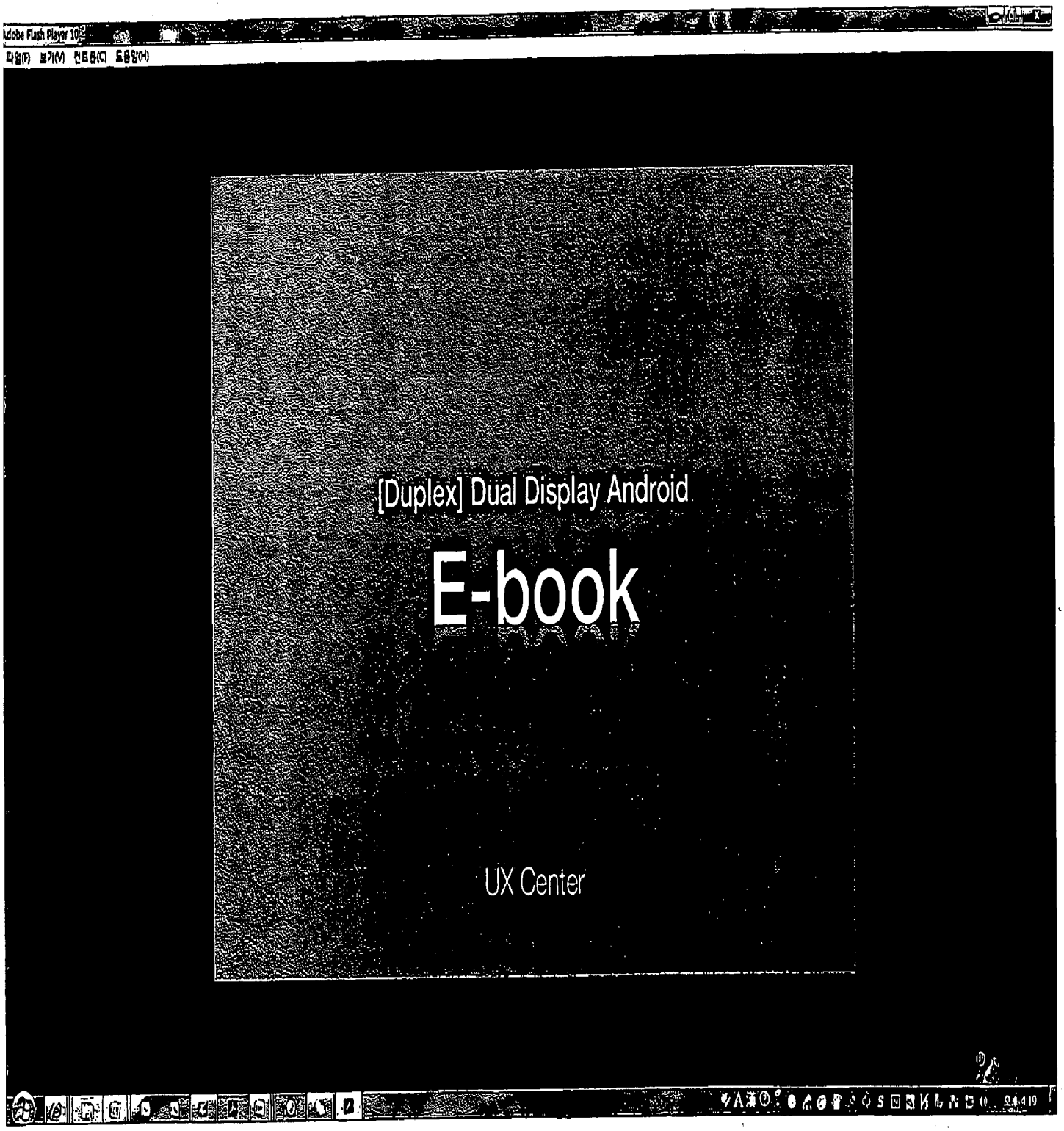
Copied from 13370939 on 05/11/2012



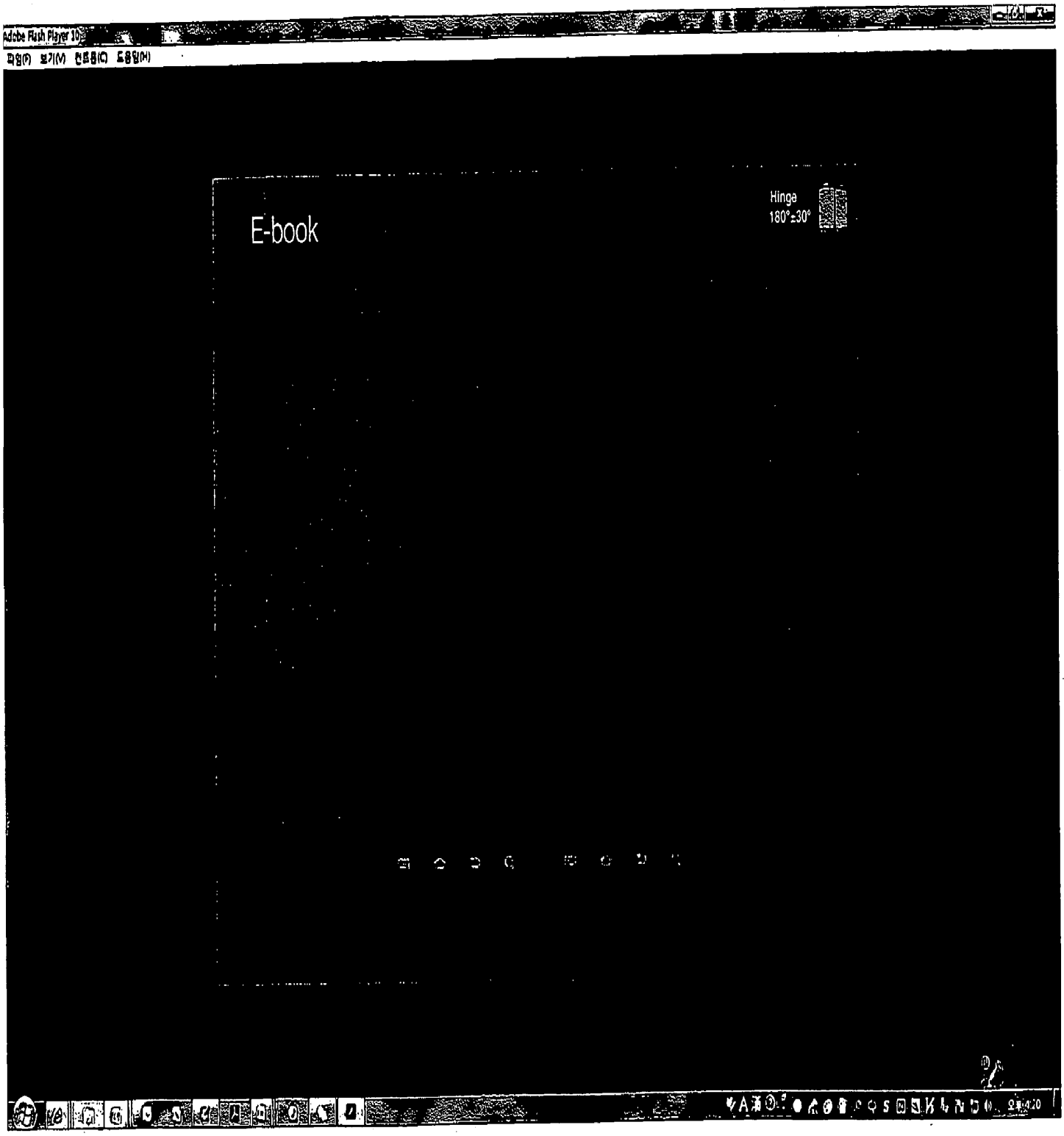
Copied from 13370939 on 05/11/2012



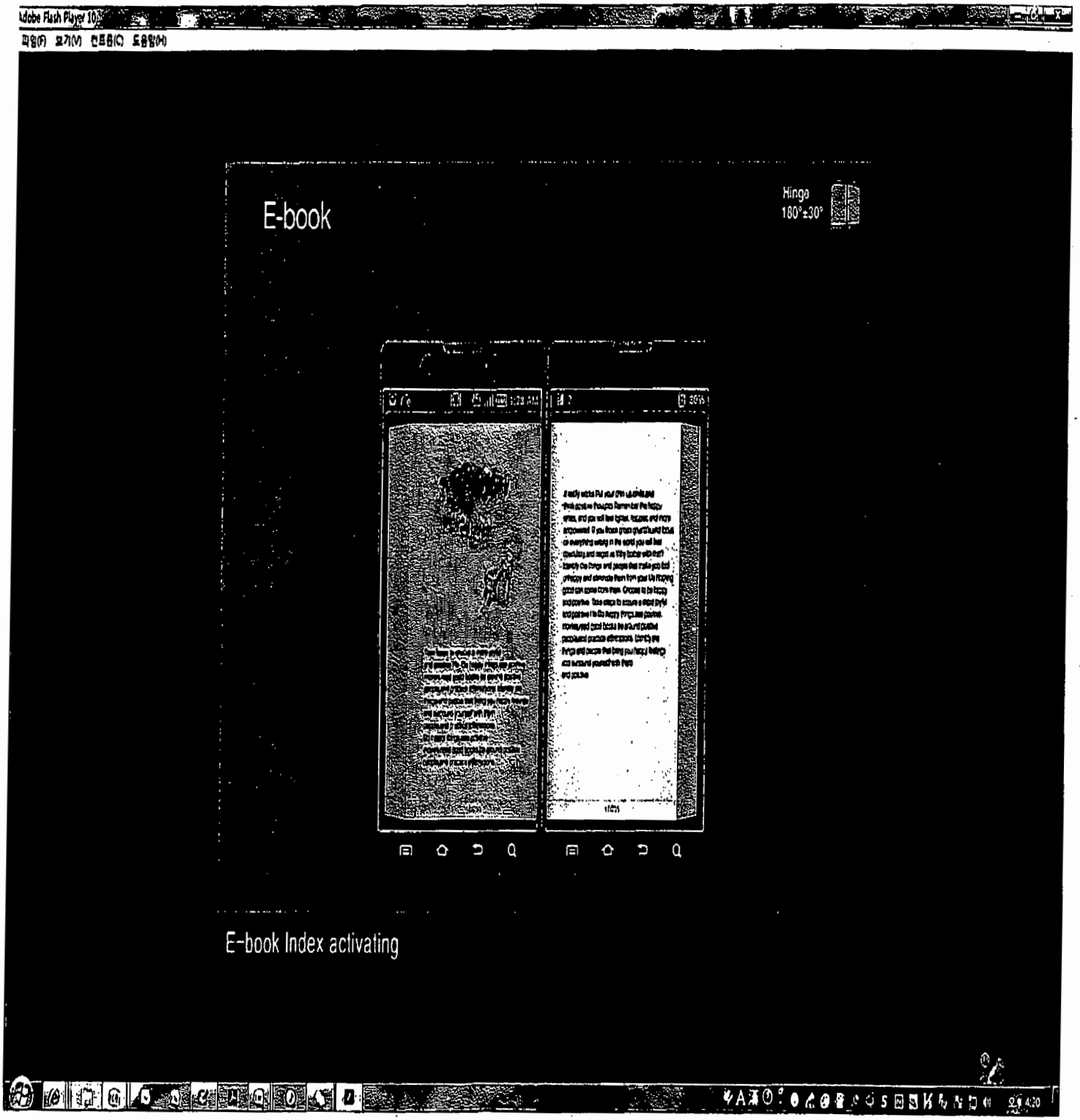
Copied from 13370939 on 05/11/2012



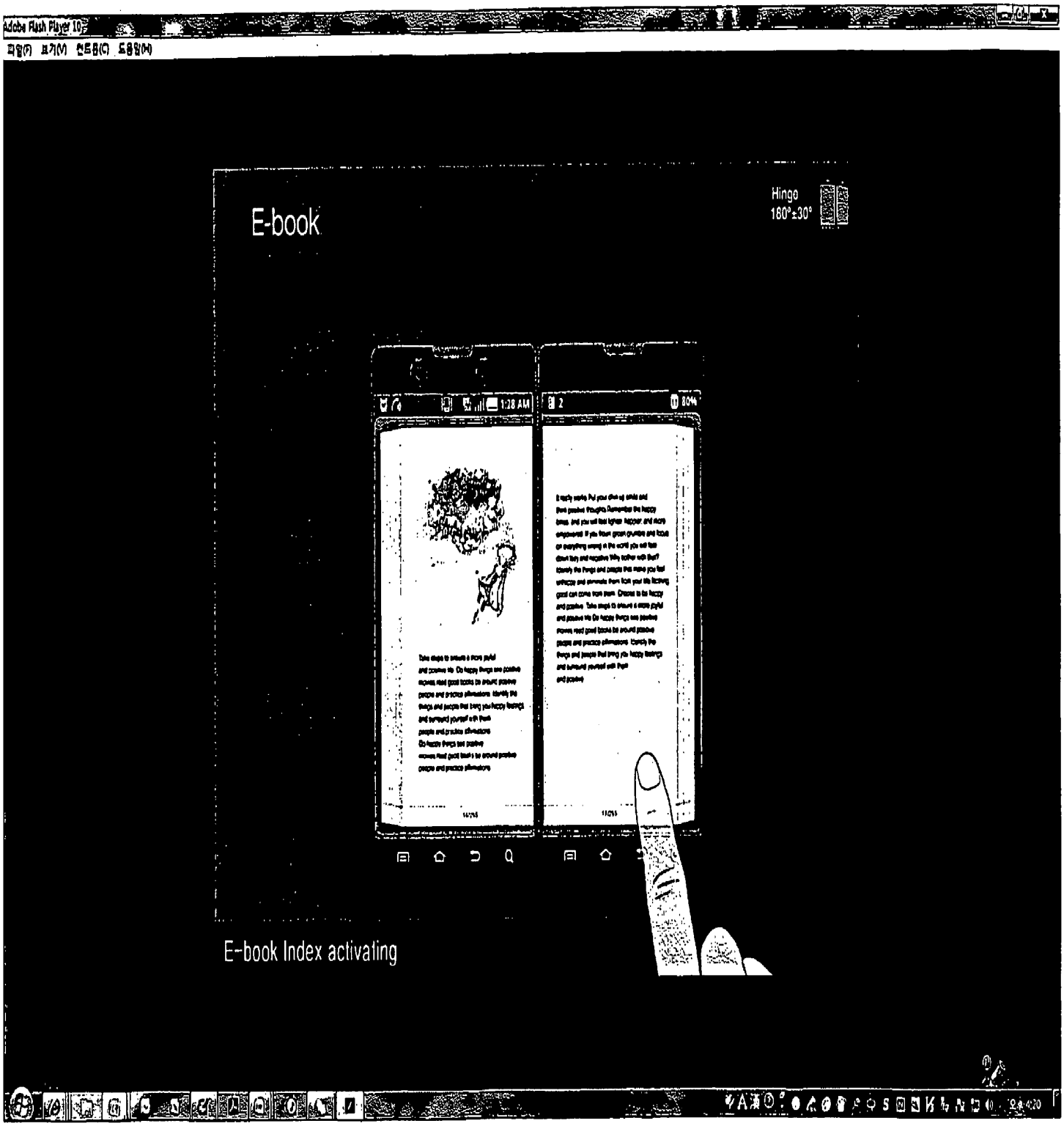
Copied from 13370939 on 05/11/2012



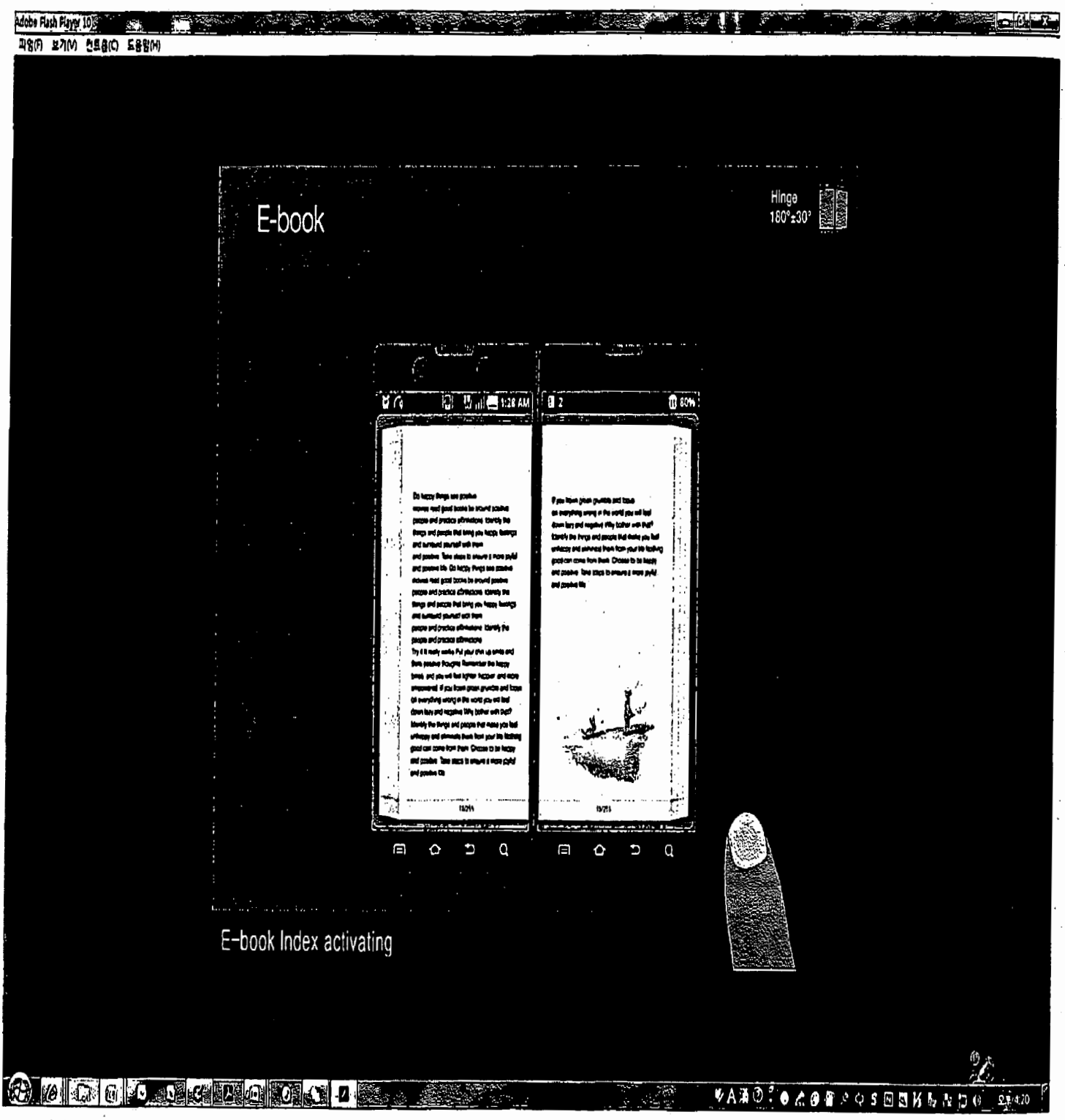
Copied from 13370939 on 05/11/2012



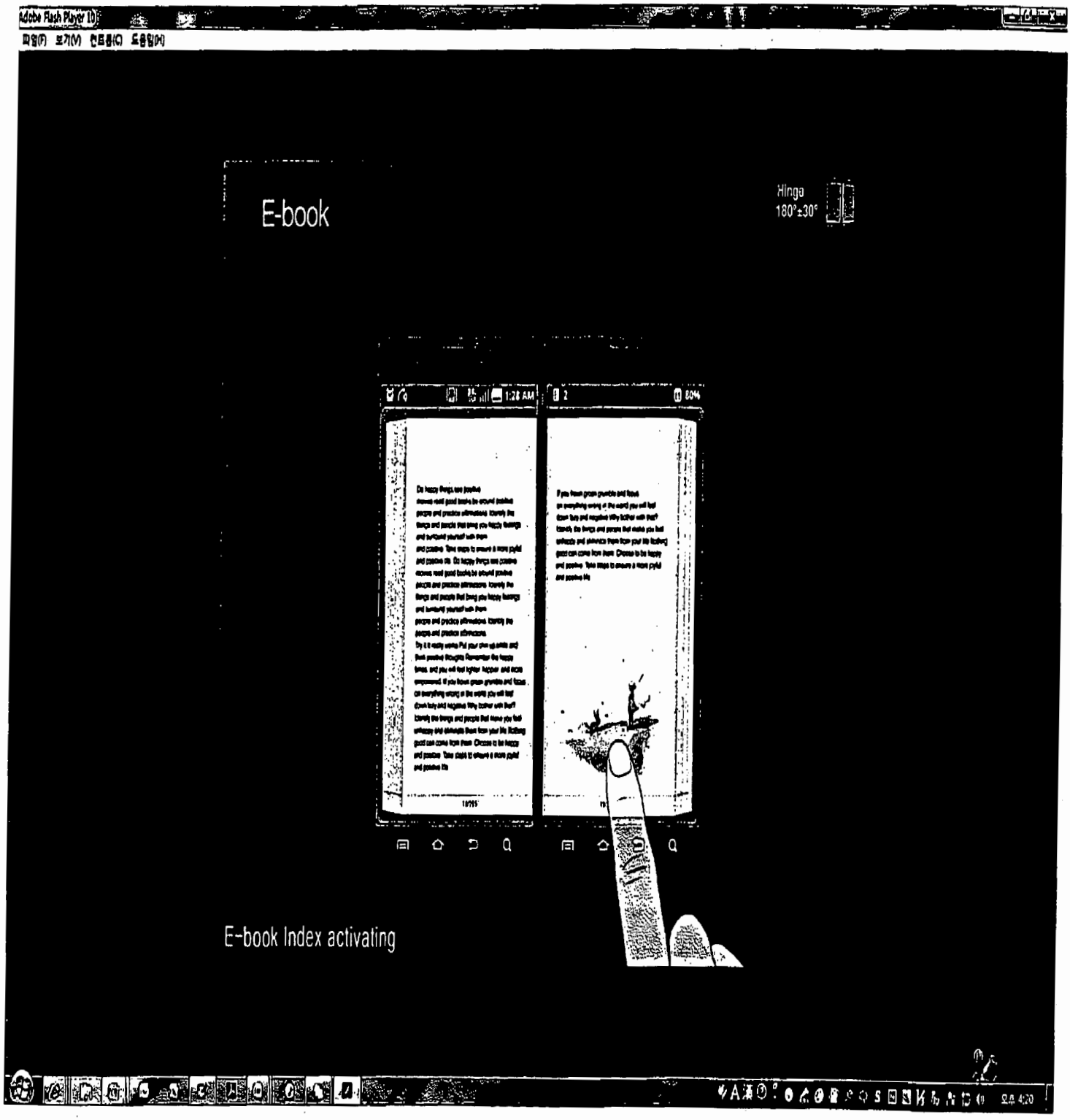
Copied from 13370939 on 05/11/2012



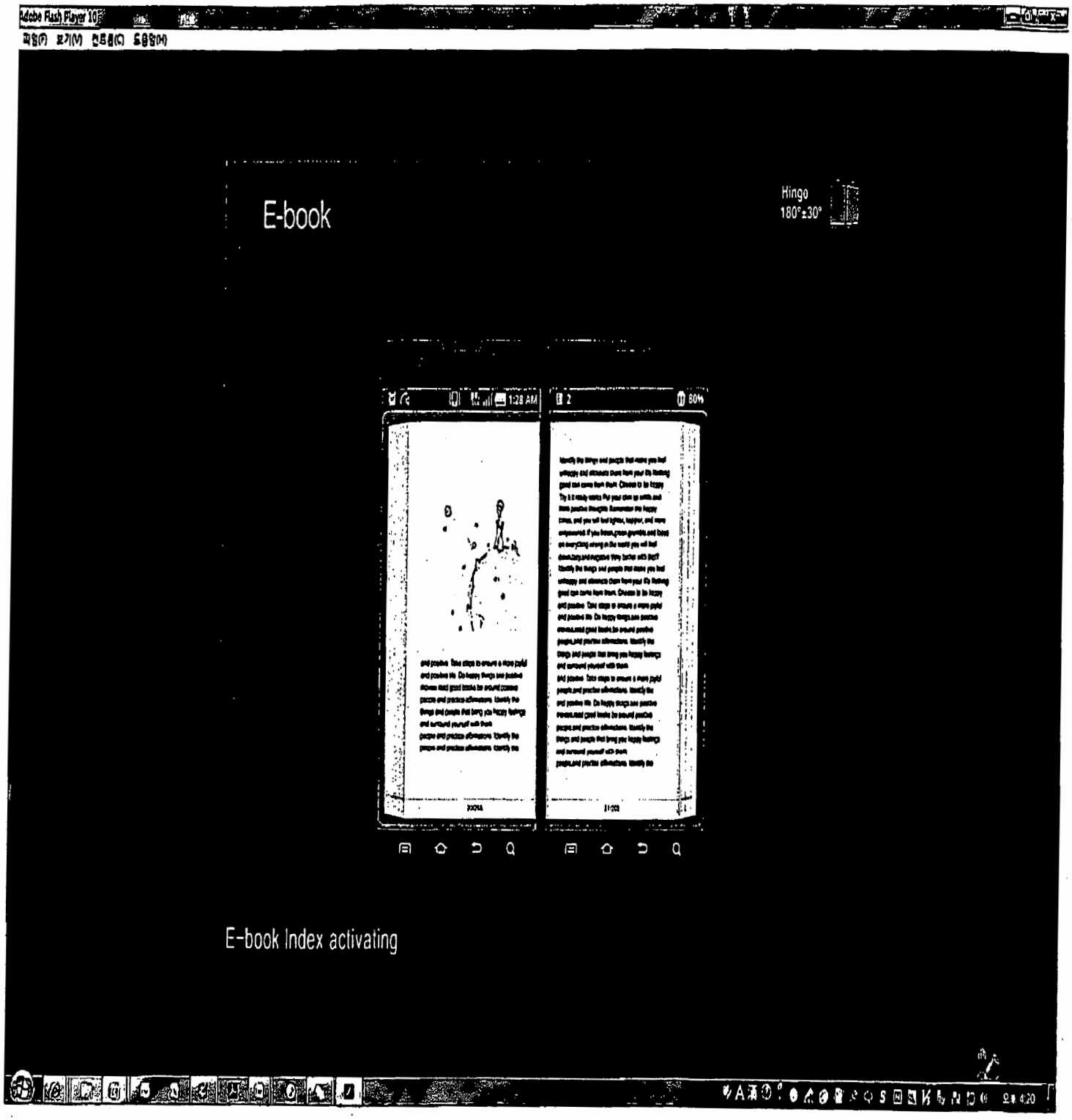
Copied from 13370939 on 05/11/2012



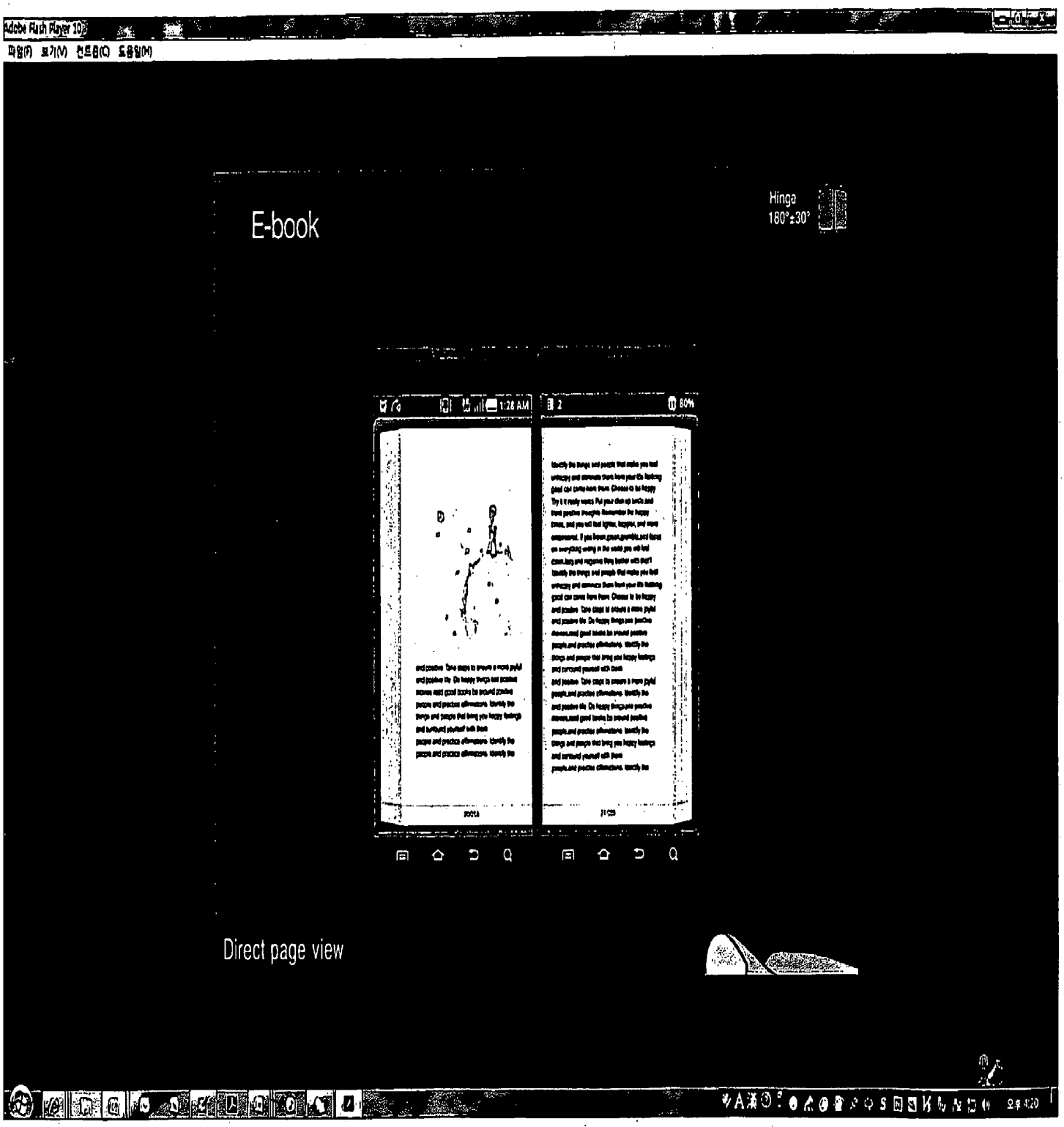
Copied from 13370939 on 05/11/2012



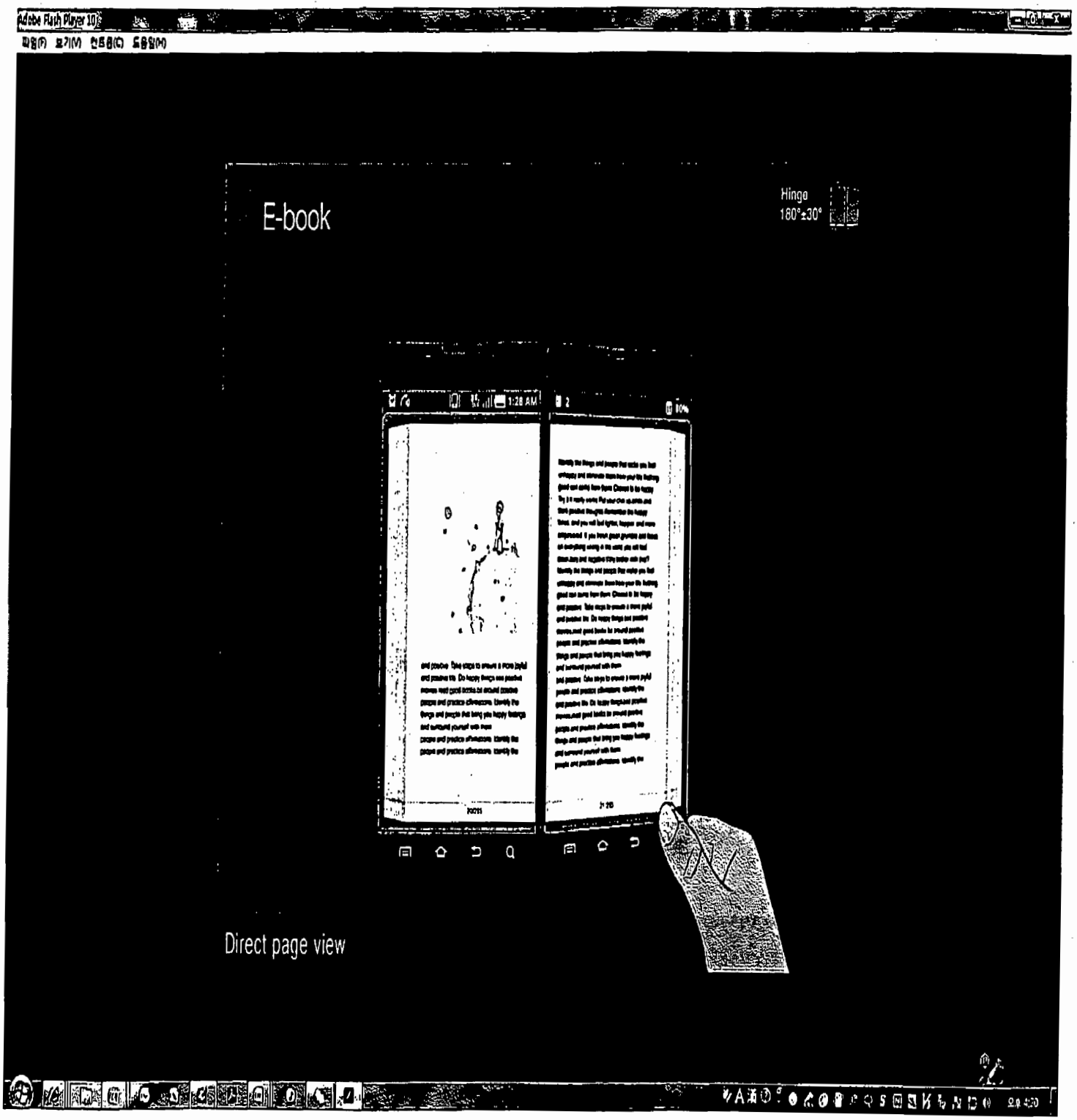
Copied from 13370939 on 05/11/2012



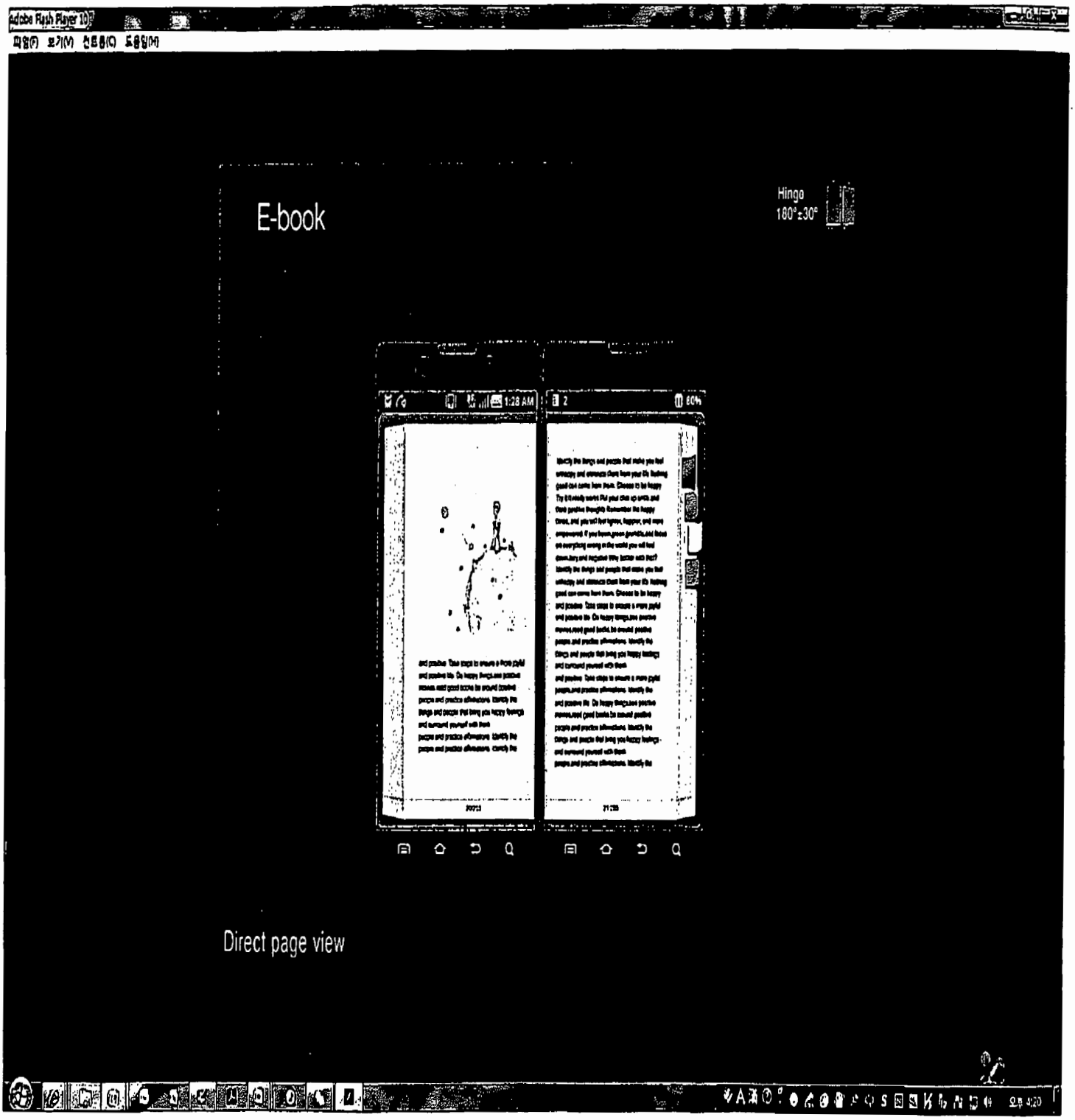
Copied from 13370939 on 05/11/2012



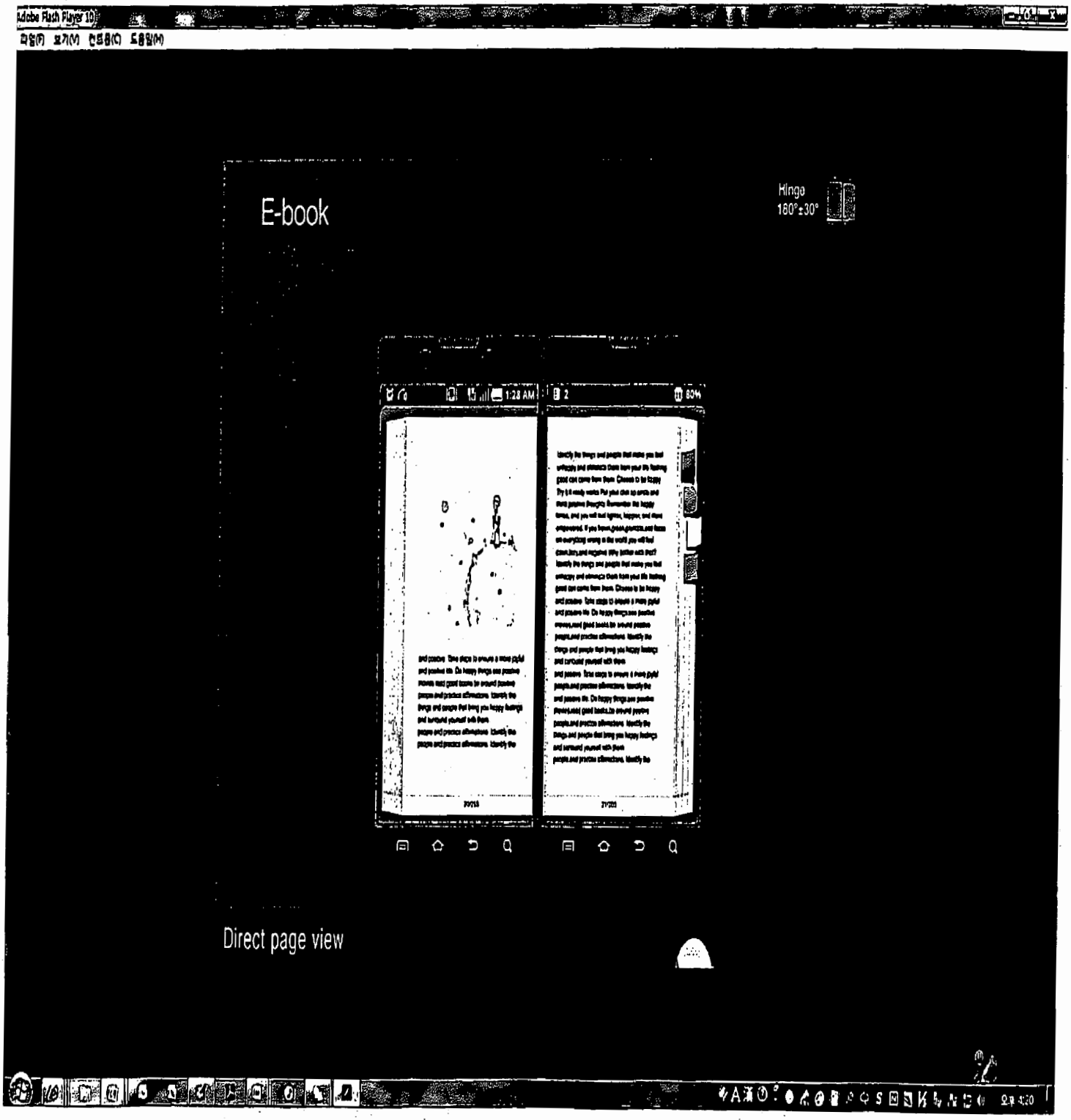
Copied from 13370939 on 05/11/2012



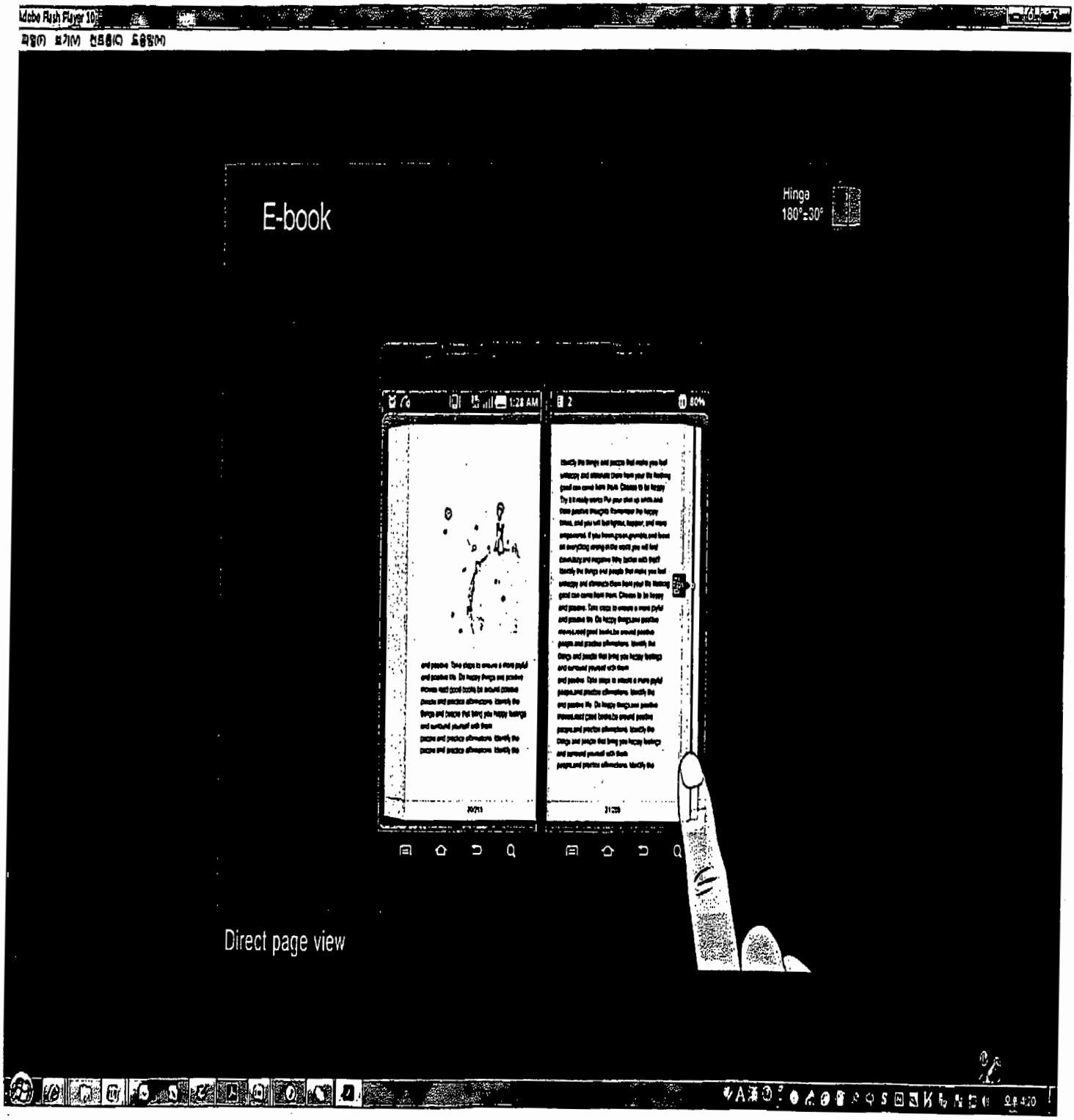
Copied from 13370939 on 05/11/2012



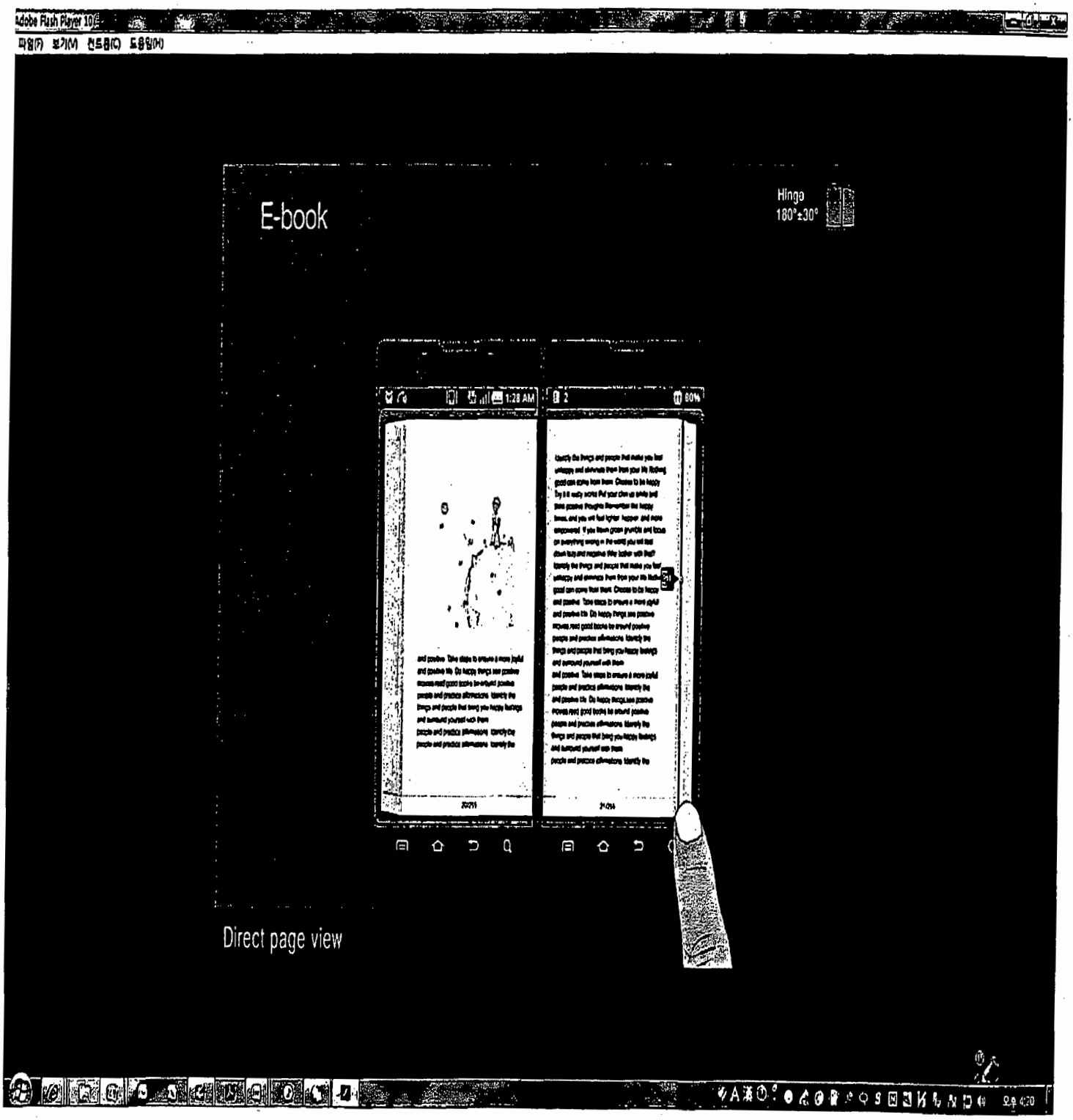
Copied from 13370939 on 05/11/2012



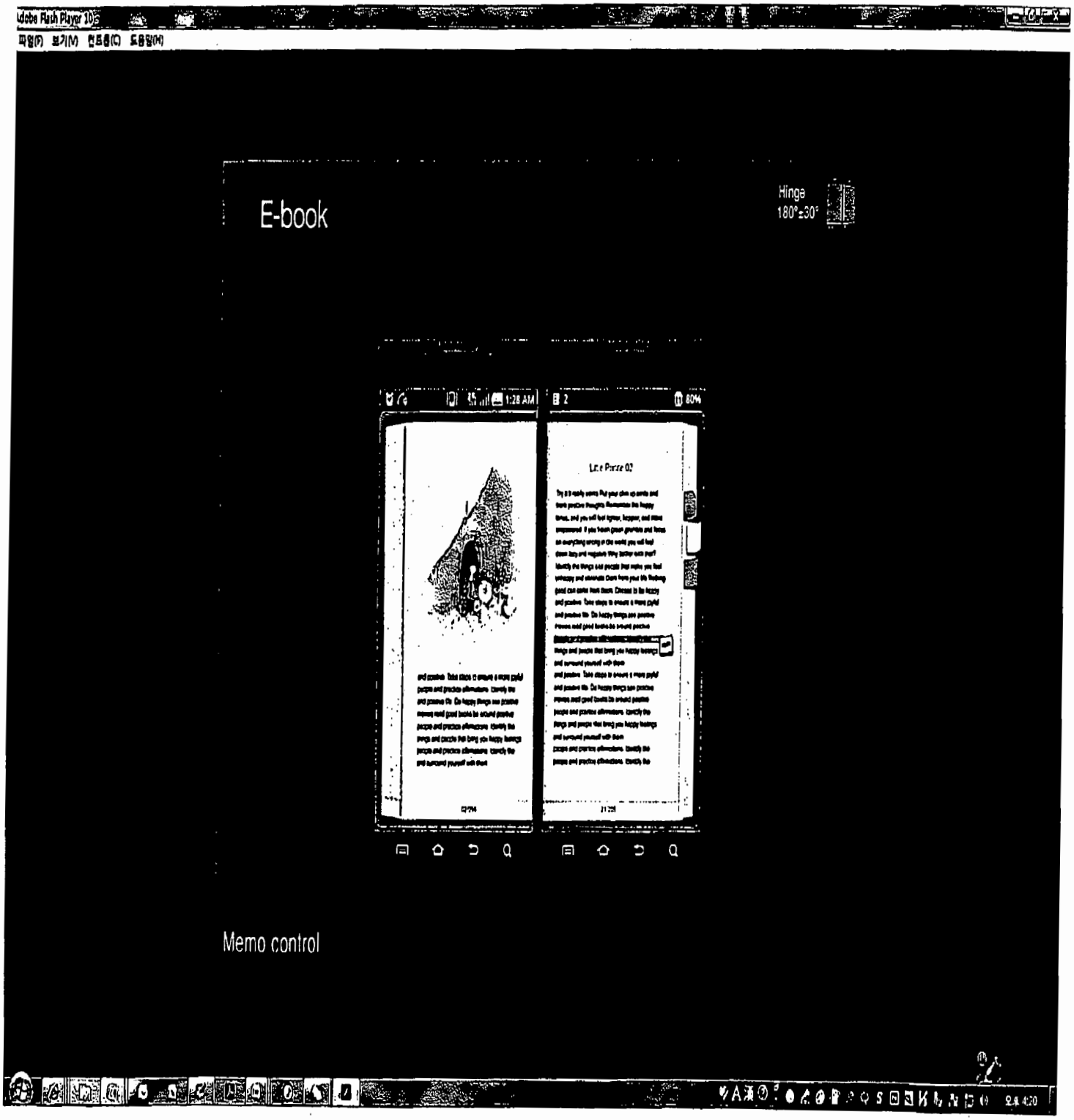
Copied from 13370939 on 05/11/2012



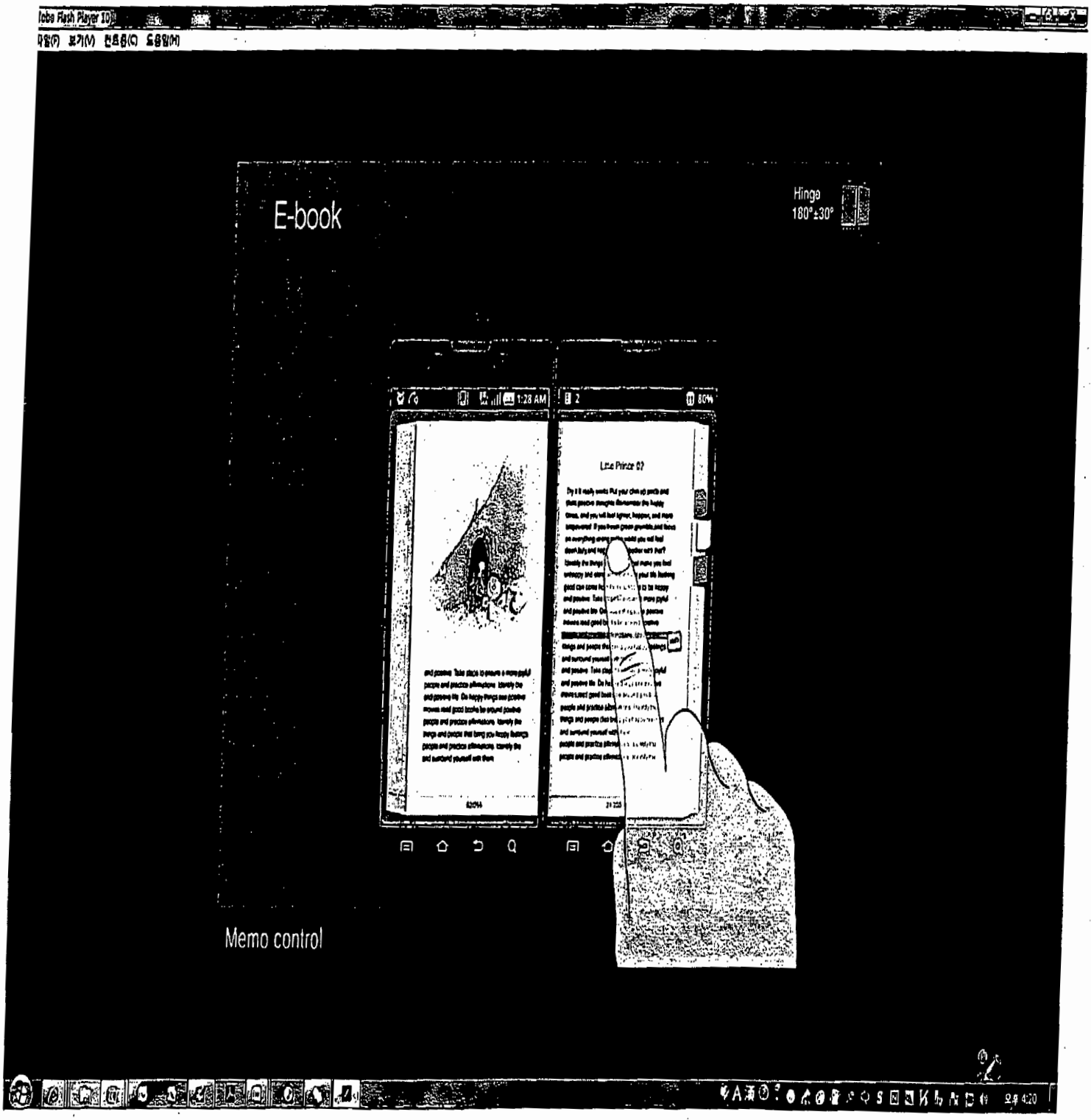
Copied from 13370939 on 05/11/2012



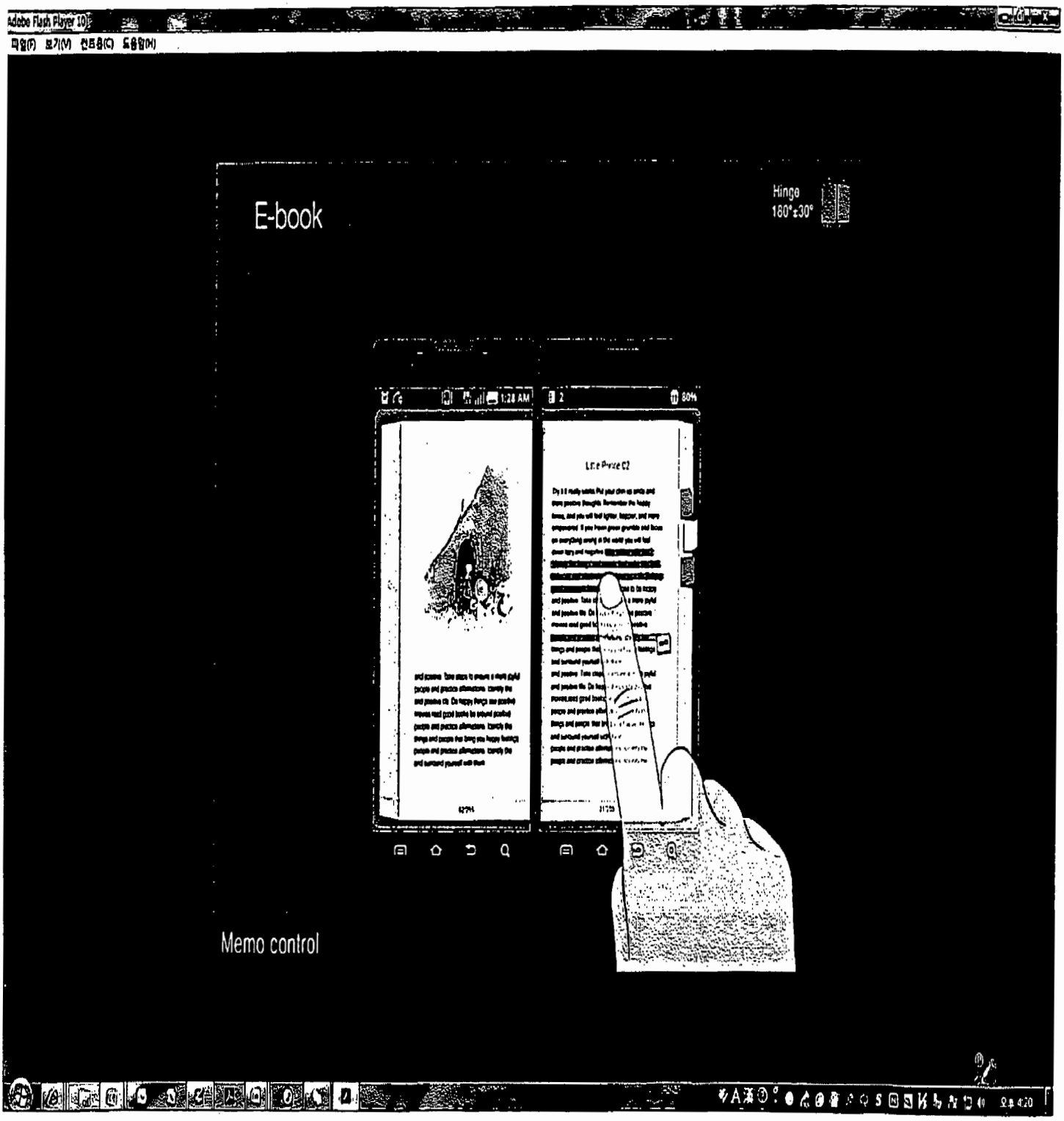
Copied from 13370939 on 05/11/2012



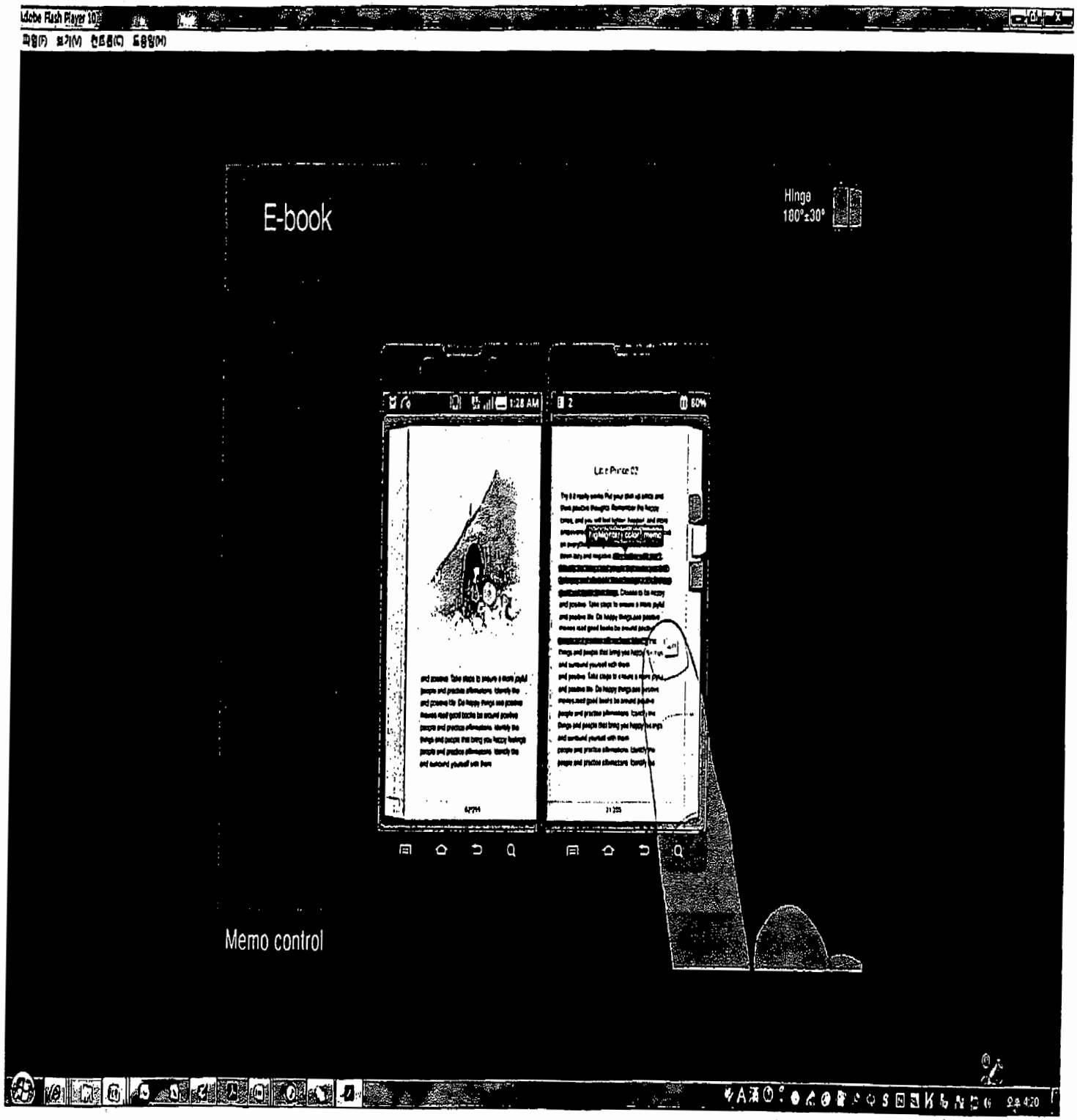
Copied from 13370939 on 05/11/2012



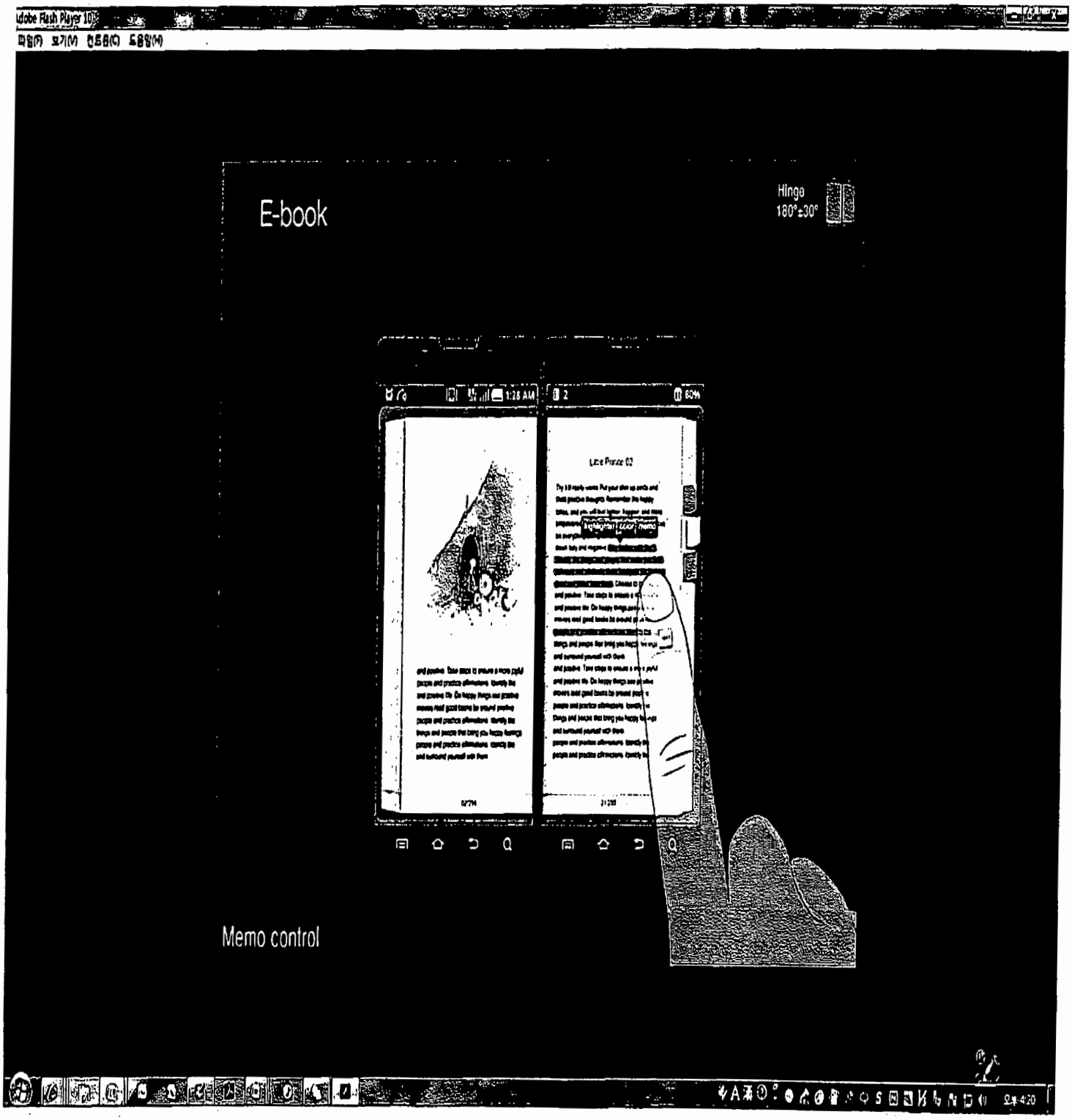
Copied from 13370939 on 05/11/2012



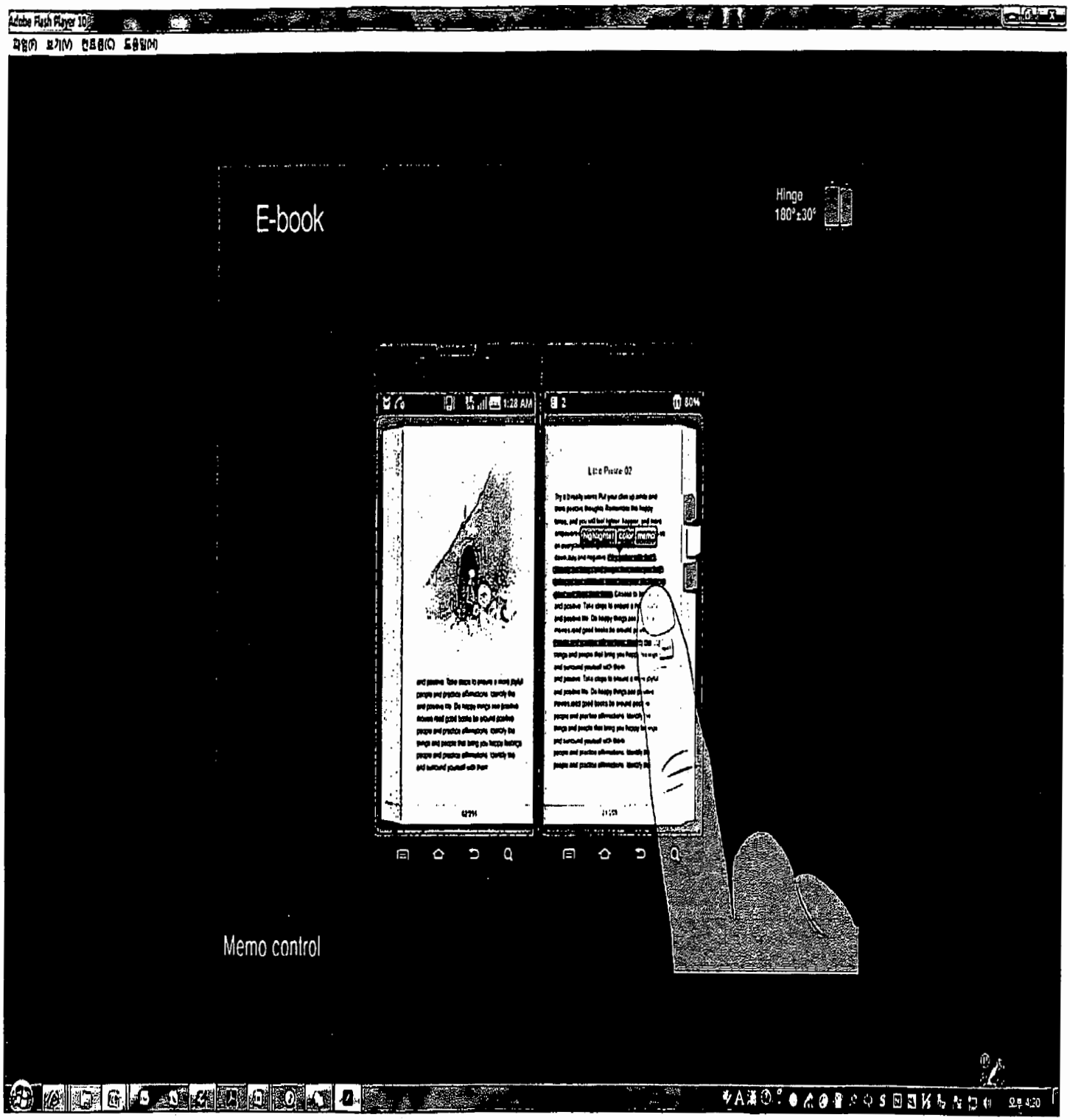
Copied from 13370939 on 05/11/2012



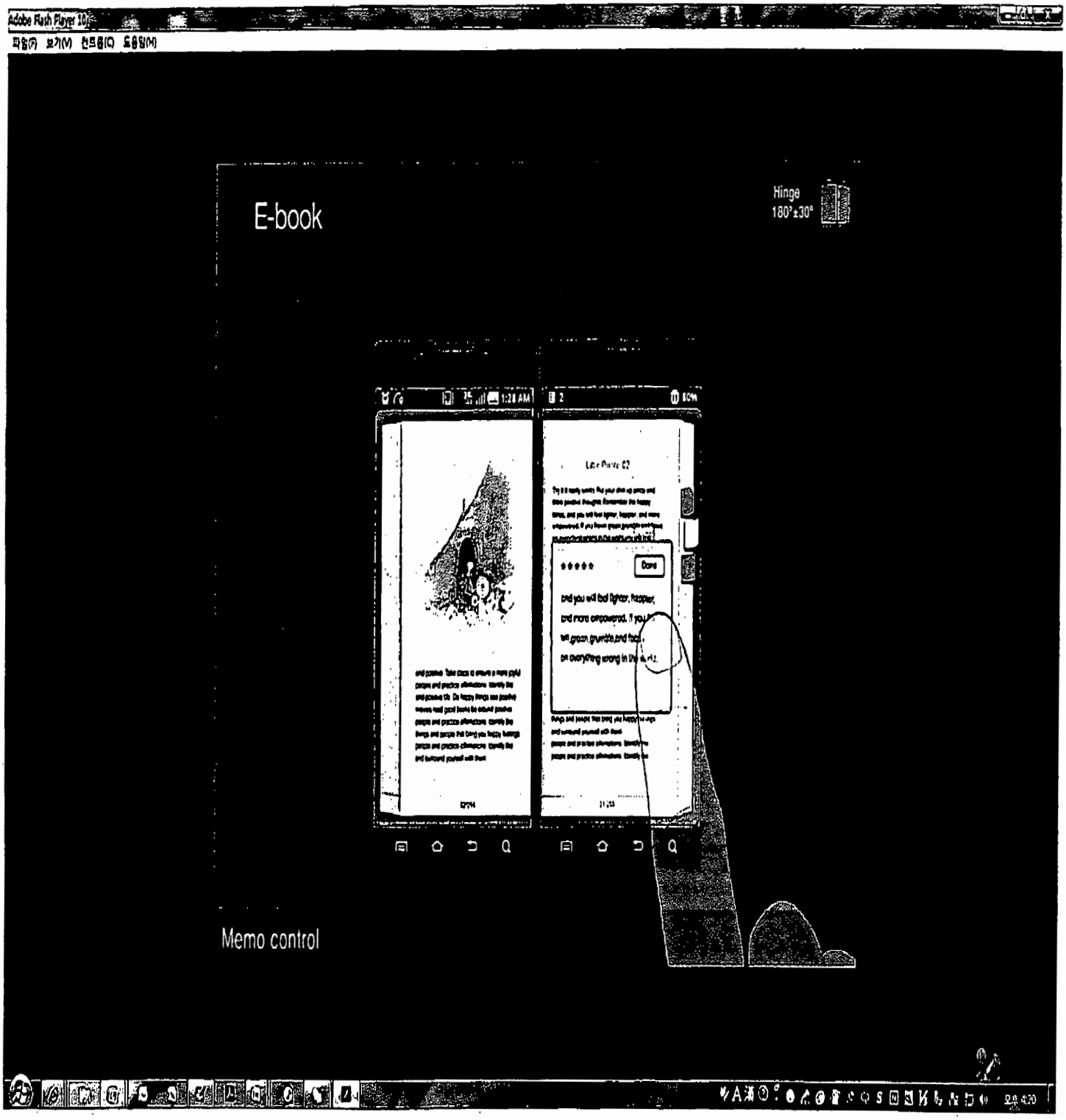
Copied from 13370939 on 05/11/2012



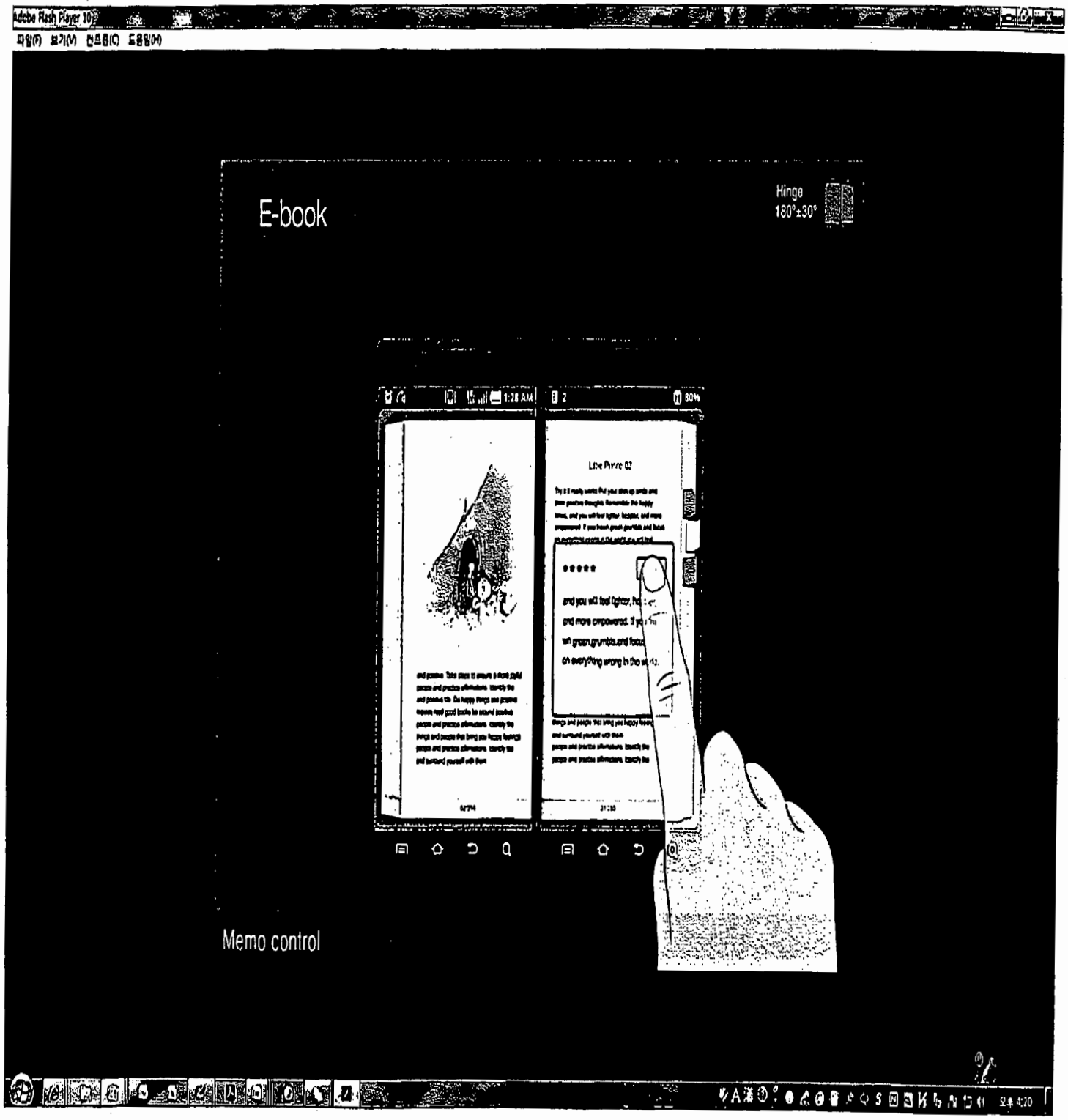
Copied from 13370939 on 05/11/2012



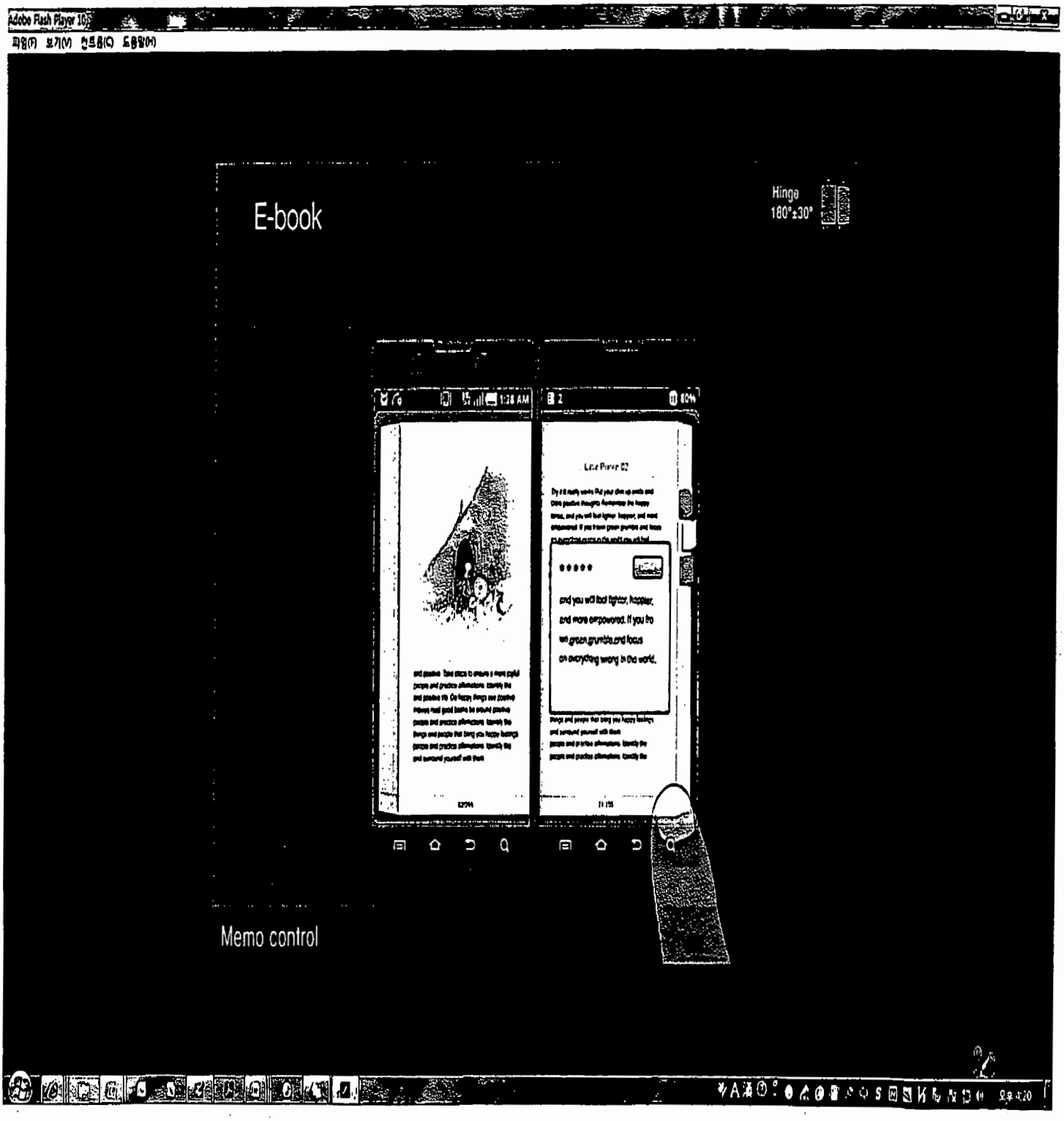
Copied from 13370939 on 05/11/2012



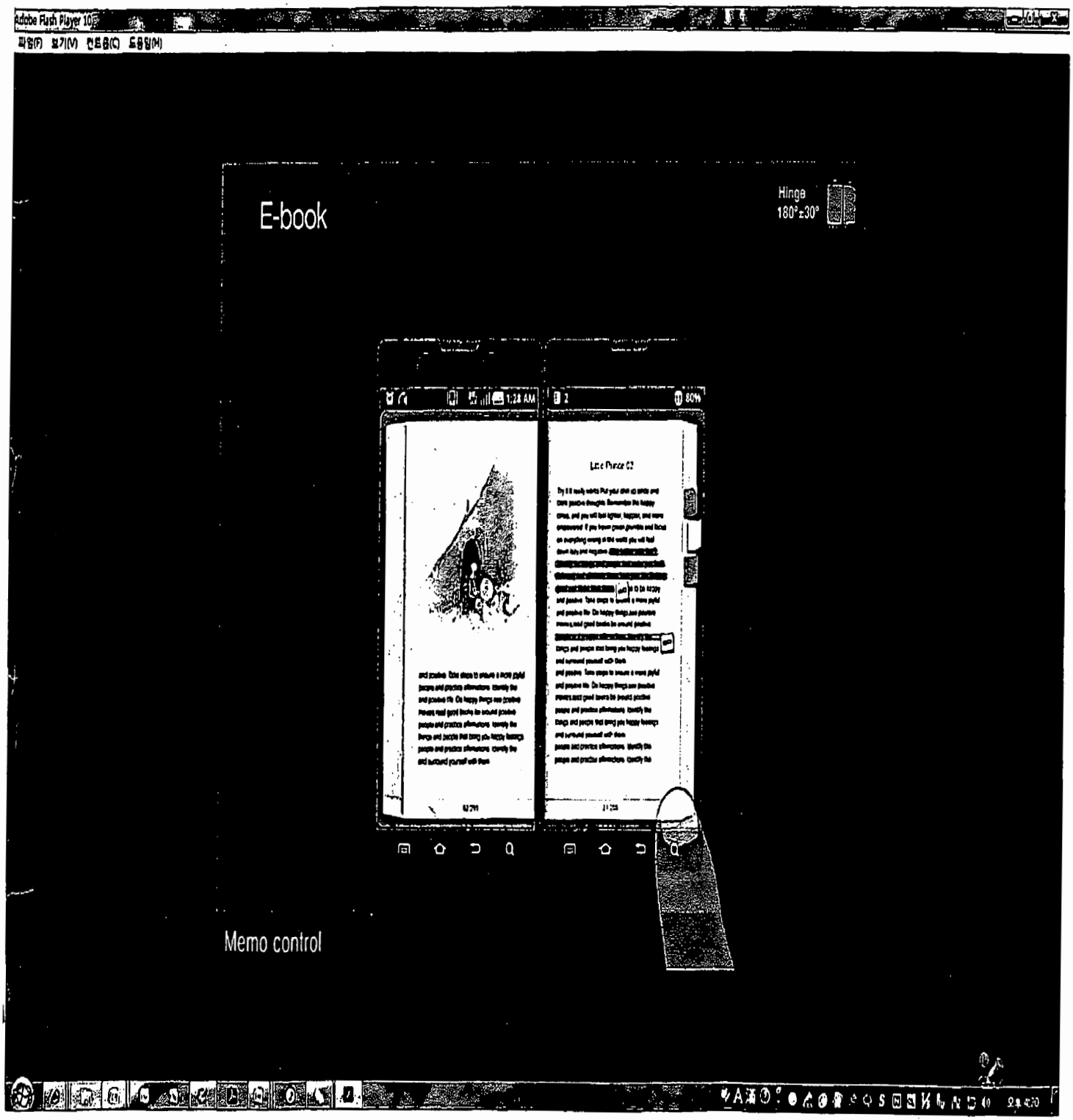
Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012



Copied from 13370939 on 05/11/2012

OPAP
APR 25 2012
IAP15
PATENT & TRADEMARK OFFICE

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Joon-Kyu SEO et al.	Docket: 678-4397 PRO	
Serial No.:	61/441,491	Dated: April 24, 2012	
Filed:	February 10, 2011		
For:	SCROLL METHOD IN DUAL DISPLAY DEVICE		

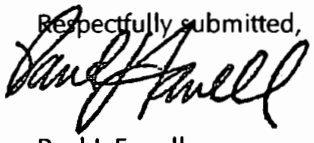
Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS

Sir:

A Notice to File Missing Parts of Application issued on February 24, 2012 in the non-provisional application (13/370,939) which claims priority to this prior-filed provisional application (61/441,491). In response to that Notice, Applicant encloses herewith an English language translation of the prior-filed provisional application and a Translation Statement.

Respectfully submitted,



Paul J. Farrell
Registration No. 33,494
Attorney for Applicant

THE FARRELL LAW FIRM, P.C.
290 Broadhollow Road, Suite 210E
Melville, NY 11747
(516) 228-3565

Copied from 13370939 on 05/11/2012

CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of a U.S Provisional Application No. 61/441,491, filed on February 10, 2011, which the translation is accurate.

NAME OF THE TRANSLATOR : Seung Ji KIM

SIGNATURE : Seung Ji KIM

Date : February 6. 2012

RESIDENCE : MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

CITIZENSHIP : REPUBLIC OF KOREA

Copied from 13370939 on 05/11/2012

직무발명(고안)서 (Invention Disclosure Form)

<table>
<tr><td colspan="2">발명의 명칭(Title of Invention)
*발명(고안)의 내용을 표현할 수 있는 명칭을 간단 명료하게 기재</td><td colspan="3"></td></tr>
<tr><td colspan="5">Dual Display Device에서 Scroll 방법</td></tr>
<tr><td colspan="2">관련기술 및 선출원</td><td colspan="3">*주1) 본 발명과 관련이 있는 공개자료(특허,논문,제품,규격서,사용설명서,인터넷자료 등)
*주2) 본 발명관 관련이 있는 발명자의 기 출원완료(출원번호) 및 출원 준비중(접수번호)</td></tr>
<tr><td rowspan="4">기술 출처
*해당부분 선택기재</td><td>등록/공개 특허 *주1)</td><td colspan="3"></td></tr>
<tr><td>관련문헌 또는제품 *주1)</td><td colspan="3"></td></tr>
<tr><td rowspan="4">본발명과 관련된 발명자의 선출원 *주2)</td><td rowspan="2">既 출원 완 료</td><td>발명의명칭</td><td></td></tr>
<tr><td>출원번호</td><td></td></tr>
<tr><td rowspan="2">출원초안 작성중</td><td>발명의명칭</td><td></td></tr>
<tr><td>접수번호</td><td></td></tr>
<tr><td colspan="2">관련 과제명</td><td colspan="3">Dual Display</td></tr>
<tr><td colspan="2">본 발명 적용가능 제품</td><td colspan="3">Mobile Device 外</td></tr>
<tr><td colspan="2">발명자 연락처</td><td colspan="3">[전화번호] Office(필수): 010-2431-1289 (내선번호 없음) Cell Phone(선택): 010-2431-1289
[E-mail Account] : joonkyu.seo@samsung.com</td></tr>
</table>

1/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

1. 본 발명의 목적(배경)

어이디어의 기술분야 및 해당 Trend

- 분야 : Device의 입력방식 및 Display 방식 外
- Trend

1. Full Touch Smart Phone의 확산으로 차세대 Display 기술 선점을 위한 경쟁이 치열함.
2. Dual Display가 채용된 Device가 출시되고 있으나 두개 화면을 사용자가 효과적으로 컨트롤 할 수 있는 솔루션이 명쾌하게 도출되지 않았음
3. 디바이스에 다양한 방식으로 재미있고 직관적으로 명령을 입력하는 UI에 대한 니즈

목적

- 목　적 : Dual Display가 적용된 단말기에서 새로운 입력 방법으로 기존의 불편했던 부분을 개선

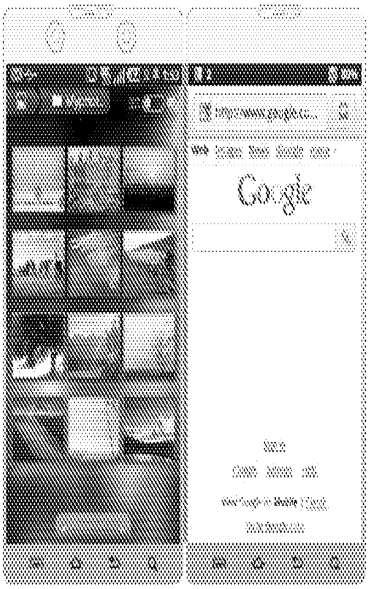
※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

2. 관련 기술 설명

2.1 차세대 Display

Dual Display

두 개의 Display를 활용하여 보다 다양한 사용 경험을 제공할 수 있는 Device
두 개의 화면을 활용한 다양한 View 모드를 사용할 수 있다.



Multi-Mode
서로 다른 App을 각각의 화면에 표시하여 사용하는 View Mode



Split-Mode
하나의 App을 Depth를 다르게 보여주거나, 기능을 구분해서 보여주는 View Mode



Expand-Mode
하나의 화면을 확대해서 두개의 화면에 표시하는 View Mode

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

2. 관련 기술 설명

2.2 Touch Gesture

Scroll

Touch Screen Device와 같은 경우 Flick이나 Touch&Move(Drag)를 통해서 Scroll을 할 수 있다.

Flick : To touch , hold, move and release the screen quickly
The contact point had a velocity throughout the entire path
The motion is typically made along a single vector.

Touch & Move : To touch , hold, move and release the screen with straight line



※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

2. 관련 기술 설명

2.3 종래 기술의 문제점

문제점

스크롤은 Web page나 리스트를 볼때 유용한 기능이다.

하지만, Web page나 리스트의 길이가 긴 경우에 스크롤을 빠르게 원하는 방향의 끝으로 움직이는 것은 불편함이 있다. 웹 페이지와 같은 경우 상단, 하단에 사용자의 선택을 묻는 버튼이 있는 경우가 많아서 화면의 처음/끝으로 이동하는 Needs가 존재한다.

PC와 같은 경우 'page up', 'page down'과 같은 Keyboard 버튼으로 빠르게 처음과 끝으로 이동할 수 있지만 터치 Gesture를 주로 사용하는 모바일 장치와 같은 경우 별도의 버튼을 화면에 표시하지 않는 한 이런 빠른 전환을 하기 어려움이 있었다.



끝으로 이동하기 위해서는
여러 번의 Flick이 필요하다.

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

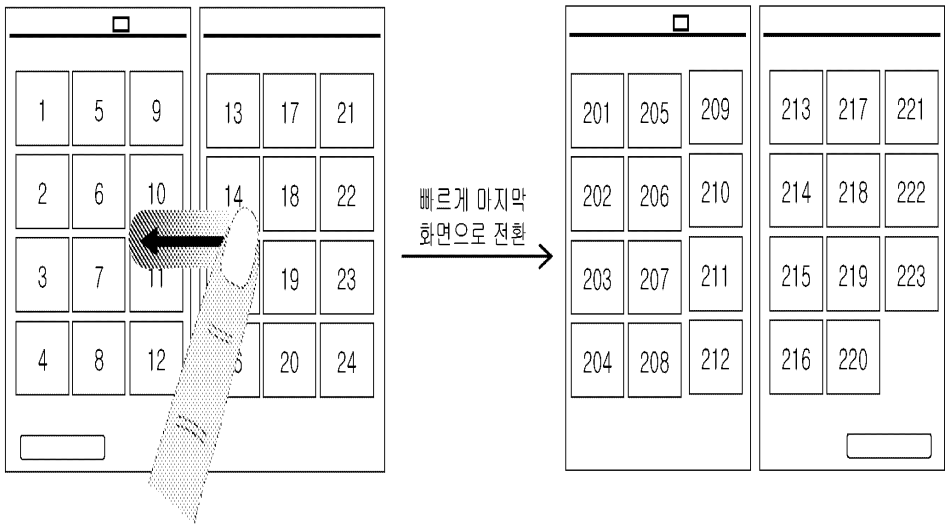
3. 발명의 설명

3.1 발명의 개요

- 구 성 : 터치 스크린 입력 디바이스
- 동작 개요 :

- Dual Display에서 화면 모드에 따라 터치 Gesture를 정의한다.
- Hinge를 넘어가는 터치 Gesture에 대해서 인식 방법을 정의한다.
- Hinge를 넘어가는 동작이 Flick 인 경우 Power Scroll, Drag인 경우 Focus 이동으로 인식한다.

* 가로 방향으로 Scroll 하는 Thumbnail List에서 Hinge를 거쳐서 왼쪽으로 Flick하였을 때 List의 마지막으로 이동



6/22

※지면이 부족한 경우 쪽 추가하여 작성바랍니다.

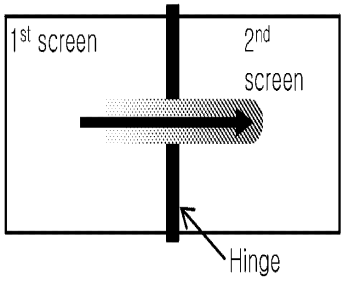
3. 발명의 설명

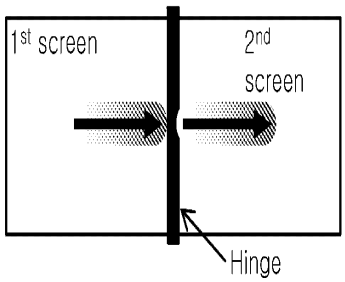
3.2 발명의 구성 : Power Scroll 인식 방법

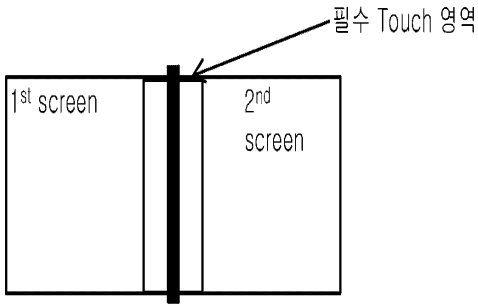
-Hinge 부위는 Touch sensor가 없는 부분이기 때문에 Gesture의 연결성을 인식하기 위한 Rule이 필요하다.

-Power Scroll 인식 기술을 바탕으로 Power Scroll 적용 가능한 입력 방법은 2가지 이다.

1. 하나의 Flick 입력이 Hinge를 거쳐서 진행되는 경우
- 1st screen에서 Touch 입력하여 빠르게 움직여서 2nd screen에서 release 한다.
- 1st screen에서 hinge로 인하여 release 되는 시간과 2nd screen에서 Touch가 연결되는 시간이 Power Scroll Threshold 이하일 경우 하나의 Flick Gesture로 인식하도록 한다.
- 우측 이미지와 같이 하나의 Flick이 아닌 분리된 동작인 경우 필수 Touch 영역을 지나면서 Power Scroll Threshold 이하인 경우 Power Scroll로 인식할 수 있다.







7/22 ※ 지면이 부족한 경우 쪽 추가하여 작성바랍니다.