EXHIBIT A

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

APPLE INC., a California corporation,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD., A Korean business entity; SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation; SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company,

Defendants.

Case No. 11-cv-01846-LHK

EXPERT REPORT OF RAVIN BALAKRISHNAN, PH.D. REGARDING INFRINGEMENT OF U.S. PATENT NO. 7,469,381

****CONFIDENTIAL – CONTAINS MATERIAL DESIGNATED AS HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY PURSUANT TO A PROTECTIVE ORDER****

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attempts to scroll the electronic document beyond its edge, the iPhone 4 displays an area beyond the edge of the electronic document along with a third smaller portion of the electronic document. When the user lifts his finger from the touch screen, the electronic document moves back into place to fill the screen, and a fourth portion of the electronic document different from the first portion is displayed.

49. Based on my examination of the aforementioned Apple products, I conclude that they practice the asserted apparatus and system claims of the '381 patent, and their ordinary and intended use practices the asserted method claims of the '381 patent. I have examined portions of the source code for Apple's iOS version 4.1 operating system and confirmed the behavior I saw on the iPhone 4 in the following source code modules: the UIScrollView class or subclass (for example, UIWebBrowserView and UIWebDocumentView); the touch panel (e.g., Grape) driver; UIKit classes; IOKit classes; SBHIDinterface.m; the SpringBoard application; and UIPanGestureRecognizer class or subclasses.

50. Moreover, my examination was further confirmed by the testimony of the inventor of the '381 patent, Bas Ording, who testified generally that certain applications on an iPhone 4 behaved in a manner consistent with his ideas in the '381 patent. (Ording 8/9/11 Dep. Tr. at 198:6 – 201:3.)

D. Samsung's Emulation Of Apple And The Features Of The '381 Patent

51. I have also reviewed a number of documents produced by Samsung in this litigation, including analyses of features in Apple products and email messages. Based on my review of these documents, it appears that Samsung studied a number of Apple products that embody the asserted claims of the '381 patent, recognized the benefits of the '381 patent, and implemented the features of the '381 patent in Samsung products.

52. As just one example, in the document titled "Behold3 Usability Evaluation Results" (SAMNDCA00508318 – 508411), Samsung evaluated its Behold3 phone against Apple's iPhone. (SAMNDCA00508331; *see* translations of excerpts in Apple's Appendix of Certified Translations in Support of Opening Expert Reports ("Translations App'x").) This evaluation concluded that Samsung's "Behold3 [was] shown inferior to Apple's iPhone in both

the task success rate (68.5%) and satisfaction score (86)." (SAMNDCA00508333.) On a page titled "Aesthetics_Browsing," the document notes that the iPhone has "a 'bouncing' visual effect," which "generates fun for the user," while the Behold3 has "no visual effect" when "a web page is dragged to its endpoint." (SAMNDCA00508383.) On that page, there is a side by side comparison between the Behold3 and the iPhone, where the rubber-banding feature of the '381 patent is being demonstrated on a web page displayed on the iPhone. (*Id*.) Specifically, the displayed web page is being pulled to the upper right hand corner, revealing an area beyond the edge of the web page to the left and below. (*Id*.) The caption notes that "If a web page is dragged to the edge, and the hand is released, a 'bouncing' visual effect is provided." At the bottom of the page, following the column "Direction of Improvement," is a direction to "Provide a fun visual effect when dragging a web page." (*Id*.) Based on the existence of this feature in the Samsung devices I examined, it appears that this instruction was carried out.

53. As another example, in the document titled "P5 Usability Evaluation Results" (SAMNDCA00176053 – 176171; *see* translation of excerpts in Translations App'x), Samsung evaluated a prototype of its "GT-P7300" (the Galaxy Tab 8.9) against Apple's iPad 2. (SAMNDCA00176053.) The document notes that the "GUI and Visual Effect are lacking in comparison to iPad 2." (SAMNDCA00176055.) Subsequently, the evaluation notes that when a Browser application window is scrolled to the top or bottom, the P5 "lack[s] bounce effect," and that the Samsung's product "Lacks Fun, Wow Effect." (SAMNDCA00176071.) This issue appears to have been designated "Critical," with the direction that the "Bounce effect is scheduled to be reviewed." (*Id*.) Later in the evaluation, there is a side by side comparison between the P5 and the iPad 2, where the rubber-banding feature of the '381 patent is being demonstrated on a web page displayed on the iPad 2. (SAMNDCA00176125.) Specifically, the displayed web page is being pulled to the lower right hand corner, revealing an area beyond the edge of the web page to the left and above. (*Id*.) To the right, it states that "In case of iPad 2, there is a fun element from a natural Bounce effect that follows hand gestures." (*Id*.) Based on this statement, it appears that Samsung understood at least part of the purpose and value of the rubber banding feature of the '381 patent, which were to provide a natural, intuitive experience for the user that

could also inspire wonder and a sense of delight. On the other hand, the P5 prototype is described as lacking the "Bounce effect." (*Id*.) Finally, the evaluation notes as an area for "Proposed Improvement" of the P5 the incorporation of the "Bounce effect" from the iPad 2. (*Id*.)

54. I have also reviewed a spreadsheet titled "Analysis of Galaxy tab Operation Speed and Screen Effects" (SAMNDCA00201771 – 201780; *see* translation in Translations App'x.) This ten-page chart shows a detailed side-by-side comparison and analysis of over 70 features in the iPad and the Galaxy Tab. Samsung concluded that its Memo and Browser applications had "no emotional impact" because they lacked the "Bounce effect" included in the iPad. (SAMNDCA00201773-6.) As discussed above, the "bouncing" or "bounce" feature described in Samsung's documents is an example of a feature covered by the '381 patent. Based on my analysis of the Galaxy Tab and Galaxy Tab 10.1, I conclude that Samsung implemented this feature in the Galaxy Tab and Galaxy Tab 10.1 products as well.

55. I understand that Samsung has identified Mr. Wookyun Kho as a person involved in the implementation of the "bounce" feature in Samsung products. (*See* Samsung's Supplemental Response to Apple's Interrogatory No. 16.) Based on Samsung emails and the portions of the Wookyun Kho deposition transcript I reviewed, it appears that Mr. Kho studied the "bounce" or "bouncing" feature in various Apple products including the iPhone 3GS, iPhone 4, iPad, and iPad 2 in order to improve Samsung's products. (*See, e.g.*, W. Kho 1/12/12 Dep. Tr. at 40:1-44:11, 48:18-49:21.) In particular, Mr. Kho appears to have worked with an outside contractor company called NemusTech to emulate the features of the iPad and make the "bounce effect" in Samsung's Galaxy Tab prototype similar to the iPad. (SAMNDCA10851706-7; SAMNDCA10850604-6; *see* translations in Translations App'x.)

56. Other documents I have reviewed also indicate that Samsung carried out extensive analysis of various Apple products and emulated many of Apple's features beyond the '381 patent features discussed above. For example, in December 2007, Samsung analyzed various multi-touch features of the iPhone and compared the iPhone with non-touch-based phones from other competitors. (SAMNDCA11394122-26; *see* translation of excerpts in Translations App'x.) Observing that the iPhone represented a "new paradigm" in the mobile phone market and

provided "Intuitive, Inventive UI," Samsung considered an internal development proposal for implementing the touch features of the iPhone, including multi-touch features, in its future products. (SAMNDCA11394125, 31, 32.)

57. In April 2008, Samsung compared the iPhone and the phones from other competitors with its products. (SAMNDCA00229011-108.) None of the phones from Samsung or other competitors had the iPhone's multi-touch user interface. (SAMNDCA00229018.) Samsung remarked that the iPhone had a "highly animated interface," and that it was "a delight to the eye as well as a highly usable device." (SAMNDCA00229020.) Samsung conducted many more detailed studies of the iPhone user interface from 2008 to 2010 comparing it with various Samsung products and/or other competitors' products. (SAMDNCA10248844-913; SAMNDCA10244357-412; SAMNDCA10993206-211; SAMNDCA10252803-841; SAMNDCA10988469-504.)

58. Although Samsung looked at phones from most of its competitors, Samsung had decided by the end of 2009 to follow the design of the iPhone. For example, the "CEO's Directives" given out in December 2009 included a direction that "[g]oing forward our comparison standard is Apple iPhone." (SAMNDCA10907803; *see* translation in Translations App'x.) In March 2010, an email from a high level UX (user experience) designer at Samsung conveyed the CEO's message that "strongly criticized Samsung UX's mindset of 'clinging to the past generation'," which the designer interpreted as an "instruction to think about and decide all matters from the perspective of the user," the most representative example of which was "obviously the iPhone." (SAMNDCA10247549; *see* translation in Translations App'x.)

59. A Samsung report dated April 2, 2010, titled "Next Phase UX Direction" summarized the status of the Samsung UX as: "Benchmarking iPhone led to cut and paste improvements resulting in lack of consistent philosophy." (SAMNDCA10998232; *see* translation of excerpts in Translations App'x.) The same document characterized the "Philosophy and Characteristics" of the iPhone's UX as "Easy and simple Usability," "Modern and minimal Look & style," and "Emotional and joyful Experiencing." (SAMNDCA10998214.) I understand that Samsung's Galaxy S phone was released in the United States during the summer of 2010.

60. Additional Samsung documents show that Samsung continued its analysis of Apple and its examination and comparison of Apple products, including the iPhone, iPad, and iPad 2, throughout 2010 and 2011. (*See* SAMNDCA00203811-3879; SAMNDCA00203880-4010; SAMNDCA00229399-9409; SAMNDCA00229449-9451; SAMNDCA00525347-5349; SAMNDCA00525353-5356; SAMNDCA00525362; SAMNDCA10244357-4412; SAMNDCA10247283-7372; SAMNDCA10252803-2841; SAMNDCA10988469-88504; SAMNDCA10989107-9179; SAMNDCA10989363-9379; SAMNDCA10989840-9941; SAMNDCA10990627-0713; SAMNDCA10992025-2057; SAMNDCA10992072-2131; SAMNDCA10993206-3226; SAMNDCA10997825-7879; SAMNDCA10998016-8035; SAMNDCA11289451-9473; and SAMNDCA11313301-3303; *see* select translations in Translations App'x.)

E. Samsung's Knowledge of the '381 Patent

61. I understand that Samsung knew of the '381 patent by no later than August 27, 2010. On that day, Chip Lutton, counsel for Apple, sent an email to K.J. Kim, counsel for Samsung, that attached two presentations that identified the '381 patent and provided an overview of its features. (*See* APLNDC00001101-1102 (email), APLNDC00001103-1123 (presentation identifying '381 patent), and APLNDC00001126-1192 ('381 overview at (1152-1153).))

F. Samsung's Infringement of Claim 1 of the '381 Patent

62. **Claim 1.** Claim 1 of the '381 patent recites:

> A computer-implemented method, comprising:
>
> [a] at a device with a touch screen display:
>
> [b] displaying a first portion of an electronic document;
>
> [c] detecting a movement of an object on or near the touch screen display; in response to detecting the movement, translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion;
>
> [d] in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display: displaying an area beyond the edge of the document, and displaying

EXHIBIT 3

Exhibit 3 – Infringement Claim Chart for U.S. Patent No. 7,469,381

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
A computer-implemented method, comprising: at a device with a touch screen display:	The Exhibit 4G phone is a mobile computing device with a touch screen display. **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual (on-screen) QWERTY keyboard (Exhibit 4G phone User Manual (APLNDC-Y0000066320).) **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual QWERTY keyboard (Vibrant User Manual (APLNDC-Y0000057339).) **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many useful features. The following list outlines a few of the features included in your phone. • Touch screen provides quick response to a variety of in-phone menus and options including applications and seven home screens (Captivate User Manual (APLNDC-Y0000062795).)

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
	Features • 10.1-inch WXGA TFT (PLS) LCD touch screen (Galaxy Tab 10.1 User Manual (APLNDC-Y0000060376).)
displaying a first portion of an electronic document;	The Exhibit 4G phone includes an application called "Gallery" that displays electronic documents — more specifically, photographs — on the touch screen display. When running the "Gallery" application, the Exhibit 4G phone displays a first portion of a photograph. (Ex. V5.)  **Figure 1:** *Displaying "first portion" of electronic document*
detecting a movement of an object on or near the touch screen display; in response to detecting the movement, translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic	The Exhibit 4G phone detects the movement of an "object" — for instance, a finger — on its touch screen. In response, it scrolls the photograph in the same direction to display a second, different portion of the photograph. (Ex. V5.)

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
document, wherein the second portion is different from the first portion;	 **Figure 2:** *Displaying "second portion" by moving document in first direction in response to finger movement on touch screen* The detection of a user's finger and translation of the electronic document are performed in the following source code modules for the Exhibit 4G phone, which runs Android 2.3: RenderView.java, GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999.) Similar code for devices running Android 2.2 can be found, for example, at SAMNDCA-C000008045 - 8180. Similar source code for devices running Android 2.1 can be found, for example, at SAMNDCA-C000007702-7746. To the extent that Samsung contends that all instances of translating in the "first direction" require that the document be translated in the same direction with absolute precision and that a human finger is incapable of such precise movement, the use of the Exhibit 4G phone would nevertheless meet this limitation under the doctrine of equivalents. Translating a document in a first direction based on the movement of a human finger with minor irregularity is not substantially different from doing so based on an absolutely precise movement. Moreover, translating a document in a first direction based on the movement of a human finger operates to perform substantially

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
	the same function (translating the document), in substantially the same way (by detecting the movement of an object), to obtain substantially the same result (translation of a document in a first direction) as translating based on the movement of an object with absolute precision.
in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display: displaying an area beyond the edge of the document, and displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion; and	In response to reaching an edge of a photograph, while a finger continues to move the photograph in the same direction, the Exhibit 4G phone displays a black region beyond the photograph's edge, and thus displays a third, smaller portion of the photograph. (Ex. V5.)  **Figure 3:** *Displaying "area beyond edge" and smaller "third portion" while moving document in first direction* The detection of a user's finger and translation of the electronic document are performed in the following source code modules: RenderView.java,

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
	GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999; *see also* SAMNDCA-C000008045 - 8180; SAMNDCA-C000007702-7746.) The GridInputProcessor.java file identifies the edge of the photograph and displays an area beyond the edge of the photograph. To the extent that Samsung contends any of the accused devices contain an AMOLED screen and that such screen does not "display[] an area beyond the edge" because the screen does not emit light or otherwise illuminate a black area, such device would nevertheless meet this limitation under the doctrine of equivalents. Displaying black in a specific area of a screen by not illuminating the area is not substantially different from doing so by filtering or blocking light in the area. Moreover, an AMOLED screen displaying black operates to perform substantially the same function (displaying a black area), in substantially the same way (avoiding emission of light), to obtain substantially the same result (showing a black area) as a screen that displays black by filtering or blocking light.

Claim 1 of U.S. Patent No. 7,469,381	Representative Samsung Products
in response to detecting that the object is no longer on or near the touch screen display, translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion.	In response to detecting that the finger is no longer on the touch screen, the Exhibit 4G phone scrolls the photograph in the opposite direction until it no longer displays the area beyond the photograph's edge. What is then displayed is a fourth portion of the photograph that is different from the first portion. (Ex. V5.)  **Figure 4:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"* The detection of a user's lifting of his finger from the touch screen and translation of the electronic document in a second direction are performed in the following source code modules: GridInputProcessor.java and GridCameraManager.java. (SAMNDCA-C000007967-8007; *see also* SAMNDCA-C000008045-8180; SAMNDCA-C000007730-7746; SAMNDCA-C000007781-7786.)

Claim 2 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the first portion of the electronic document, the second portion of the electronic document, the third portion of the electronic document, and the fourth portion of the electronic document are displayed at the same magnification.	The entire sequence illustrated in Claim 1 is depicted below in a side-by-side comparison for the Exhibit 4G phone. As is evident from this comparison, the portions of the photograph are displayed at the same magnification. (Ex. V5.)  **Figure 1:** *Displaying "first portion" of electronic document*  **Figure 2:** *Displaying "second portion" by moving in first direction in response to finger movement*  **Figure 3:** *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*  **Figure 4:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 2 of U.S. Patent No. 7,469,381	Representative Samsung Products
	The entire sequence described in Claim 1 is depicted below in a side-by-side comparison for the Captivate. As is evident from this comparison, the portions of the photograph are displayed at the same magnification. (Ex. V1.)

Figure 5: *Displaying "first portion" of electronic document*

Figure 6: *Displaying "second portion" by moving in first direction in response to finger movement*

Figure 7: *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*

Figure 8: *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 2 of U.S. Patent No. 7,469,381	Representative Samsung Products
	The entire sequence described in Claim 1 is depicted below in a side-by-side comparison for the Vibrant. As is evident from this comparison, the portions of the photograph are displayed at the same magnification. (Ex. V3.)

Figure 9: *Displaying "first portion" of electronic document*

Figure 10: *Displaying "second portion" by moving in first direction in response to finger movement*

Figure 11: *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*

Figure 12: *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 2 of U.S. Patent No. 7,469,381	Representative Samsung Products
	The entire sequence described in Claim 1 is depicted below in a side-by-side comparison for the Galaxy Tab 10.1. As is evident from this comparison, the portions of the photograph are displayed at the same magnification. (Ex. V8.)

Figure 13: *Displaying "first portion" of electronic document*

Figure 14: *Displaying "second portion" by moving in first direction in response to finger movement*

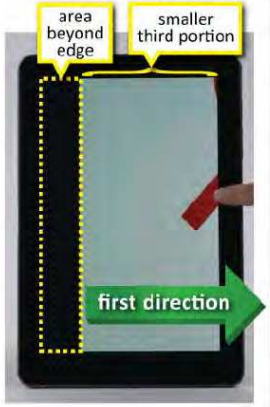


Figure 15: *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*

Figure 16: *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 3 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the movement of the object is on the touch screen display.	In the sequences illustrated for Claims 1 and 2, the movement of the finger is on the touch screen display.

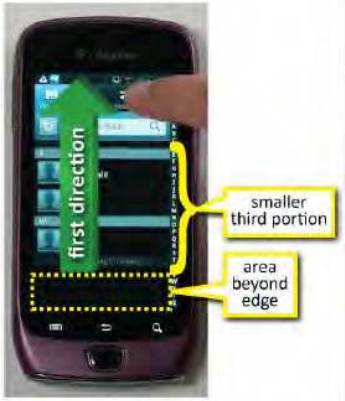
Claim 4 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the object is a finger.	In the sequences illustrated in Claims 1 and 2, the object that moves on the touch screen display is a finger.

Claim 5 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the first direction is a vertical direction, a horizontal direction, or a diagonal direction.	In the sequences illustrated in Claims 1 and 2, the first direction is a horizontal direction — specifically, to the right.

Claim 6 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the electronic document is a web page.	On the Galaxy Tab 10.1, for example, the method of claim 1 can be performed using a web page. (Ex. V9.)  **Figure 17:** *Displaying "first portion" of electronic document*  **Figure 18:** *Displaying "second portion" by moving in first direction in response to finger movement*  **Figure 19:** *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*  **Figure 20:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"* The source code for detecting a user's finger movement, translating an electronic document, detecting a user's lifting of his finger from the touch screen, and translating an electronic document in a second direction can be found in the following source code modules in the Galaxy Tab 10.1's Browser application: WebView.java and View.java. (SAMNDCA-C000003501 – 3549.)

Claim 7 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the electronic document is a digital image.	In the sequence illustrated in Claim 1, the electronic document is a digital image, namely a digital photograph.

Claim 8 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the electronic document is a word processing, spreadsheet, email or presentation document.	On the Exhibit 4G phone, for example, the method of claim 1 can be performed using a presentation document. (Ex. V7.)  **Figure 21:** *Displaying "first portion" of electronic document*  **Figure 22:** *Displaying "second portion" by moving in first direction in response to finger movement*  **Figure 23:** *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*  **Figure 24:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 9 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the electronic document includes a list of items.	The Exhibit 4G phone also includes an application called "Contacts" that displays an electronic document including a list of items — specifically, a list of contacts — on the touch screen display. When running the "Contacts" application, the Exhibit 4G phone performs the method of claim 1. (Ex. V6.)  **Figure 25:** *Displaying "first portion" of electronic document*  **Figure 26:** *Displaying "second portion" by moving in first direction in response to finger movement*  **Figure 27:** *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*  **Figure 28:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 9 of U.S. Patent No. 7,469,381	Representative Samsung Products
	The Captivate also includes an application called "Contacts" that displays an electronic document including a list of items — specifically, a list of contacts — on the touch screen display. When running the "Contacts" application, the Captivate performs the method of claim 1. (Ex. V2.)

Figure 29: *Displaying "first portion" of electronic document*

Figure 30: *Displaying "second portion" by moving in first direction in response to finger movement*

Figure 31: *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*

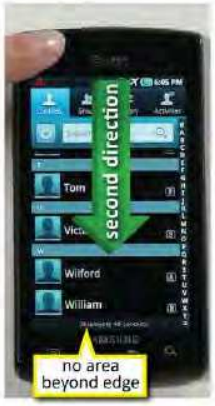
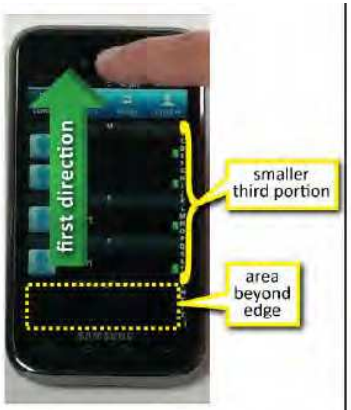


Figure 32: *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 9 of U.S. Patent No. 7,469,381	Representative Samsung Products
	The Vibrant also includes an application called "Contacts" that displays an electronic document including a list of items — specifically, a list of contacts — on the touch screen display. When running the "Contacts" application, the Vibrant performs the method of claim 1. (Ex. V4.)  **Figure 33:** *Displaying "first portion" of electronic document*  **Figure 34:** *Displaying "second portion" by moving in first direction in response to finger movement*  **Figure 35:** *Displaying "area beyond edge" and smaller "third portion" while moving in first direction*  **Figure 36:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"*

Claim 10 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the second direction is opposite the first direction.	In the sequence illustrated in Claim 1, the "first direction" is to the right, while the "second direction" is opposite, to the left. (*See also* Exs. V1-V9.)

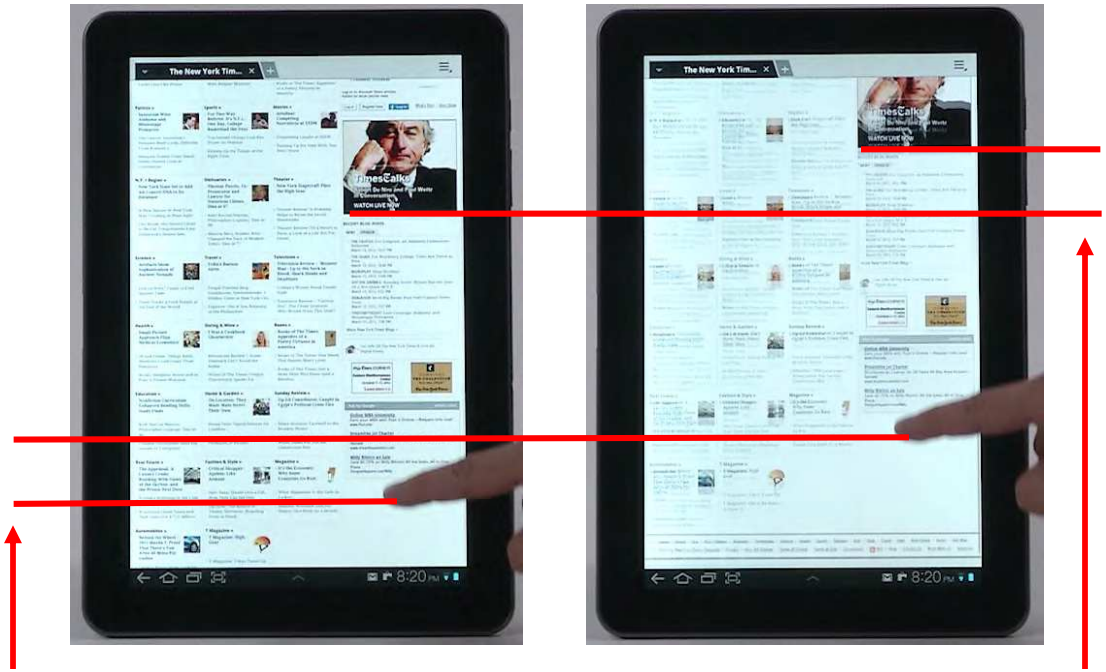
Claim 11 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein translating in the first direction prior to reaching an edge of the document has an associated speed of translation that corresponds to a speed of movement of the object.	In Exhibits V1-V9, the speed of translation of the photograph, contacts list, web page, or presentation document prior to reaching an edge of the document corresponds to the speed of movement of the user's finger.

Claim 13 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the area beyond the edge of the document is black, gray, a solid color, or white.	In Exhibits V1, V3, V5, V7, V8, and V9, the areas beyond the edges of the photographs are black, and the area beyond the edge of the presentation document is gray.

Claim 14 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein the area beyond the edge of the document is visually distinct from the document.	In Exhibits V1, V3, V5, V7, V8, and V9, the areas beyond the edges of the photographs are black, and the area beyond the edge of the presentation document is gray. These areas are visually distinct, respectively, from the photographs themselves, which are in color, and the presentation document, which is white with additional colors.

Claim 15 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein translating the document in the second direction is a damped motion.	In Exhibits V1, V3, V5, and V8, as the electronic document scrolls back in the second direction to fill the screen, it exhibits damped motion and slows as it reaches the end of its movement.

Claim 16 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein changing from translating in the first direction to translating in the second direction until the area beyond the edge of the document is no longer displayed makes the edge of the electronic document appear to be elastically attached to an edge of the touch screen display or to an edge displayed on the touch screen display.	In the sequence illustrated in Claim 1, in response to detecting that the finger is no longer on the touch screen, the Exhibit 4G phone changes from scrolling the photograph in the first direction (to the right) to scrolling the photograph in the opposite direction (to the left). This change makes the photograph appear to "snap" or "bounce" back to the left, as though the photograph were elastically attached to the edge of the touch screen display. (*See also* Exs. V1 – V6, V8, V9.)

Claim 17 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein translating in the first direction prior to reaching the edge of the electronic document has a first associated translating distance that corresponds to a distance of movement of the object prior to reaching the edge of the electronic document; and wherein displaying an area beyond the edge of the electronic document comprises translating the electronic document in the first direction for a second associated translating distance, wherein the second associated translating distance is less than a distance of movement of the object after reaching the edge of the electronic document.	On the Galaxy Tab 10.1, translating in the first direction prior to reaching the edge of the electronic document has a first associated translating distance that corresponds to a distance of movement of the user's finger prior to reaching the edge of the electronic document.  **Figure 37**

Claim 17 of U.S. Patent No. 7,469,381	Representative Samsung Products
	When the Galaxy Tab 10.1displays an area beyond the edge of the electronic document, it translates the electronic document in the first direction for a second associated translating distance. The second associated translating distance is less than a distance of movement of the user's finger after reaching the edge of the electronic document.

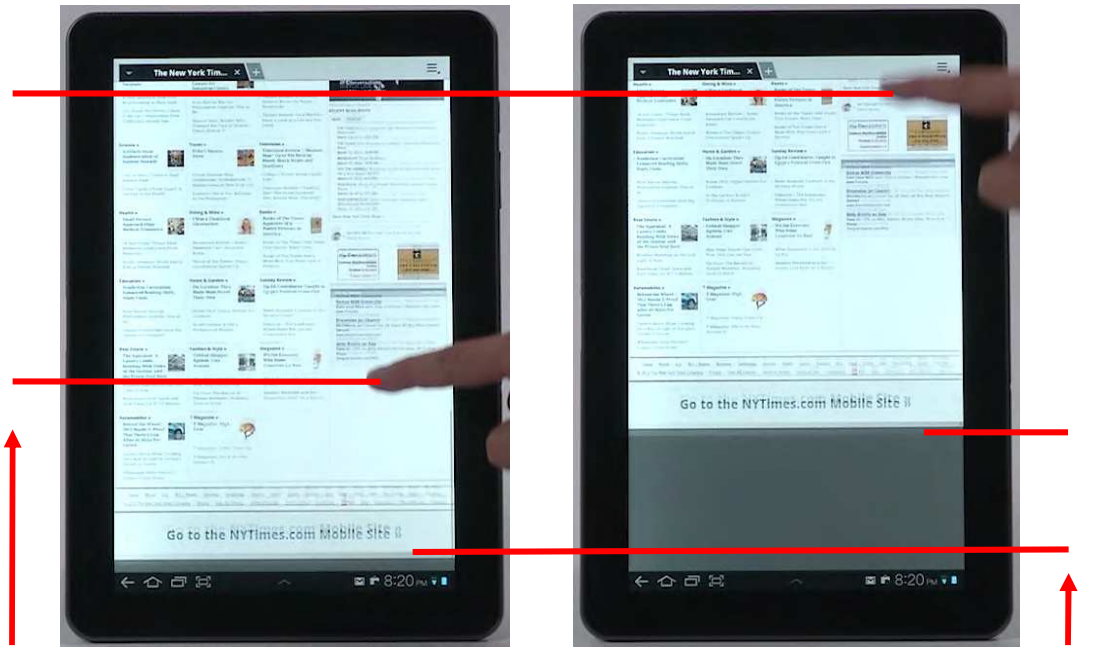
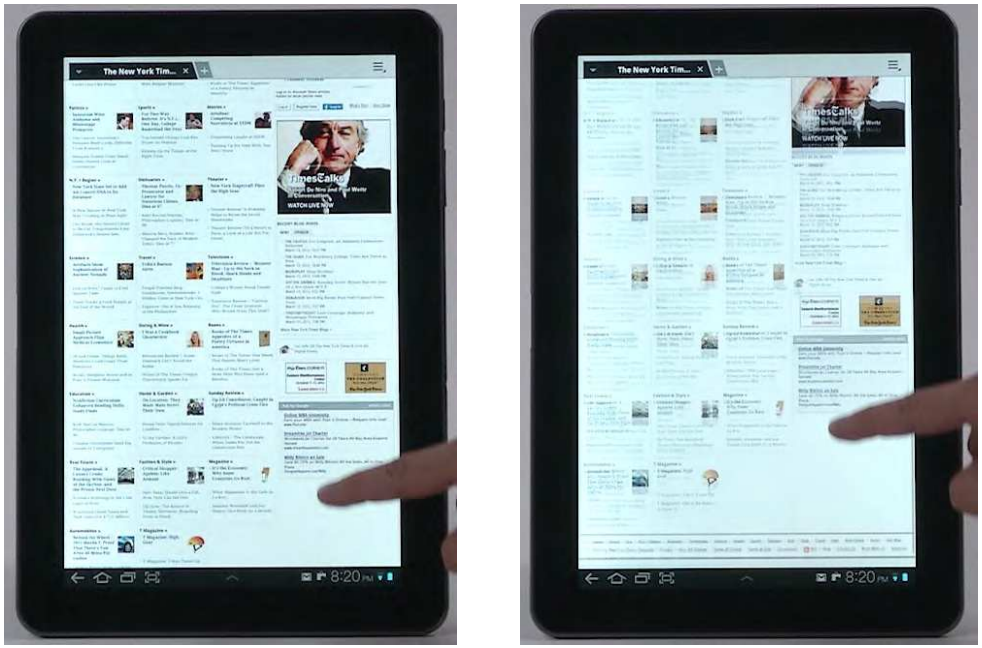
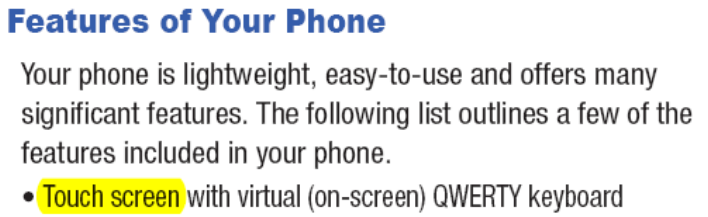


Figure 38

Claim 18 of U.S. Patent No. 7,469,381	Representative Samsung Products
The computer-implemented method of claim 1, wherein translating in the first direction prior to reaching the edge of the electronic document has a first associated translating speed that corresponds to a speed of movement of the object, and wherein displaying an area beyond the edge of the electronic document comprises translating the electronic document in the first direction at a second associated translating speed, wherein the second associated translating speed is slower than the first associated translating speed.	On the Galaxy Tab 10.1, translating in the first direction prior to reaching the edge of the electronic document has a first associated translating speed that corresponds to a speed of movement of the user's finger. The speed of translation is essentially the same as the speed with which the user's finger moves.  **Figure 39**

Claim 18 of U.S. Patent No. 7,469,381	Representative Samsung Products
	When the Galaxy Tab 10.1 displays an area beyond the edge of the electronic document, it translates the electronic document in the first direction at a second associated translating speed. The second associated translating speed is slower than the first associated translating speed. The document translates more slowly in the first direction when the area beyond the edge is displayed.   **Figure 40**

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
A device, comprising: a touch screen display; one or more processors; memory; and one or more programs, wherein the one or more programs are stored in the memory and configured to be executed by the one or more processors, the programs including:	The Exhibit 4G phone, Vibrant, Captivate, and Galaxy Tab 10.1 are mobile computing devices with touch screen displays, processors, and memory.  **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual (on-screen) QWERTY keyboard (Exhibit 4G phone User Manual (APLNDC-Y0000066320).)  **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual QWERTY keyboard (Vibrant User Manual (APLNDC-Y0000057339).)  **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many useful features. The following list outlines a few of the features included in your phone. • Touch screen provides quick response to a variety of in-phone menus and options including applications and seven home screens (Captivate User Manual (APLNDC-Y0000062795).)  **Features** • 10.1-inch WXGA TFT (PLS) LCD touch screen (Galaxy Tab 10.1 User Manual (APLNDC-Y0000060376).)

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
	• Exhibit 4G: "1-GHz Hummingbird" processor that uses "Android 2.3, Gingerbread OS." (APLNDC-Y0000066850) • Vibrant: "1 GHz Cortex A8 Hummingbird Application Processor" that uses "Android 2.2, Froyo." (APLNDC-Y0000066798); • Captivate: "1 GHz, Cortex A8 Hummingbird Processor" that uses "Android 2.3, Gingerbread." (APLNDC-Y0000066835); and • Galaxy Tab 10.1: "1 Ghz Dual Core Nvidia Tegra2 Processor" that uses "Android 3.2, Honeycomb." (APLNDC-Y0000066820-821.) • Exhibit 4G: "Internal Memory" of "512 MB." (APLNDC-Y0000066850); • Vibrant: "Internal Memory" of "2 GB." (APLNDC-Y0000066800); • Captivate: "Internal Memory" of "2 GB." (APLNDC-Y0000066836); and • Galaxy Tab 10.1: "16 GB Internal Memory." (APLNDC-Y0000066850.)

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
instructions for displaying a first portion of an electronic document;	The Exhibit 4G phone includes an application called "Gallery" with instructions for displaying electronic documents — more specifically, photographs — on the touch screen display. When running the "Gallery" application, the Exhibit 4G phone displays a first portion of a photograph. (Ex. V5.)  **Figure 1:** *Displaying "first portion" of electronic document*

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
instructions for detecting a movement of an object on or near the touch screen display; instructions for translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion, in response to detecting the movement;	The Exhibit 4G phone includes instructions for detecting the movement of an "object" — for instance, a finger — on its touch screen. In response, it scrolls the photograph in the same direction to display a second, different portion of the photograph. (Ex. V5.)  **Figure 2:** *Displaying "second portion" by moving document in first direction in response to finger movement on touch screen* The detection of a user's finger and translation of the electronic document are performed in the following source code modules for the Exhibit 4G phone, which runs Android 2.3: RenderView.java, GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999.) Similar code for devices running Android 2.2 can be found, for example, at SAMNDCA-C000008045 - 8180. Similar source code for devices running Android 2.1 can be found, for example, at SAMNDCA-C000007702-7746. To the extent that Samsung contends that all instances of translating in the "first direction" require that the document be translated in the same direction with absolute precision and that a human finger is incapable of such precise movement, the use of the

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
	Exhibit 4G phone would nevertheless meet this limitation under the doctrine of equivalents. Translating a document in a first direction based on the movement of a human finger with minor irregularity is not substantially different from doing so based on an absolutely precise movement. Moreover, translating a document in a first direction based on the movement of a human finger operates to perform substantially the same function (translating the document), in substantially the same way (by detecting the movement of an object), to obtain substantially the same result (translation of a document in a first direction) as translating based on the movement of an object with absolute precision.

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
instructions for displaying an area beyond an edge of the electronic document and displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion, in response to the edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display; and	The Exhibit 4G phone includes instructions for displaying a black region beyond the photograph's edge in response to reaching an edge of a photograph, while a finger continues to move the photograph in the same direction, and thus displays a third, smaller portion of the photograph. (Ex. V5.)  **Figure 3:** *Displaying "area beyond edge" and smaller "third portion" while moving document in first direction* The detection of a user's finger and translation of the electronic document are performed in the following source code modules: RenderView.java, GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999; *see also* SAMNDCA-C000008045 - 8180; SAMNDCA-C000007702-7746.) The GridInputProcessor.java file identifies the edge of the photograph and displays an area beyond the edge of the photograph.

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
	To the extent that Samsung contends any of the accused devices contain an AMOLED screen and that such screen does not "display[] an area beyond the edge" because the screen does not emit light or otherwise illuminate a black area, such device would nevertheless meet this limitation under the doctrine of equivalents. Displaying black in a specific area of a screen by not illuminating the area is not substantially different from doing so by filtering or blocking light in the area. Moreover, an AMOLED screen displaying black operates to perform substantially the same function (displaying a black area), in substantially the same way (avoiding emission of light), to obtain substantially the same result (showing a black area) as a screen that displays black by filtering or blocking light.

Claim 19 of U.S. Patent No. 7,469,381	Representative Samsung Products
instructions for translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion, in response to detecting that the object is no longer on or near the touch screen display.	The Exhibit 4G phone includes instructions for scrolling the photograph in the opposite direction until it no longer displays the area beyond the photograph's edge, in response to detecting that the finger is no longer on the touch screen. What is then displayed is a fourth portion of the photograph that is different from the first portion. (Ex. V5.)  **Figure 4:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"* The detection of a user's lifting of his finger from the touch screen and translation of the electronic document in a second direction are performed in the following source code modules: GridInputProcessor.java and GridCameraManager.java. (SAMNDCA-C000007967-8007; *see also* SAMNDCA-C000008045-8180; SAMNDCA-C000007730-7746; SAMNDCA-C000007781-7786.)

Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
A computer readable storage medium having stored therein instructions, which when executed by a device with a touch screen display, cause the device to:	The Exhibit 4G phone, Vibrant, Captivate, and Galaxy Tab 10.1 are mobile computing devices with touch screen displays, processors, and memory. **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual (on-screen) QWERTY keyboard (Exhibit 4G phone User Manual (APLNDC-Y0000066320).) **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many significant features. The following list outlines a few of the features included in your phone. • Touch screen with virtual QWERTY keyboard (Vibrant User Manual (APLNDC-Y0000057339).) **Features of Your Phone** Your phone is lightweight, easy-to-use and offers many useful features. The following list outlines a few of the features included in your phone. • Touch screen provides quick response to a variety of in-phone menus and options including applications and seven home screens (Captivate User Manual (APLNDC-Y0000062795).) **Features** • 10.1-inch WXGA TFT (PLS) LCD touch screen

Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
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Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
display a first portion of an electronic document;	The Exhibit 4G phone includes an application called "Gallery" that displays electronic documents — more specifically, photographs — on the touch screen display. When running the "Gallery" application, the Exhibit 4G phone displays a first portion of a photograph. (Ex. V5.)  **Figure 1:** *Displaying "first portion" of electronic document*

Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
detect a movement of an object on or near the touch screen display; translate the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion, in response to detecting the movement;	The Exhibit 4G phone detects the movement of an "object" — for instance, a finger — on its touch screen. In response, it scrolls the photograph in the same direction to display a second, different portion of the photograph. (Ex. V5.)  **Figure 2:** *Displaying "second portion" by moving document in first direction in response to finger movement on touch screen* The detection of a user's finger and translation of the electronic document are performed in the following source code modules for the Exhibit 4G phone, which runs Android 2.3: RenderView.java, GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999.) Similar code for devices running Android 2.2 can be found, for example, at SAMNDCA-C000008045-8180. Similar source code for devices running Android 2.1 can be found, for example, at SAMNDCA-C000007702-7746. To the extent that Samsung contends that all instances of translating in the "first direction" require that the document be translated in the same direction with absolute precision and that a human finger is incapable of such precise movement, the use of the

Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
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Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
display an area beyond an edge of the electronic document and display a third portion of the electronic document, wherein the third portion is smaller than the first portion, if the edge of the electronic document is reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display; and	In response to reaching an edge of a photograph, while a finger continues to move the photograph in the same direction, the Exhibit 4G phone displays a black region beyond the photograph's edge, and thus displays a third, smaller portion of the photograph. (Ex. V5.)  **Figure 3:** *Displaying "area beyond edge" and smaller "third portion" while moving document in first direction* The detection of a user's finger and translation of the electronic document are performed in the following source code modules: RenderView.java, GLSurfaceView.java, GridLayer.java, and GridInputProcessor.java. (SAMNDCA-C000007890-7999; *see also* SAMNDCA-C000008045 - 8180; SAMNDCA-C000007702-7746.) The GridInputProcessor.java file identifies the edge of the photograph and displays an area beyond the edge of the photograph.

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	To the extent that Samsung contends any of the accused devices contain an AMOLED screen and that such screen does not "display[] an area beyond the edge" because the screen does not emit light or otherwise illuminate a black area, such device would nevertheless meet this limitation under the doctrine of equivalents. Displaying black in a specific area of a screen by not illuminating the area is not substantially different from doing so by filtering or blocking light in the area. Moreover, an AMOLED screen displaying black operates to perform substantially the same function (displaying a black area), in substantially the same way (avoiding emission of light), to obtain substantially the same result (showing a black area) as a screen that displays black by filtering or blocking light.

Claim 20 of U.S. Patent No. 7,469,381	Representative Samsung Products
translate the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion, in response to detecting that the object is no longer on or near the touch screen display.	In response to detecting that the finger is no longer on the touch screen, the Exhibit 4G phone scrolls the photograph in the opposite direction until it no longer displays the area beyond the photograph's edge. What is then displayed is a fourth portion of the photograph that is different from the first portion. (Ex. V5.)  **Figure 4:** *When finger is lifted, document is moved in second direction to display "fourth portion" with no "area beyond edge"* The detection of a user's lifting of his finger from the touch screen and translation of the electronic document in a second direction are performed in the following source code modules: GridInputProcessor.java and GridCameraManager.java. (SAMNDCA-C000007967-8007; *see also* SAMNDCA-C000008045-8180; SAMNDCA-C000007730-7746; SAMNDCA-C000007781-7786.)