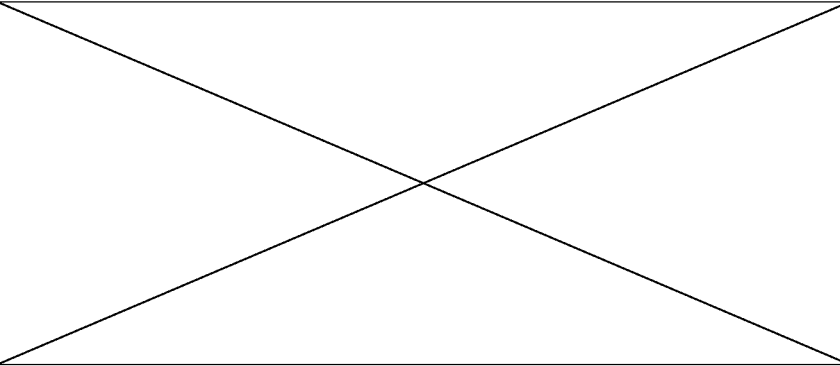
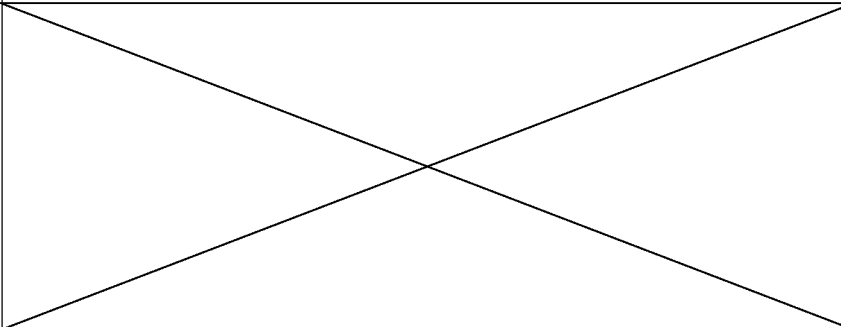


## EXHIBIT 2.05

Claim Language	Miller
<p>instructions for displaying an area beyond an edge of the electronic document 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</p>	<p>Page 9 states "When the scrolling list is at the top (see Figure 6), there is a half-space left blank to tell users they are at the top. If there is more information to scroll to, then the last item is shown clipped in half. In addition, the scroll buttons are enabled or disabled appropriately for each state. . . . When the list is at the bottom (see Figure 8), the half space is at the bottom and the upper item is clipped."</p>
<p>instructions for translating the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.</p>	
<p>20. A computer readable storage medium having stored therein instructions, which when executed by a device with a touch screen display, cause the device to:</p>	<p>Page 1 states "This document focuses on the Touchable look and feel, a specific look and feel designed for touch screen based consumer products, including retail kiosks, personal digital assistants (PDAs), and screen phones." PDAs and screen phones inherently include a computer readable storage medium having stored therein instructions.</p>
<p>detect a movement of an object on or near the touch screen display;</p>	<p>Page 6 states ". . . the Touchable look and feel is targeted for use on touch screen based consumer products. On such products, typically a finger or a stylus is used for input . . ."</p> <p>But Miller does not disclose instructions that when executed cause a device with a touch screen display to "detect a <u>movement</u> of an object on or near the touch screen display" as required by this claim. Rather, Miller discloses touch screens that use one or more <u>stationary</u> taps to activate soft buttons (e.g., scroll-up and scroll-down buttons) on the touch screen: "A single tap interaction model is common" (Miller, page 6)</p>

Claim Language	Miller
<p>translate an electronic document displayed on the touch screen display in a first direction, in response to detecting the movement;</p>	<p>Pages 9-10 disclose touch screens that use <u>stationary</u> taps on scroll-up and scroll-down buttons to translate electronic lists on the touch screen.</p> <p>But Miller does not disclose instructions that when executed cause a device with a touch screen display to translate an electronic document "<u>in response to detecting the movement</u>" (i.e., in response to detecting the movement of the object on or near the touch screen display) as required by this claim.</p>
<p>display an area beyond an edge of the electronic document 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</p>	<p>Page 9 states "When the scrolling list is at the top (see Figure 6), there is a half-space left blank to tell users they are at the top. If there is more information to scroll to, then the last item is shown clipped in half. In addition, the scroll buttons are enabled or disabled appropriately for each state. . . . When the list is at the bottom (see Figure 8), the half space is at the bottom and the upper item is clipped."</p>
<p>translate the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.</p>	

In view of the remarks in the chart above, claims 1-20 are not anticipated by Zimmerman, Kwatinetz, Pallakoff, or Miller because none of these references discloses each and every limitation of these claims.

## **Detailed Explanation of Patentability:**

### **35 U.S.C. § 102**

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). . . . "The identical invention must be shown in as complete detail as is contained in the ... claim." MPEP § 2131 citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

All of claims 1-20 include the element that after the object is no longer detected on or near the touch screen display, the document is translated in a second direction until the area beyond the edge of the document is no longer displayed:

“after the object is no longer detected on or near the touch screen display, translating the document in a second direction until the area beyond the edge of the document is no longer displayed” (Claim 1);

“instructions for translating the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display” (Claim 19); and

“translate the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display” (Claim 20).

As shown in the chart in the preceding section, Zimmerman, Kwatinetz, Pallakoff, and Miller do not teach or suggest this claim element, either expressly or inherently.

Thus, at least one element in each of claims 1-20 is not taught or suggested by Zimmerman, Kwatinetz, Pallakoff, and/or Miller. As shown in the chart in the preceding section, some of the claims include additional elements that are not taught or suggested by Zimmerman, Kwatinetz, Pallakoff, or Miller.

Applicants respectfully submit that for at least the reasons set forth above, Zimmerman, Kwatinetz, Pallakoff, and Miller do not anticipate any of claims 1-20 of the above captioned patent application under 35 U.S.C. § 102(a)-(g) at least because none of these references discloses each and every limitation of any of claims 1-20. MPEP §2131.

### **35 U.S.C. § 103(a)**

One of the criteria required to establish a prima facie case of obviousness is that the prior art must teach or suggest all the claim limitations. MPEP §2143.

Applicants respectfully submit that Zimmerman, Kwatinetz, Pallakoff, and Miller, either standing alone or in combination, do not render claims 1-20 of the above-captioned patent application obvious under 35 U.S.C. § 103(a) because, as explained above, at least one element in each of claims 1-20 is not taught or suggested by Zimmerman, Kwatinetz, Pallakoff, and/or Miller. MPEP §2143.

**Concise Statement of Utility:**

The invention as claimed in independent claims 1, 19, and 20 has utility at least because it visually indicates when one or more edges of an electronic document have been reached.

**Showing of Support under 35 USC 112, First Paragraph:**

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. <u>60/946,971</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/945,858</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/883,801</u> , to which the above captioned application claims benefit
1. A computer-implemented method, comprising:	At least paragraph 0010; and Figures 7 and 8A-8D.	At least paragraph 0011 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraph 0011 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraph 0011 and claims 1-2; and Figures 7 and 8A-8D.
at a device with a touch screen display,	At least paragraphs 0010 and 0103; and Figure 2.	At least paragraphs 0011 and 0104 and claims 1-2; and Figure 2.	At least paragraphs 0011 and 0082 and claims 1-2; and Figure 2.	At least paragraphs 0011 and 0082 and claims 1-2; and Figure 2.
detecting a movement of an object on or near the touch screen display;	At least paragraphs 0010 and 0148; and Figures 7 and 8A-8D.	At least paragraphs 0011 and 0149 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 0011 and 0122 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 0011 and 0122 and claims 1-2; and Figures 7 and 8A-8D.
in response to detecting the movement, translating an electronic document displayed on the touch screen display in a first direction;	At least paragraphs 0010 and 0149; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0150 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0123 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0123 and claims 1-2; and Figures 7 and 8A-8D.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
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	At least paragraphs 0010 and 0151; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0152 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0125 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0125 and claims 1-2; and Figures 7 and 8A-8D.
after the object is no longer detected on or near the touch screen display, translating the document in a second direction until the area beyond the edge of the document is no longer displayed.	At least paragraphs 0010 and 0152; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0153 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0126 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 011 and 0126 and claims 1-2; and Figures 7 and 8A-8D.
2. The computer-implemented method of claim 1, wherein the device is a portable multifunction device.	At least paragraphs 0103 and 0148; and Figures 2 and 4.	At least paragraphs 0104 and 0149; and Figures 2 and 4.	At least paragraphs 0082 and 0122; and Figures 2 and 4.	At least paragraphs 0082 and 0122; and Figures 2 and 4.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
3. The computer-implemented method of claim 1, wherein the movement of the object is on the touch screen display.	At least paragraph 0148; and Figure 7.	At least paragraph 0149; and Figure 7.	At least paragraph 0122; and Figure 7.	At least paragraph 0122; and Figure 7.
4. The computer-implemented method of claim 1, wherein the object is a finger.	At least paragraph 0148; and Figure 7.	At least paragraph 0149; and Figure 7.	At least paragraph 0122; and Figure 7.	At least paragraph 0122; and Figure 7.
5. The computer-implemented method of claim 1, wherein the first direction is a vertical direction, a horizontal direction, or a diagonal direction.	At least paragraph 0149; and Figures 7 and 8A-8D.	At least paragraph 0150; and Figures 7 and 8A-8D.	At least paragraph 0123; and Figures 7 and 8A-8D.	At least paragraph 0123; and Figures 7 and 8A-8D.
6. The computer-implemented method of claim 1, wherein the electronic document is a web page.	At least paragraph 0149; and Figures 8A-8D.	At least paragraph 0150; and Figures 8A-8D.	At least paragraph 0123; and Figures 8A-8D.	At least paragraph 0123; and Figures 8A-8D.



Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
7. The computer-implemented method of claim 1, wherein the electronic document is a digital image.	At least paragraphs 0149 and 0156.	At least paragraphs 0150 and 0157.	At least paragraph 0059.	At least paragraph 0059.
8. The computer-implemented method of claim 1, wherein the electronic document is a word processing, spreadsheet, email or presentation document.	At least paragraphs 0149 and 0156.	At least paragraphs 0150 and 0157.	At least paragraphs 0123 and 0128.	At least paragraphs 0123 and 0128.
9. The computer-implemented method of claim 1, wherein the electronic document includes a list of items.	At least paragraph 0133; and Figures 5 and 6A-6D.	At least paragraph 0134; and Figures 5 and 6A-6D.	At least paragraph 0110; and Figures 5 and 6A-6D.	At least paragraph 0110; and Figures 5 and 6A-6D.
10. The computer-implemented method of claim 1, wherein the second direction is opposite the first direction.	At least paragraph 0152; and Figures 7 and 8A-8D.	At least paragraph 0153; and Figures 7 and 8A-8D.	At least paragraph 0126; and Figures 7 and 8A-8D.	At least paragraph 0126; and Figures 7 and 8A-8D.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
11. 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.	At least paragraph 0150; and Figure 7.	At least paragraph 0151; and Figure 7.	At least paragraph 0124; and Figure 7.	At least paragraph 0124; and Figure 7.
12. The computer-implemented method of claim 1, wherein translating in the first direction is in accordance with a simulation of an equation of motion having friction.	At least paragraph 0150; and Figure 7.	At least paragraph 0151; and Figure 7.	At least paragraph 0124; and Figure 7.	At least paragraph 0124; and Figure 7.
13. The computer-implemented method of claim 1, wherein the area beyond the edge of the document is black, gray, a solid color, or white.	At least paragraph 0151; and Figures 7 and 8C.	At least paragraph 0152; and Figures 7 and 8C.	At least paragraph 0125; and Figures 7 and 8C.	At least paragraph 0125; and Figures 7 and 8C.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
14. The computer-implemented method of claim 1, wherein the area beyond the edge of the document is visually distinct from the document.	At least paragraphs 0151; and Figures 7 and 8C.	At least paragraph 0152; and Figures 7 and 8C.	At least paragraph 0125; and Figures 7 and 8C.	At least paragraph 0125; and Figures 7 and 8C.
15. The computer-implemented method of claim 1, wherein translating the document in the second direction is a damped motion.	At least paragraph 0152; and Figure 7.	At least paragraph 0153; and Figure 7.	At least paragraph 0126; and Figure 7.	At least paragraph 0126; and Figure 7.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
<p>16. 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.</p>	<p>At least paragraph 0152; and Figures 7 and 8A-8D.</p>	<p>At least paragraph 0153; and Figures 7 and 8A-8D.</p>	<p>At least paragraph 0126; and Figures 7 and 8A-8D.</p>	<p>At least paragraph 0126; and Figures 7 and 8A-8D.</p>

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
<p>17. 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.</p>	<p>At least paragraph 0153; and Figure 8C.</p>	<p>At least paragraph 0154; and Figure 8C.</p>		

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
<p>18. 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.</p>	<p>At least paragraph 0154; and Figure 8C.</p>	<p>At least paragraph 0154; and Figure 8C.</p>		

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
19. A device, comprising:	At least paragraphs 0012 and 0103; and Figure 2.	At least paragraphs 0013 and 0104; and Figure 2.	At least paragraphs 0013 and 0082; and Figure 2.	At least paragraphs 0013 and 0082; and Figure 2.
a touch screen display;	At least paragraphs 0012 and 0103; and Figure 2.	At least paragraphs 0013 and 0104; and Figure 2.	At least paragraphs 0013 and 0082; and Figure 2.	At least paragraphs 0013 and 0082; and Figure 2.
one or more processors;	At least paragraphs 0012 and 0059; and Figure 1.	At least paragraphs 0013 and 0060; and Figure 1.	At least paragraphs 0013 and 0038; and Figure 1.	At least paragraphs 0013 and 0038; and Figure 1.
memory; and	At least paragraphs 0012 and 0061; and Figure 1.	At least paragraphs 0013 and 0062; and Figure 1.	At least paragraphs 0013 and 0040; and Figure 1.	At least paragraphs 0013 and 0040; and Figure 1.
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:	At least paragraph 0012; and Figure 1.	At least paragraph 0013; and Figure 1.	At least paragraph 0013; and Figure 1.	At least paragraph 0013; and Figure 1.
instructions for detecting a movement of an object on or near the touch screen display;	At least paragraphs 0012 and 0148; and Figures 7 and 8A-8D.	At least paragraphs 0013 and 0149; and Figures 7 and 8A-8D.	At least paragraphs 0013 and 0122; and Figures 7 and 8A-8D.	At least paragraphs 0013 and 0122; and Figures 7 and 8A-8D.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
instructions for translating an electronic document displayed on the touch screen display in a first direction, in response to detecting the movement;	At least paragraphs 0012 and 0149; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0150 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0123 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0123 and claims 1-2; and Figures 7 and 8A-8D.
instructions for displaying an area beyond an edge of the electronic document 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	At least paragraphs 0012 and 0151; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0152 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0125 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0125 and claims 1-2; and Figures 7 and 8A-8D.



Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
instructions for translating the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.	At least paragraphs 0012 and 0152; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0153 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0126 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 013 and 0126 and claims 1-2; and Figures 7 and 8A-8D.
20. A computer readable storage medium having stored therein instructions, which when executed by a device with a touch screen display, cause the device to:	At least paragraph 0013; and Figure 1.	At least paragraph 0014; and Figure 1.	At least paragraph 0014; and Figure 1.	At least paragraph 0014; and Figure 1.
detect a movement of an object on or near the touch screen display;	At least paragraphs 0013 and 0148; and Figures 7 and 8A-8D.	At least paragraphs 0014 and 0149 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 0014 and 0122 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 0014 and 0122 and claims 1-2; and Figures 7 and 8A-8D.
translate an electronic document displayed on the touch screen display in a first direction, in response to detecting the movement;	At least paragraphs 0013 and 0149; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0150 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0123 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0123 and claims 1-2; and Figures 7 and 8A-8D.

Claim Limitation	Support for claim limitation in the above captioned patent application	Support for claim limitation in provisional application no. 60/946,971, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/945,858, to which the above captioned application claims benefit	Support for claim limitation in provisional application no. 60/883,801, to which the above captioned application claims benefit
display an area beyond an edge of the electronic document 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	At least paragraphs 0013 and 0151; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0152 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0125 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0125 and claims 1-2; and Figures 7 and 8A-8D.
translate the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.	At least paragraphs 0013 and 0152; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0153 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0126 and claims 1-2; and Figures 7 and 8A-8D.	At least paragraphs 014 and 0126 and claims 1-2; and Figures 7 and 8A-8D.

**Showing of Support under 35 USC 112, First Paragraph (continued):**

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
1. A computer-implemented method, comprising:	At least claims 318 and 319; and Figures 43B-43D.	At least claims 318 and 319; and Figures 43B-43D.	At least claims 303 and 304; and Figures 43B-43D.
at a device with a touch screen display,	At least paragraph 0756; and Figure 2.	At least paragraph 0724; and Figure 2.	At least paragraph 0703; and Figure 2.
detecting a movement of an object on or near the touch screen display;	At least paragraph 0761; and Figures 43B-43D.	At least paragraph 0729; and Figures 43B-43D.	At least paragraph 0708; and Figures 43B-43D.
in response to detecting the movement, translating an electronic document displayed on the touch screen display in a first direction;	At least paragraph 0762; and Figures 43B-43D.	At least paragraph 0730; and Figures 43B-43D.	At least paragraph 0709; and Figures 43B-43D.
in response to an edge of the electronic document being reached while translating the electronic document in the first direction	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
while the object is still detected on or near the touch screen display, displaying an area beyond the edge of the document; and	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
after the object is no longer detected on or near the touch screen display, translating the document in a second direction until the area beyond the edge of the document is no longer displayed.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
2. The computer-implemented method of claim 1, wherein the device is a portable multifunction device.	At least paragraph 0003; and Figures 2 and 4A-4B.	At least paragraph 0003; and Figures 2 and 4A-4B.	At least paragraph 0003; and Figures 2 and 4A-4B.
3. The computer-implemented method of claim 1, wherein the movement of the object is on the touch screen display.	At least paragraph 0761; and Figures 43B-43D.	At least paragraph 0729; and Figures 43B-43D.	At least paragraph 0708; and Figures 43B-43D.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
4. The computer-implemented method of claim 1, wherein the object is a finger.	At least claims 318 and 319; and Figures 43B-43D.	At least claims 318 and 319; and Figures 43B-43D.	At least claims 303 and 304; and Figures 43B-43D.
5. The computer-implemented method of claim 1, wherein the first direction is a vertical direction, a horizontal direction, or a diagonal direction.	At least paragraph 0762.	At least paragraph 0730.	At least paragraph 0709.
6. The computer-implemented method of claim 1, wherein the electronic document is a web page.	At least paragraph 0756.	At least paragraph 0724.	At least paragraph 0703.
7. The computer-implemented method of claim 1, wherein the electronic document is a digital image.	At least paragraph 0243.	At least paragraph 0237.	At least paragraph 0237.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
8. The computer-implemented method of claim 1, wherein the electronic document is a word processing, spreadsheet, email or presentation document.	At least paragraph 0756.	At least paragraph 0724.	At least paragraph 0703.
9. The computer-implemented method of claim 1, wherein the electronic document includes a list of items.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
10. The computer-implemented method of claim 1, wherein the second direction is opposite the first direction.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
11. 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.	At least paragraph 0762.	At least paragraph 0730.	At least paragraph 0709.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
12. The computer-implemented method of claim 1, wherein translating in the first direction is in accordance with a simulation of an equation of motion having friction.	At least paragraph 0762.	At least paragraph 0730.	At least paragraph 0709.
13. The computer-implemented method of claim 1, wherein the area beyond the edge of the document is black, gray, a solid color, or white.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
14. The computer-implemented method of claim 1, wherein the area beyond the edge of the document is visually distinct from the document.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
15. The computer-implemented method of claim 1, wherein translating the document in the second direction is a damped motion.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
16. 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.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.



Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
<p>17. 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.</p>			

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
<p>18. 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.</p>			
<p>19. A device, comprising:</p>	<p>At least paragraph 0084 and claim 338; and Figures 1A-1B.</p>	<p>At least paragraph 0083 and claim 338; and Figures 1A-1B.</p>	<p>At least paragraph 0083 and claim 322; and Figures 1A-1B.</p>
<p>a touch screen display;</p>	<p>At least paragraph 0084; and Figures 1A-1B.</p>	<p>At least paragraph 0083; and Figures 1A-1B.</p>	<p>At least paragraph 0083; and Figures 1A-1B.</p>

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
one or more processors;	At least paragraph 0084; and Figures 1A-1B.	At least paragraph 0083; and Figures 1A-1B.	At least paragraph 0083; and Figures 1A-1B.
memory; and	At least paragraph 0084; and Figures 1A-1B.	At least paragraph 0083; and Figures 1A-1B.	At least paragraph 0083; and Figures 1A-1B.
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:	At least paragraph 0104; and Figures 1A-1B.	At least paragraph 0103; and Figures 1A-1B.	At least paragraph 0103; and Figures 1A-1B.
instructions for detecting a movement of an object on or near the touch screen display;	At least paragraph 0761; and Figures 43B-43D.	At least paragraph 0729; and Figures 43B-43D.	At least paragraph 0708; and Figures 43B-43D.
instructions for translating an electronic document displayed on the touch screen display in a first direction, in response to detecting the movement;	At least paragraph 0762; and Figures 43B-43D.	At least paragraph 0730; and Figures 43B-43D.	At least paragraph 0709; and Figures 43B-43D.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
instructions for displaying an area beyond an edge of the electronic document in response to the edge of the electronic document being reached while translating the electronic document in the first direction	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
while the object is still detected on or near the touch screen display; and	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
instructions for translating the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
20. A computer readable storage medium having stored therein instructions, which when executed by a device with a touch screen display, cause the device to:	At least claim 339; and Figures 1A-1B.	At least claim 339; and Figures 1A-1B.	At least claim 323; and Figures 1A-1B.

Claim Limitation	Support for claim limitation in patent application no. <u>60/937,993</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,469</u> , to which the above captioned application claims benefit	Support for claim limitation in provisional application no. <u>60/879,253</u> , to which the above captioned application claims benefit
detect a movement of an object on or near the touch screen display;	At least paragraph 0761; and Figures 43B-43D.	At least paragraph 0729; and Figures 43B-43D.	At least paragraph 0708; and Figures 43B-43D.
translate an electronic document displayed on the touch screen display in a first direction, in response to detecting the movement;	At least paragraph 0762; and Figures 43B-43D.	At least paragraph 0730; and Figures 43B-43D.	At least paragraph 0709; and Figures 43B-43D.
display an area beyond an edge of the electronic document if the edge of the electronic document is reached while translating the electronic document in the first direction	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
while the object is still detected on or near the touch screen display; and	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.
translate the document in a second direction until the area beyond the edge of the document is no longer displayed, after the object is no longer detected on or near the touch screen display.	At least paragraph 0537; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.	At least paragraph 0518; and Figures 43B-43D.

Thus, as shown in the table above, claims 1-20 satisfy the requirements of 35 U.S.C. §112, first paragraph.

The claims do not invoke 35 USC 112, sixth paragraph. There are no means- (or step-) plus-function claim elements.

**Identification of References Disqualified as Prior Art under 35 USC 103(c):**

The following references are disqualified as prior art under 35 USC 103(c):

- |                   |                |
|-------------------|----------------|
| 1. Lemay et al    | US 20070157094 |
| 2. Ording et al   | US 20070152984 |
| 3. Jobs et al     | US 20070152979 |
| 4. Kocienda et al | US 20070152978 |
| 5. Jobs et al     | US 20070155434 |
| 6. Chaudhri et al | US 20070150842 |

Applicants respectfully submit that the claims of the above-captioned patent application are in condition for allowance, and respectfully request that the Examiner allow the claims of the above-captioned application to issue in a U.S. patent.

Respectfully submitted,

Date: April 30, 2008

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46,552

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Apr 26, 2008

<http://java.sun.com/products/personaljava/touchable/>

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### Introduction

A look and feel design represents the visual appearance and behavior of a graphical user interface (GUI) component set. The "look" is based on the visual design characteristics shared with the GUI component set. The "feel" is based on the input mechanisms that the GUI component set provides for the user to interact. Look and feel designs vary according to the needs of the underlying product and the target user. Forcing consistency across radically different products results in unusable products.

This document focuses on the Touchable look and feel, a specific look and feel designed for touch screen based consumer products, including retail kiosks, personal digital assistants (PDAs), and screen phones. The main objectives of the Touchable look and feel are twofold: (1) to provide developers with a good starting point for a touch screen based consumer product look and feel, and (2) to provide a look and feel that is usable for consumers.

This document discusses the advantages of using the Touchable look and feel on touch screen based consumer products. The first section focuses on the experience and expectations of the target user. The next section details the nature of the target products and how these products differ significantly from traditional desktop computers. The final section describes some of the design approaches and extensive usability evaluations conducted in producing the Touchable look and feel, along with some of the lessons learned from the process.

For a more detailed discussion on designing human interfaces for consumer products, refer to the forthcoming Consumer Products User Experience Style Guide.

### The Consumer

When developing a product, it is important to keep in mind both the experience and expectations of the target user. The target user for the Touchable look and feel is the consumer. Consumers include people without any experience with personal computers. These users probably have experience with consumer electronics devices and they expect software-enabled consumer electronics devices to operate and behave consistently with their solid-state predecessors. Even people with computer experience have very different expectations when dealing with a consumer product than they do when dealing with a computer at work.

### Experience



Statistics for the United States show that around 50-60% of households do not have a personal computer. The number of households with a personal computer is rising, but it will be a number of years before most households have a personal computer. Interestingly, the number of households with personal computers has remained fairly stable for the last few years. The belief is that it is more likely that consumer products, such as screen phones or internet-enhanced televisions, will appear in the remaining households before a personal computer does.

Of those consumers who do have a personal computer at home, the applications used most frequently are word processors and personal finance applications (e.g., Quicken). In addition, compared to business or enterprise computer users, consumers typically perform less complex tasks on the computer, use the computer less hours per day, and know fewer applications well.

While it is true that children are being increasingly exposed to personal computers in school, this does not always translate to the same kind of computer applications or tasks as used by business or enterprise users. Many schools employ software designed specifically for children, which is less complex than typical productivity applications.

The implications of these characteristics are many. It can be assumed that most consumers have used a telephone, the younger ones may have used a game machine like a Nintendo or Playstation, and most have watched television, used a remote control, and probably used a VCR. Some consumers may even have programmed a VCR, though this is more common in the younger part of the population. These users have also used control panels on microwaves, answering machines, and stereos.

## Expectations

Not surprisingly, consumers who are unfamiliar with desktop computers may feel uncomfortable dealing with anything they consider to be too "high tech" and tend to be unwilling to learn complex interaction models. Those consumers who do have computer experience often have very different expectations when dealing with a consumer product than they do when dealing with a computer at work. Business users who regularly use a cell phone expect to be able to pick up the phone and dial a call in seconds. When has a personal computer ever booted up in seconds? Additionally, people who have participated in some of our consumer studies have voiced the sentiment that even if they are fairly computer literate, they do not want to take the "lingo" from the office to the home.

Furthermore, within the consumer domain itself, expectations differ depending upon the user's generation, sex, class, and education. All of these types of factors should be considered during the development of the product.

While electronic appliances such as televisions, VCRs, telephones, and microwave ovens are common today, widespread acceptance is hard fought. Eight out of ten consumer products fail in the marketplace, often because consumers find them too difficult to use. Modern consumers have little patience for learning how to operate new products. They expect the interfaces to be self-evident. Most consumers simply will not buy a product if they believe it might be hard to use.

In short, consumers expect products to be easy to figure out and fun to use. Such expectations affect response time, the complexity of applications, the plastic of the product, the choice of colors, and many other aspects of a consumer product. The result? A marketplace where success is equated to simple, slick design. Design that inspires consumers to pick up the product and play with it. Products that come in all shapes and sizes and colors, for children, teenagers, and adults alike.

## The Touchable Look and Feel: What Makes it Different?

This section details some of the main considerations that affected the development of the Touchable look and feel, and how these considerations differ for a look and feel targeted for touch screen based consumer products compared to typical desktop look and feel designs. It is important to keep in mind that there are similar differences, though maybe not as radical, within the consumer product area itself.

## Modification

Consumer products are tightly integrated and reflect a careful balance between several competing design criteria. Specifically, the level of integration between the software and the hardware (i.e., the actual plastic) must be very high. The color of the physical components (e.g., plastics, buttons, bezels, etc.) must be coordinated with the colors on the display. The shape of the physical buttons on the plastic should be integrated with the shape of the buttons on the screen.

The Touchable look and feel is a reference design only. It represents a framework from which a variety of derivative look and feel designs are possible. A main consideration in the development of the Touchable look and feel was to ensure that it can easily be modified to support the product identity or product design needs of device manufacturers. For a more detailed discussion of how to modify the Touchable look and feel, refer to the [Truffis Customization Guide](#).

### Scalability

The Touchable look and feel is targeted for products containing a variety of different display sizes. For example, the display size on a retail kiosk is likely to be larger than the display size on a screen phone, which in turn is likely to be larger than the display size on a PDA. As a result, the look and feel is designed to scale gracefully. This is in direct contrast with desktop look and feel designs, where there is less variance in display size, and therefore scalability is not as important.

The Touchable look and feel started with a working target of a640"x480", 100 dots per inch (dpi), color touch LCD. Finger input was used as the starting point because, compared to stylus input, finger input requires more adjustments to the look and feel due mostly to target size issues. Figure 1 shows an example of some of the Touchable look and feel widgets in the context of an email application. Figures 2 and 3 show the same widgets scaled down to 75% and 50%, respectively.

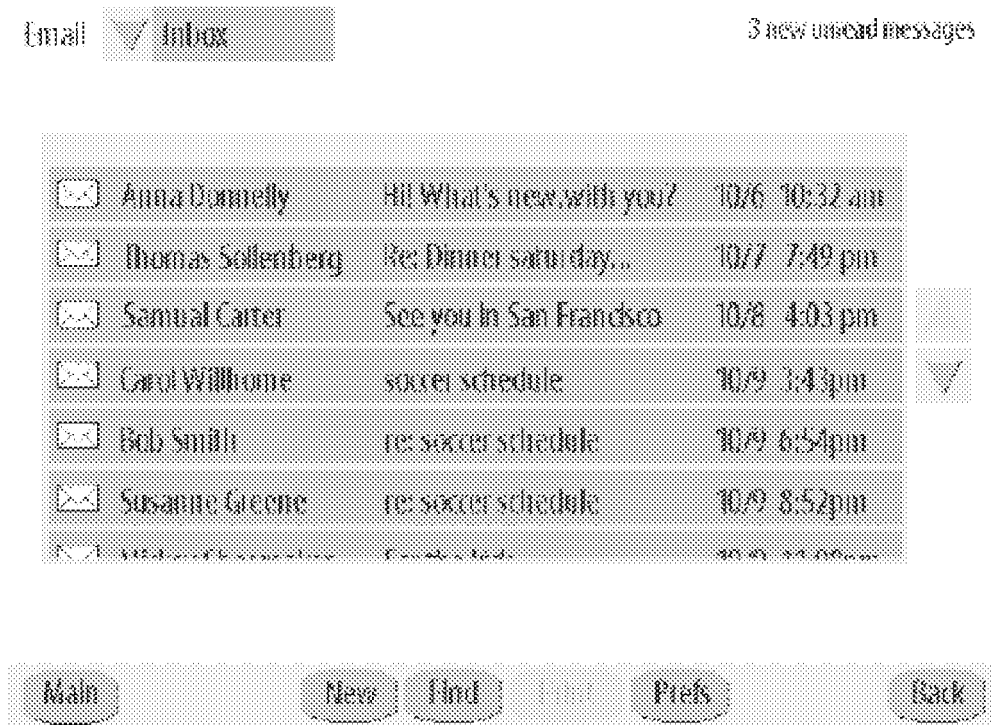


Figure 1: A 640" x 480", 100 dpi, full scale sample of the list, choice menu, and button widgets from the Touchable look and feel in the context of an email application.



Figure 2: A sample of some of the widgets from the Touchable look and feel in the context of an email application, scaled down to 75%.



Figure 3: A sample of some of the widgets from the Touchable look and feel in the context of an email application, scaled down to 50% and rotated to vertical. Notice the modified button shape and placement of the scroll buttons.

**Color Schemes**

The color schemes are different in the Touchable look and feel than they are in a typical desktop look and feel. In general, consumers dislike gray scale. In user studies, color schemes that resembled desktop computer look and feel designs received the lowest ratings from the participants (see Figure 4). Instead, consumers prefer bright, cheerful colors. Figure 5 shows the color

scheme that received the highest ratings from the participants in the user study.

Note: Only a sense of the color schemes can be gathered from the figures included in this section. The colors appear extremely different on an LCD display.

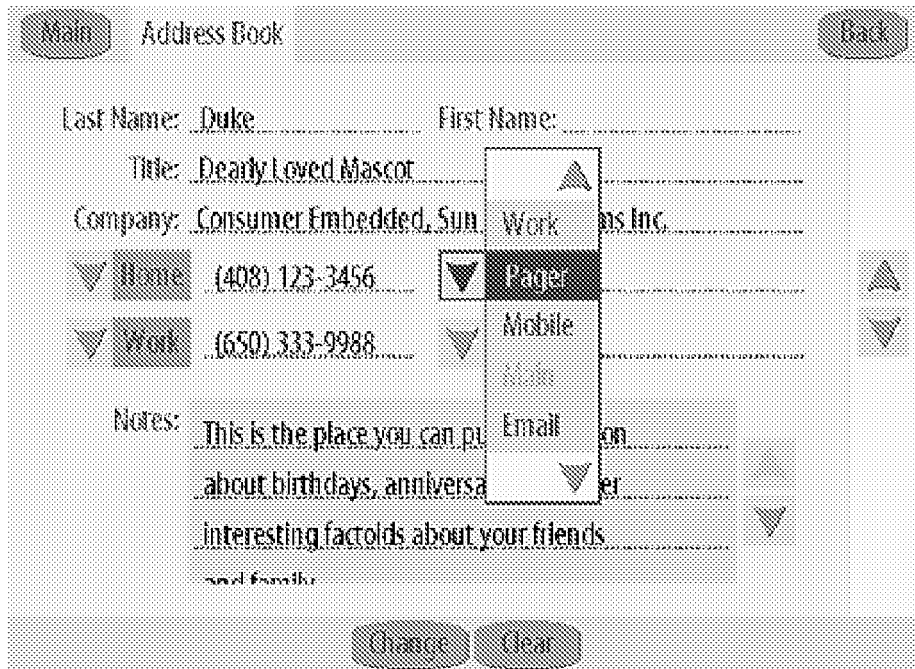


Figure 4: This predominantly gray scale color scheme received low ratings from consumers.

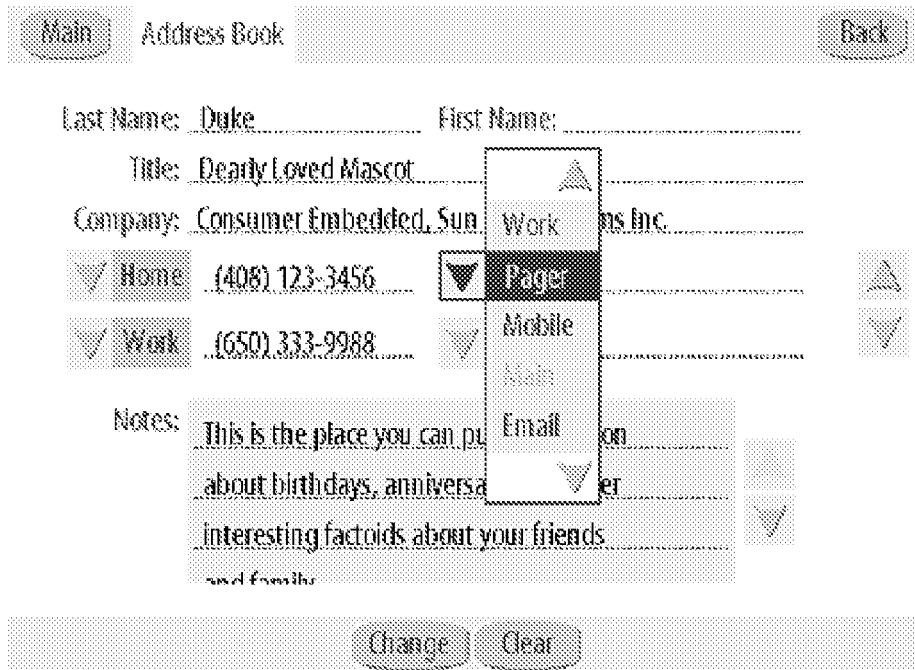


Figure 5: This yellow/blue color scheme received the highest ratings from consumers.

Additionally, participants in the user study desired the ability to set the color scheme on the product. Color schemes should be

targeted to age groups: what works for a child will not work for an adult. Color preference also differs according to sex: what works for a 7-year old boy may not work for a 7-year old girl; likewise a female adult prefers different color schemes than a male adult. The Touchable look and feel provides alternate color palettes from which to choose.

## Alternate Input Mechanisms

As discussed, the Touchable look and feel is targeted for use on touch screen based consumer products. On such products, typically a finger or a stylus is used for input, resulting in the following implications for the look and feel:

- \* No pointer or cursor is shown on the screen

The pointer/cursor model of graphical user interface has become common in computer desktops. It was originally developed to provide a mechanism for allowing a user to control graphical elements in a computer display (e.g., pressing a button on the interface by moving the mouse over the button and pressing the physical button on the mouse).

This model is not necessary in a touch screen based look and feel for two reasons: (1) the touch screen hardware allows a user to directly manipulate an object on the display, and (2) a mouse adds bulk and complexity. The arrow pointer used on desktop computer systems is out of place on a touch screen. Users try to make the arrow move to the right place instead of just touching an element. Paying attention to the arrow pointer makes the entire system seem much harder to use than it really is. The pointer is unnecessary because the direct interaction model simply does not require it. The current position is wherever the user places his/her finger.

(Note: The only exception to this in the Touchable look and feel is the text insertion point, which is not a cursor.)

- \* No focus highlight

Many desktop computers use a focus highlight graphic to indicate which human interface element has keyboard focus. The graphic is usually displayed as a rectangle drawn around an element. This rectangle can be very distracting to a consumer user and is unneeded on most touch input consumer devices.

(Note: The Touchable look and feel does include focus highlight, however the default is to have it turned off.)

- \* A single tap interaction model is common

It is actually quite hard to tap twice in the same spot with a finger. Fingers inherently jitter. Given the error-prone nature of fingers and touch input with regard to tapping, double-tapping should be avoided.

- \* Components execute on finger-up rather than on finger-down

In general, most human interface components, like button or choice menu, will show a state change upon finger-down. The state change may be a simple highlight. Upon finger-up, the operation associated with the component is executed. For example, upon finger-down a choice menu button will highlight and upon finger-up, the choice menu will be displayed.

Additionally, an input is only registered if the user lets his/her finger up over the original target (i.e., the same target as the one the finger went down on). If the user touches (i.e., finger-down) on a target and then drags his/her finger out of a target then the target returns to a neutral state. That is, finger-up outside of the original target serves as a cancel, even if the finger is dragged over another legal target.

- \* Components must be much large enough for finger input

A finger is neither small nor accurate. If the user is expected to use a finger as the input device, then all of the user interface elements must be large enough to accommodate this. The size of desktop computer elements is far too small. For example, on displays with a resolution of ~100 dpi, the minimum height of a button should be no smaller than 36 pixels in order to accommodate the full range of adult sized fingers.

## Low Resolution & Small Displays

Compared to desktop computers, the lower resolution and smaller displays of consumer products also have several implications for the look and feel, including:

- \* Use of color

The color LCD has a big effect on the Touchable look and feel design because of the differences in how color is displayed. Not only is color displayed differently on a color LCD compared to a CRT, but color is affected by the specific LCD as well. For

example, on some LCDs the saturation level of red is much lower than expected, resulting in the inability to show certain colors, such as violet. Furthermore, subtle color differences may not be apparent to the eye on LCDs, thereby limiting the available shades of gray and requiring the use of high contrast colors. As a result, there is a limit on the variety of color palettes provided with the Touchable look and feel. Viewing the palettes on a typical personal computer display is not a good idea. (Note: The actual LCD on which the look and feel is displayed will directly affect how the colors are displayed. The color palettes included with the Touchable look and feel were tuned for a specific type !! of LCD. Developers are encouraged to tune the colors for their own LCDs.) (For a more detailed discussion on this topic, refer to the Design Language section in the forthcoming Consumer Products User Experience Style Guide.)

#### \* Rendering time

Given the small size of the display and the performance typical of these products, the human interface elements on the screen have to take rendering time into consideration when they are designed. The Touchable look and feel is deliberately a simple look with few outlines or other excess graphic bits. This is advantageous because the look is both fast to render and simple, and therefore less intimidating to consumers.

#### \* Typeface

The style of typeface recommended to work with the Touchable look and feel is a sans-serif condensed typeface. The recommended size for a 640" x 480", 100 dpi display is 24 point for finger input of adults (see Figure 1). A sans-serif condensed typeface is recommended because of space considerations on small displays.

## Component Design in Consumer Products

The first release of the Touchable look and feel includes the minimum required set of AWT components from the PersonalJava technology API specification. Components such as overlapping windows, modeless dialogs, hierarchical menus, and scroll bars are considered optional in the PersonalJava API specification and are not supported at this time, though future releases may support some of these components. Many of the unsupported components and their related concepts have been shown to be hard to learn, difficult to understand, and generally too complex for consumer products.

A few examples of desktop concepts that typically cause problems for consumers are included below. For a more detailed discussion of the Desktop Concepts: Do's and Don'ts refer to the forthcoming Consumer Products User Experience Style Guide.

### Multiple Overlapping Windows

Multiple overlapping windows are very confusing to consumers with no desktop computer experience and require a much steeper learning curve than is appropriate for most consumer products. They assume the presence of a windowing system and a method for the user to manipulate or manage windows, neither of which is common or necessary in consumer products. In addition, the display size of consumer products is typically much smaller than that of a personal computer display, leading to insufficient space for multiple overlapping windows.

The basic human interface problem with multiple overlapping windows is cognitive load on the user. Multiple overlapping windows require users to learn and then use various interaction methods to resize, move, scroll, and so on. The collection of extra knowledge that the user must learn and use puts a cognitive burden on the user that is inappropriate given the simple specialized nature of most consumer products.

In addition to having to learn how to manage windows, the inherent reason a computer system has multiple windows is so that multiple applications can be running simultaneously. Ignoring the fact that many consumer products do not have the memory to support multiple applications, forcing a user to interact with multiple applications at a time places another cognitive load on the user. While the operating system and other system infrastructure may need to support multi-tasking, users should not be exposed to it in the personal computer sense.

### Double Clicking

Double clicking an icon on a personal computer is a shortcut for selecting the icon and choosing the Open command from the File menu to open the icon. It should never be used as a primary method for an operation even on a desktop computer. Most consumer products do not have a mouse or any device that provides for double clicking. Even when consumer products do have a pointing device, it may inadvertently move between clicks causing the system to interpret the double click as two single clicks. Moreover, users with common medical conditions like arthritis or Repetitive Stress Syndrome (RSI) may be even less tolerant of double clicking in a consumer environment than in a desktop environment.

Double tapping on a touch screen presents further problems because people do not consistently hit the same spot on the screen twice in rapid succession. What the user meant as a double tap may get parsed by the input handler as two discrete single taps,

and then the user sees the software do the wrong thing twice instead of the right thing once.

## Scroll bars

Scroll bars were originally designed for viewing documents on a personal computer; the bar gave an indication of how much of the document was visible. The document model is one of the main concepts of the personal computer human interface as creating and editing documents are two of the main tasks on personal computers. Consumer products rarely allow users to do more than create and send an email or fill in an address book entry. Users do not typically view either of these items as a *document* in the personal computer sense.

The bar portion of the scroll bar is very confusing to people with no computer experience. Because they usually have little experience with the concept of documents on a personal computer, they do not readily understand what the bar represents. In addition, the thumb, or elevator, in a scroll bar can be very difficult to manipulate with the limited input devices available on consumer products.

## The Process Behind the Touchable Look and Feel Design

This section describes some of the design approaches and lessons learned from the extensive usability evaluations conducted in developing the Touchable look and feel.

### The Iterative Design and Evaluation Process

It can be argued that an iterative design and evaluation process is even more crucial when designing products for novice computer users than it is when designing for more experienced computer users. In no way should such a statement insinuate that iterative design and evaluation should not play a central role in the desktop computer market. However, when designing for computer users, assumptions can be made regarding their behavior based on their knowledge of the conventions used in the desktop world. On the other hand, consumers include novice computer users who may have had little, if any, exposure to computer conventions, and consequently few assumptions can be made with regard to how they will behave. Once a good intuitive model for what a user expects and how a user behaves is obtained, the designer can develop designs more directly, with less iteration.

The needs and expectations of consumers were taken into account throughout the development process of the Touchable look and feel. At the same time, the goal was to understand the needs and requirements of developers. A fair amount of time was spent working closely with software engineers, learning about their business, and evaluating existing products on the market.

The development process for the Touchable look and feel involved several design iterations. The process began with the creation of the basic elements or building blocks from which other more complex components could be built. The next step was to iterate the designs of the components until patterns started to emerge. Two sets of design rules emerged during the design process: (1) rules that had to do with how elements were laid out, internally within a component as well as with regard to other components, and (2) rules dealing with how color was used, how many colors, and what color mapped onto in the elements.

Other tools that were used during the design process included a demo that mimicked possible screen phone applications and made use of all of the Touchable look and feel components, as well as a set of tests created to display the widgets and test out edge cases. Additionally, the designer working on the Touchable look and feel created sample application screens based on the consumer application work of the other designers in the company, and held regular design reviews with peers.

The first release of the Touchable look and feel went through five rounds of user testing with consumers who had little or no personal computer experience. Although the intended user population for the Touchable look and feel varies broadly with regard to their level of computer experience, the focus during the user evaluations was predominantly on those users with less experience in order to ensure that the design accommodated their needs. The data from the user testing was tightly integrated into the look and feel design. Touch monitors and a color touch LCD were used throughout the design and evaluation process.

### Lessons Learned from the Evaluation Process

During the user evaluations, valuable feedback was collected regarding the usability of the components. Some of the lessons learned through the many hours of user testing are shared below:

#### Finger Input

Users are very inconsistent with regard to which finger they use. Many times they will change the finger or even the hand being used to tap on the screen. Users also do not tap with a consistent area of the finger. They tap with the tip or the side of their finger, roll their finger, place their finger sideways or straight up, and just about every other possible contortion. Long fingernails are another source of trouble, as users can inadvertently tap on two items if the nail is too long: one item with the pad of their finger

and the second as the finger is raised and the nail contacts the screen. In addition, a finger inherently jitters and can accidentally produce double clicks. When users are frustrated with something on the screen they will sometimes tap repeatedly and very quickly on an element.

Furthermore, it was commonly observed that users touch lower on an element than they would with a mouse pointer. This is most likely due to the fact that the finger obscures the thing the user is touching. Consequently, users touch lower to make sure they are touching the correct element. This effect is more pronounced with finger input as compared to stylus input. These observations directly impacted the design of the widgets. Specifically, the following guideline was adhered to for each of the widgets: *Once the appropriate width constraints are met, the height of the element becomes critical to ensure error-free operation by users.*

### Active Labels

Another observation from the user evaluations was that when using checkboxes, radio buttons or text fields, users touched on either the actual object (i.e., checkbox, radio button, or text field) or on the object's label and expected both to operate the component. When using finger input, being able to select the object and its label makes the target area that much larger, which is a distinct advantage.

Labels are usually part of the checkbox and radio button components in toolkits. Text fields do not have labels as part of the component. The additional work to tie the label and text field together makes the operation of the product less error prone and more user friendly.

### Scroll Feedback

For reasons already discussed, the Touchable look and feel does not contain a scroll bar widget. However, the issue remains that users need feedback to tell them if there is more information to scroll to or not, and if they are at the top or the bottom of a list or text area.

In developing the Touchable look and feel, visual cues to replace the feedback that a scroll bar would give a user were iteratively explored, implemented, and tested. The resulting design incorporates redundant feedback in the form of scroll arrows, clipping of items, and blank spaces at the top and bottom of a list to provide feedback as to whether the user is at the top, bottom, or middle of a list or text area.

When the scrolling list is at the top (see Figure 6), there is a half-space left blank to tell users they are at the top. If there is more information to scroll to, then the last item is shown clipped in half. In addition, the scroll buttons are enabled or disabled appropriately for each state. When the list is somewhere in the middle (see Figure 7), the text is shown clipped on the top and the bottom of the visible list. When the list is at the bottom (see Figure 8), the half space is at the bottom and the upper item is clipped.



Figure 6: Scrolling list at the top. Half-space left blank at the top of the list. Bottom item is clipped. Scroll-up button is disabled.



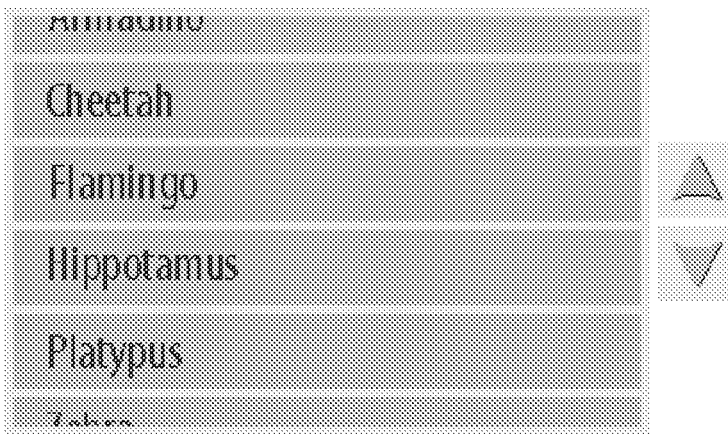


Figure 7: Scrolling list in the middle. Items at the top and bottom are clipped. Both scroll buttons are enabled.

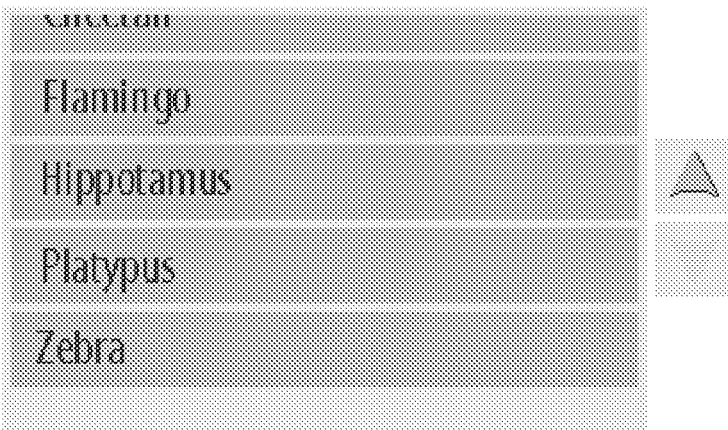


Figure 8: Scrolling list at the bottom. Half-space left blank at the bottom of the list. Top item is clipped. Scroll-down button is disabled.

The scrolling feedback within the list and text area widgets proved extremely successful during the user evaluations. So successful, in fact, that it was applied to scrolling in the choice menu widget as well.

A general lesson that can be learned from the design of the scrolling feedback is to build redundancy into the interface. Each of the visual cues by themselves may or may not have been enough of a cue to signal the scroll state of the list or text area. However, taken together, the cues succeeded in signaling the state to practically all of the participants in the user evaluations.

### Choice Menu

One of the components that was extremely difficult to design, and that went through a series of redesign phases, was the choice menu. This is a component that is very dynamic. The size of the component is dependent upon what items are in it. Where it pops up and whether it is scrollable is dependent upon the screen real estate around it. This component can be confusing to a user who has never seen one. The goal was to make the component as easy to understand as possible given the constraints.

A choice menu has two parts. One part is the menu button which is the element from which the menu originates. The other part is the menu itself. There are three states the menu button can have: enabled, disabled, and selected. The menu supports scrolling if there is not enough room to display all of the items. Figure 9 shows one of the original designs of the choice menu.

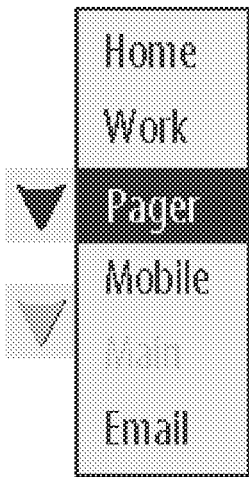


Figure 9: One of the original designs of the choice menu.

One thing the original design of the widget had not taken completely into account was the situation in which there was a group of menu buttons and one of them had a menu popped up. During the user evaluations, the demo application displayed a set of four choice popup menus which were used to set the label for an associated text field. It became clear that not all of the users could tell what "popped up" menu went with what menu button. Given our users had very little if any desktop user interface experience, the confusion was not surprising.

The design of the choice menu was revised such that the selected menu button and its menu were visually tied together with a colored outline (see Figure 10). In user testing, the new design did seem to alleviate most of the confusion.

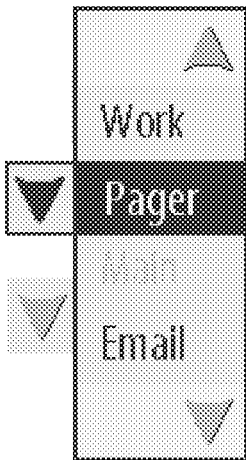


Figure 10: Revised design of the choice menu.

A remaining problem with the widget was that users did not seem to easily pick up on the scrolling state of the menu. In the next user test, the clipping feedback from the scrolling list was added to the menu as an extra visual cue for users that the menu was scrollable (see Figure 11). This extra bit of visual feedback fixed the scrolling problem successfully.

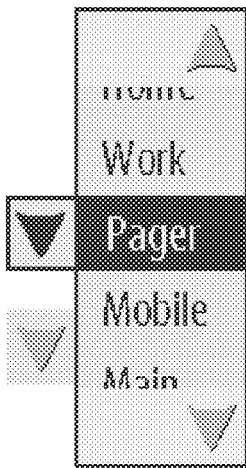


Figure 11: Final design of the choice menu.

The choice menu is another widget that demonstrates the strength of building redundancy into the interface. The choice menu can be closed in three different ways. The user can touch an item in the menu to select that item and close the menu. The user can touch the arrow on the menu button or simply touch outside the menu to dismiss the menu. The last two methods do not change the selection. The choice to have the widget behave this way was based on observation of the varying behaviors of the participants in the user studies. After all, no two users are exactly alike. When possible, the Touchable look and feel attempts to accommodate the varying behaviors of the users.

## Text

Text fields and text areas differ in their visual appearance from the typical box one sees on a desktop system. In designing the text field and text area widgets in the Touchable look and feel, it became painfully obvious that consumers did not automatically know to touch a text field or text area to enter text into it. After several iterations of the design, the final design of these widgets incorporates a lightly shaded background with a small vertical affordance on the left edge of a text field and area. This affordance leverages the manner in which color is used by employing the button color. Figure 12 provides an example of the text field and text area widgets in the context of an address book application.

Group:	Family	<input type="checkbox"/> Private
Last Name:	Shoemaker-Thompson	First Name: Jonathan
Title:	Photographer	
Company:	National Geographic	
Home:	(810) 352-5540	Work: (310) 778-978
Pager:	(888) 654-0180	Mobile: (810) 655-1129
Notes:	Wedding anniversary: June 4 Elizabeth's birthday: July 26	
Done		

Figure 12: Example of the text field and text area widgets in the context of an address book application.

Another observation made during the user studies was that consumers expect to be able to simply tap on an empty line (i.e., below the last line of text) in a text area and have the insertion point appear on that line so they can enter text. In addition, users expect the down arrow on the keyboard, physical and on-screen versions, to move the insertion point down to a empty line.

Though not supported in the desktop market, this behavior is the default behavior in the final design of the text areas in the Touchable look and feel.

The behavior of the insertion point in the text field and text area widgets was also the result of the data from the user studies. In the final design of the Touchable look and feel, when the user taps on a field, the word they tap on is selected. Upon second tap, the insertion point is set at the tap point. This model of selecting a word upon tap, lessens usability errors when the finger is used for input. When a pen or stylus is used for input, the model recommended in the Touchable look and feel is to place the insertion point at the tap point. The selection mode is a property that can be easily altered.

## Conclusions

Designing for consumer products requires a different perspective than designing for desktop computers. Memory and input device limitations, as well as user expectations, have direct implications on the look and feel for consumer products.

The Touchable look and feel is a reference look and feel design. Device manufacturers are expected to modify the look and feel to make it suitable for their product. The Touchable look and feel provides the building blocks for creating a good user experience for touchscreen based consumer products. Although it contributes to good design, the Touchable look and feel does not guarantee good design in and of itself. The device manufacturer should consider the overall behavior of their product and how customers will use it in order to produce well-designed applications.

The Touchable look and feel is intended to be the first in a series of look and feels created for the consumer product market. The goal of producing such look and feels is for Sun Microsystems Inc. to continue creating products and technologies that make our customers successful by helping them get to market sooner. Indeed, one of the key selling points of our look and feel technology is the ability to easily alter and customize it, thereby being able to tailor it to specific needs. Our products and technologies, including the Touchable look and feel, reflect our commitment to understand and address the differing needs of the consumer product market.

## Related Reading

- \* [Consumer Products User Experience Style Guide \(forthcoming\)](#)
- \* [Truffle Graphical Toolkit Customization Guide](#)

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application of:	Bas Ording	Confirmation No.:	8460
Serial No.:	11/956,969	Art Unit:	2174
Filed:	December 14, 2007	Examiner:	Wiley, David Armand
For:	<i>List Scrolling and Document Translation, Scaling, and Rotation on a Touch-Screen Display</i>	Attorney Docket No.:	P4304US1/63266-5054-US

**INFORMATION DISCLOSURE STATEMENT  
IN SUPPORT OF PETITION TO MAKE SPECIAL**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

1. Enclosures accompanying this Information Disclosure Statement are:
  - 1a.  A list of all patents, publications, applications, or other information submitted for consideration by the office.
  - 1b. A legible copy of :
    - Each U.S. patent application publication and U.S. and foreign patent;
    - Each publication or that portion which caused it to be listed on the PTO-1449;
    - For each cited pending U.S. application, the application specification including the claims, and any drawing of the application, or portion of the application which caused it to be listed on the PTO-1449 including any claims directed to that portion;
    - all other information or portion which caused it to be listed on the PTO-1449.
  - 1c.  An English language copy of search report(s) from a counterpart foreign application or PCT International Search Report.
  - 1d.  Explanations of relevancy (ATTACHMENT 1(d), hereto) or English language

abstracts of the non-English language publications.

2.  This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b):
- Within three months of the filing date of a national application other than a continued prosecution application under §1.53(d);
  - Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;
  - Before the mailing of the first Office action on the merits;
  - Before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

3.  This Information Disclosure Statement is filed under 37 C.F.R. §1.97(c) after the period specified in 37 C.F.R. §1.97(b), but before the mailing date of any of a final action under 37 C.F.R. §1.113, a notice of allowance under 37 C.F.R. §1.311 or an action that otherwise closes prosecution in the application.

*(Check either Item 3a or 3b)*

- 3a.  The Certification Statement in Item 5 below is applicable. Accordingly, no fee is required.
- 3b.  The \$180.00 fee set forth in 37 C.F.R. §1.17(p) in accordance with 37 C.F.R. §1.97(c) is:
- enclosed
  - to be charged to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (order no.       ).

*(Item 3b to be checked if any reference known for more than 3 months)*

4.  This Information Disclosure Statement is filed under 37 C.F.R. §1.97(d) after the period specified in 37 C.F.R. §1.97(c), but on or before the date of payment of the issue fee.

*(Check either Item 4a or 4b)*

- 4a.  The Certification Statement in Item 5 below is applicable.
- 4b.  The \$180.00 fee set forth in 37 C.F.R. §1.17(p) is:
- enclosed.
  - to be charged to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (order no.       ).

5.  Certification Statement (applicable if Item 3a or Item 4a is checked)

*(Check either Item 5a, 5b or 5c)*

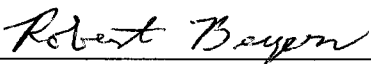
- 5a.  In accordance with 37 C.F.R. §1.97(e)(1), it is certified that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

- 5b.  In accordance with 37 C.F.R. §1.97(e)(2), it is certified that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.
- 5c.  Pursuant to 37 C.F.R. §1.704(d), each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not **received** by any individual designated in 37 C.F.R. §1.56(c) more than thirty days prior to the filing of this information disclosure statement.
6.  Copies of each cited U.S. patent and each U.S. patent application publication are not enclosed pursuant to the USPTO OG Notice dated 05 August 2003 waiving the requirement under 37 C.F.R. 1.98(a)(2)(i) for U.S. patent applications filed after June 30, 2003.
7.  This application is a continuation application under 37 C.F.R. §1.53(b) or (d).  
*(Check appropriate Items 7a, 7b and/or 7c)*
- 7a.  A Petition to Withdraw from issue under 37 C.F.R. §1.313(b)(5) is concurrently filed herewith.
- 7b.  Copies of publications listed on Form PTO-1449 from prior application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_, of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).
- 7c.  Copies of the publications listed on Form PTO-1449 were not previously cited in prior application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_, and are provided herewith.
8.  This is a Supplemental Information Disclosure Statement. (Check Item 8a)
- 8a.  This Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(f) supplements the Information Disclosure Statement filed on \_\_\_\_\_. A bona fide attempt was made to comply with 37 C.F.R. §1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental Information Disclosure Statement can be considered as if properly filed on \_\_\_\_\_.
9.  In accordance with 37 C.F.R. §1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:  
*( Check Item 9a, 9b, or 9c)*
- 9a.  satisfied because all non-English language publications were cited on the enclosed English language copy of the PCT International Search Report or the search report from a counterpart foreign application indicating the degree of relevance found by the foreign office.

- 9b.  set forth in the application.
- 9c.  enclosed as an attachment hereto.
10.  The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (order no. 63266-5054-US).
11.  No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date: April 30, 2008

  
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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
11/956,969 12/14/2007 Bas Ording P4304US1/63266-5054US 8460

61725 7590 06/09/2008
MORGAN LEWIS & BOCKIUS LLP/ AI
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3000 EL CAMINO REAL
PALO ALTO, CA 94306

EXAMINER

PESIN, BORIS M

ART UNIT PAPER NUMBER

2174

MAIL DATE DELIVERY MODE

06/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Examiner-Initiated Interview Summary</b>	<b>Application No.</b> 11/956,969	<b>Applicant(s)</b> ORDING, BAS	
	<b>Examiner</b> BORIS PESIN	<b>Art Unit</b> 2174	

**All Participants:**

(1) BORIS PESIN.

(2) Robert Beyers.

**Status of Application:** \_\_\_\_\_

(3) Cyndi Wheeler.

(4) \_\_\_\_\_.

**Date of Interview:** 2 June 2008

**Time:** 1:30 PM

**Type of Interview:**

- Telephonic
- Video Conference
- Personal (Copy given to:  Applicant  Applicant's representative)

Exhibit Shown or Demonstrated:  Yes  No  
If Yes, provide a brief description: Apple Iphone.

**Part I.**

Rejection(s) discussed:  
*Proposed Examiner's rejection*

Claims discussed:  
*1*

Prior art documents discussed:  
*Zimmerman et al. (US 6690387), Microsoft word Screenshots, and Colling et al (US 2008/0104544)*

**Part II.**

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:  
*See Continuation Sheet*

**Part III.**

- It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.
- It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

/Boris Pesin/  
Primary Examiner, Art Unit 2174

(Applicant/Applicant's Representative Signature – if appropriate)

Continuation of Substance of Interview including description of the general nature of what was discussed: The Examiner and the Applicant's representatives discussed the prior art applied to the independent claims. The Examiner agreed that Collins did not read on the claims as written. The Applicant agreed to amend the last limitation of the independent claims to read "in response to detecting that the object is no longer on or near the touch screen display, translating the document in a second direction until the area beyond the edge of the document is no longer displayed." The Examiner informed the Applicant that a further search would be conducted and that if more prior art is found, that the Examiner would contact the Attorney.



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Table with 4 columns: APPLICATION NUMBER, FILING OR 371(C) DATE, FIRST NAMED APPLICANT, ATTY. DOCKET NO./TITLE. Row 1: 11/956,969, 12/14/2007, Bas Ording, P4304US1/63266-5054US

CONFIRMATION NO. 8460

PUBLICATION NOTICE



61725
MORGAN LEWIS & BOCKIUS LLP/ AI
2 PALO ALTO SQUARE
3000 EL CAMINO REAL
PALO ALTO, CA 94306

Date Mailed: 07/10/2008

Title:List Scrolling and Document Translation, Scaling, and Rotation on a Touch-Screen Display

Publication No.US-2008-0168404-A1

Publication Date:07/10/2008

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

## WO0201338

Publication Title:

PROVIDING A SCROLLING FUNCTION FOR A MULTIPLE FRAME WEB PAGE

Abstract:

Abstract of WO0201338

A scroll device may be provided on a processor-based system to simultaneously scroll both of at least two frames in two separate windows. Thus, each frame is scrolled until a first frame reaches its beginning or end. At that point, the f1c scrolling of the first frame stops automatically while the other frame continues to scroll.

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International Bureau



(43) International Publication Date  
3 January 2002 (03.01.2002)

PCT

(10) International Publication Number  
**WO 02/01338 A1**

(51) International Patent Classification<sup>7</sup>: **G06F 3/033**

Street, Portland, OR 97225 (US). **LUNDELL, James** [US/US]; 11945 NW South Drive, Portland, OR 97229 (US). **HARRISON, Edward** [US/US]; 3560 NW Paisley Court, Beaverton, OR 97006 (US).

(21) International Application Number: PCT/US01/18749

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(74) Agents: **TROP, Timothy, N.**; Trop, Pruner & Hu, P.C., Suite 100, 8554 Katy Freeway, Houston, TX 77024 et al. (US).

(25) Filing Language: English

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(30) Priority Data:  
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(71) Applicant (*for all designated States except US*): **INTEL CORPORATION** [US/US]; 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).

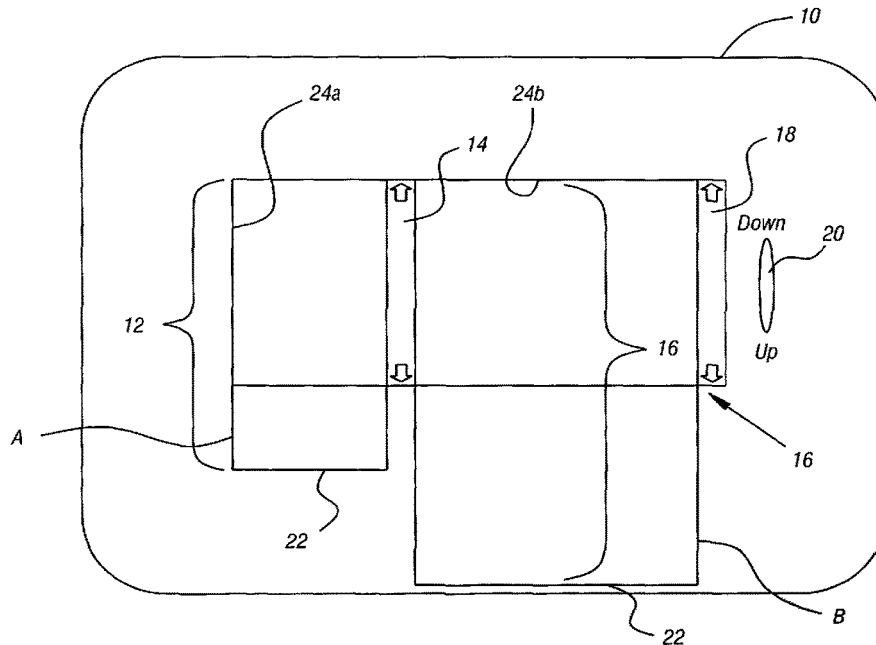
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

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[Continued on next page]

(54) Title: PROVIDING A SCROLLING FUNCTION FOR A MULTIPLE FRAME WEB PAGE



(57) Abstract: A scroll device may be provided on a processor-based system to simultaneously scroll both of at least two frames in two separate windows. Thus, each frame is scrolled until a first frame reaches its beginning or end. At that point, the scrolling of the first frame stops automatically while the other frame continues to scroll.



WO 02/01338 A1



**Published:**

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**PROVIDING A SCROLLING FUNCTION  
FOR A MULTIPLE FRAME WEB PAGE**

Background

This invention relates to processor-based systems and to scrolling displays of processor-based systems.

Internet web browsers are software typically running on  
5 a processor-based system that allow web pages to be  
displayed on a monitor or other display device. Web pages  
may contain one page of information that is optionally  
scrollable or they may contain multiple "frames" each of  
which may be independent scrollable. Scrolling is typically  
10 done using graphical user interfaces called scroll bars, for  
example in Microsoft® Windows®. Generally, one scroll bar  
is used for each frame.

In some processor-based systems, such as Internet  
appliances, it may be more desirable to provide a mechanical  
15 scrolling device to facilitate scrolling through the various  
frames making up a web page. This may provide simpler  
operation compared to using a graphical user interface  
scroll bar.

The mechanical scrolling device may be a scroll wheel,  
20 push-button switch or a rocker switch as examples. In each  
case, when the displayed object, such as a web page, has a  
length greater than a normal video display window, the  
object may be viewed by scrolling the display using the  
mechanical scrolling device.

25 A problem arises with a mechanical scrolling device  
when more than one frame is available to be scrolled at a  
given time on the same page. If the user operates the  
scrolling device, an ambiguity arises with respect to which  
frame should be scrolled.



Thus, there is a need for a better way to implement scrolling using a scrolling device.

#### Brief Description of the Drawings

Figure 1 is a screen display, in accordance with one  
5 embodiment of the present invention;

Figure 2 is another screen display, in accordance with one embodiment of the present invention;

Figure 3 is a screen display, in accordance with one embodiment of the present invention;

10 Figure 4 is a flow chart for software, in accordance with one embodiment of the present invention; and

Figure 5 is a block diagram for hardware, in accordance with one embodiment of the present invention.

#### Detailed Description

15 Referring to Figure 1, a scrolling function may be implemented through a graphical user interface 10 displayed on a display associated with a processor-based system. The processor-based system may be a conventional computer system, such as a desktop computer system or a laptop  
20 computer system. It may also be an appliance-like device, such as an Internet or web appliance. It may also be a handheld device, such as a handheld computer system or a cellular phone. The system may also be an embedded system such as an Internet tablet that may be dedicated to a  
25 limited application without an open operating system.

The interface 10 may include a pair of frames 12 and 16. Each frame 12 or 16 may include a graphical scroll bar 14 or 18 in one embodiment of the invention. Each scroll bar 14 or 18 enables each frame 12 or 16 to be scrolled  
30 relative to the other.

Each viewable window 24 displays only a portion of a frame 12 or 16. Thus, referring to Figure 1, each frame

includes a portion A or B which extends below the window 24a or 24b. Thus, in the illustrated embodiment, each frame 12 or 16 is larger than its corresponding window 24a or 24b respectively.

5           A scroll device 20 is provided for scrolling both frames 12 and 16 simultaneously. The scroll device 20 may be a rotary switch as one example. Rotating the scroll device 20 in the downward direction for example, causes the unexposed portion A of the frame 12 and the unexposed  
10 portion B of the frame 16 to come into view in each viewable window 24.

          In other words, the portion A that is not displayed within the window 24a associated with the frame 12 is caused to extend into the window 24a while the portion C, shown in  
15 Figure 2, is caused to extend above the window 24a. Likewise, with the frame 16, the unexposed portion B below the window 24b may be scrolled upwardly into view within the window 24b while the portion D extends above the window 24b as shown in Figure 2. The portion D has extended upwardly  
20 beyond the upper edge of the window 24b, but because the frame 16 is bigger than the frame 12, a remaining portion E, is still not exposed within the window 24b.

          In accordance with one embodiment of the present invention, when the scroll device 20 is operated in the  
25 upward direction, frame 12 no longer scrolls, since it has reached its bottom end 22. However, the frame 16 in the window 24b continues to scroll, as shown in Figure 3, until the bottom end 22 of the frame 16, reaches the bottom of the window 24b. At this point, a frame portion F has scrolled  
30 upwardly past the window 24b. Rotating the scroll device 20 in the upward direction no longer moves either frame 12 or frame 16. The same operation is achieved when the scroll device 20 is operated for downward scrolling.

Referring next to Figure 4, the software 34, implementing one embodiment of the scroll control feature, begins by determining whether a scroll command has been received from the scroll device 20, as determined at diamond 5 32. If so, each frame 12 or 16 is scrolled in the direction of operation of the scroll device 20, as indicated in block 34. A check at diamond 36 determines whether a frame end 22 has been reached. If so, that frame's scrolling is terminated as indicated in block 38. The other frame 10 continues to be scrolled. A check at diamond 40 determines whether the other frame has reached its end 22. If so, the flow ends. If not, the flow iterates back to block 34.

Turning next to Figure 5, a processor-based system 48 may be in the form of an Internet appliance, in accordance 15 with one embodiment of the present invention. It may include a controller 50 that may be a processor in one embodiment. The controller 50 is coupled to the scroll device 20. It is also coupled to a display 54 that displays the graphical user interface 10. The display 54 may be 20 coupled to the system 48 by a wired or wireless link.

Likewise, the controller 50 may be coupled to a wireless interface 52 that provides a wireless Internet connection. The interface 52 may, for example, be a modem. The controller 50 also couples a storage 56 that may be a 25 non-volatile memory, such as a hard disk drive or a flash memory. The storage 56 may store a browser as well as the software 30, shown in Figure 4.

In accordance with one embodiment of the present invention, when the scroll device 20 is operated, both 30 frames 12 and 16 scroll automatically in the indicated direction. This avoids the need to provide each frame 12 or 16 with its own independent scroll device 20. On some systems, there is a relatively limited screen space for this

additional device 20. Moreover, added complexity may arise from using independent scroll devices 20. Alternatively, if only one scroll device 20 is used for two frames, a focus assigning system may be needed that may add operational  
5 complexity. With the embodiments of the present invention, the user does not need to indicate which frame to scroll, because both frames 12 and 16 are automatically scrolled, if possible.

While the present invention has been described with  
10 respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

15 What is claimed is:

1. A method comprising:
  - receiving a command to scroll each of a first frame for display in a first display window and a second frame for display in a second display window, said first and second frames having a beginning and an end, at least one of said frames being larger than its window;
  - scrolling each frame in its window in response to said command;
  - determining when the beginning or end of one of said frames is displayed in its window; and
  - automatically stopping the scrolling of a frame when its beginning or end is displayed while continuing to scroll the other of said frames.
2. The method of claim 1 including enabling each frame to be scrolled relative to the other frame using a scroll bar associated with each frame.
3. The method of claim 1 wherein scrolling each frame includes operating a scroll device to scroll each frame.
4. The method of claim 3 wherein operating a scroll device includes rotating a scroll switch.
5. The method of claim 1 including organizing each frame with respect to a window at a different distance from its frame end and simultaneously scrolling both frames.
6. The method of claim 1 including providing only a single scroll device for more than one frame.
7. An article comprising a medium storing instructions that enable a processor-based system to:

receive a command to simultaneously scroll each of two frames in each of two windows;

determine when the beginning or end of one of said frames is displayed in its window; and

5 automatically stop the scrolling of a frame when its beginning or end is displayed while continuing to scroll the other of said frames.

8. The article of claim 7 further storing instructions that enable the processor-based system to  
10 enable each frame to be scrolled relative to the other frame using a scroll bar associated with each frame.

9. The article of claim 7 further storing instructions that enable the processor-based system to receive a command from a scroll device to scroll each frame.

15 10. The article of claim 9 further storing instructions that enable the processor-based system to receive a command from a scroll switch.

11. The article of claim 7 further storing instructions that enable the processor-based system to  
20 organize each frame with respect to a window at a different distance from its frame end and simultaneously scroll both frames.

12. The article of claim 7 further storing instructions that enable the processor-based system to  
25 receive a command from a single scroll device to scroll more than one frame in more than one window.

13. A system comprising:

a processor-based device; and  
a storage coupled to said processor-based device  
storing instructions that enable the processor-based device  
to receive a command to simultaneously scroll each of two  
5 frames in each of two windows on said display, determine  
when the beginning or end of one of said frames is displayed  
in its window and automatically stop the scrolling of a  
frame when its beginning or end is displayed while  
continuing to scroll the other of said frames.

10 14. The system of claim 13 wherein said scroll device  
is a rotary scroll switch.

15 15. The system of claim 13 wherein said storage stores  
instructions that enable the processor-based device to  
receive a command from a single scroll device to scroll more  
than one frame in more than one window.







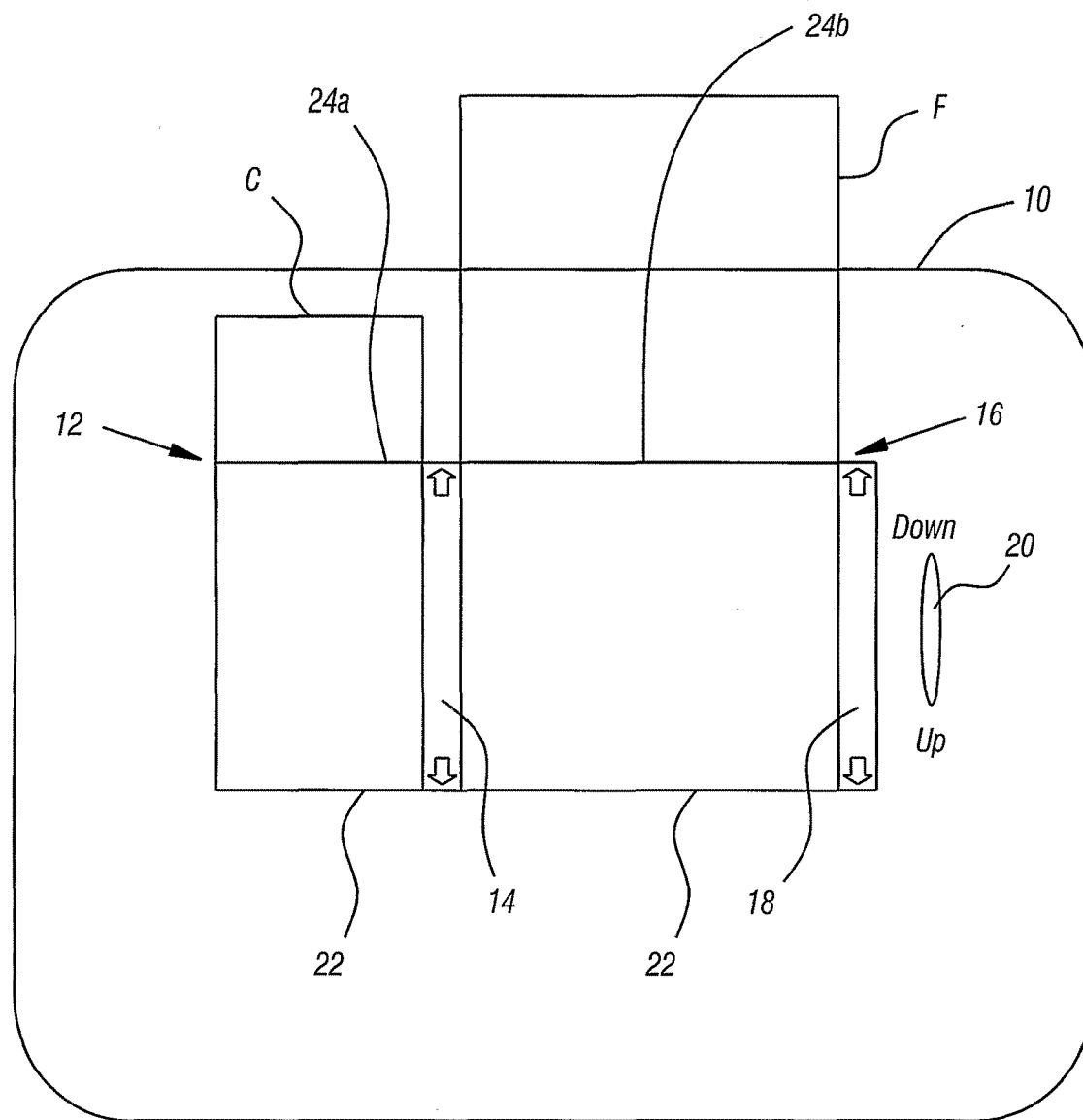


FIG. 3