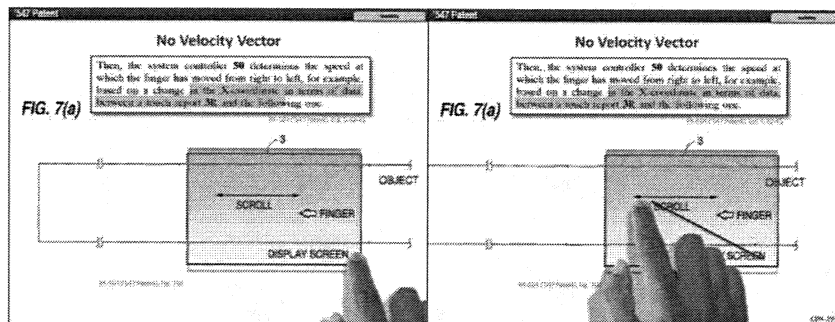
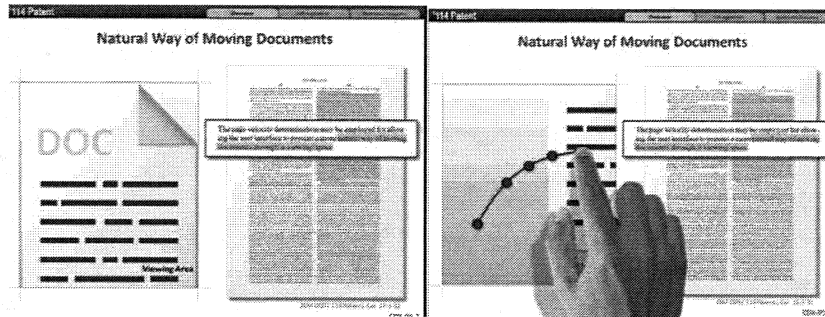


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As for Apple's contention that a one-dimensional vector falls within the scope of the claims of the '114 patent and Apple's reference to Figures 13A and 13B of the patent for support, Samsung counters that those figures do not depict a "page velocity determination," but instead "depict a command stroke that may be employed by the user..." (*Id.* at 152 (citing JXM-9 at 13:3-4).) Samsung argues that, even if Apple's assertion that the figures are depicting a one-dimensional pan were correct, the claims of the '114 patent are explicit that both the change in X and the change in Y are being calculated, even though in the case of Y the change may be zero. (*Id.* (citing Tr. (Abowd) at 3102-08, 3110, 3153-55; JXM-9 at 14:3-32, 16:1-65).) Samsung argues that one thing that distinguishes the '114 patent from the '547 patent is that the former moves the document in the direction of the finger such that the movement is more natural and therefore one-dimensional movement of a document in the '114 patent occurs only when the finger moves perfectly horizontally or vertically, leaving one component of the two-dimensional velocity vector at zero. (*Id.*) Samsung says the '547 patent cannot move a document in the direction of the finger movement because no change in the Y direction is being calculated and the patent simply ignores any movement in the Y direction when the user's finger moves from "right to left." (*Id.* (citing RX-504 at 5:31-32 ("fixed Y = 800")).) Samsung says this is illustrated below:



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(*Id.* (citing CBr. at 217).)

Samsung complains that Apple, in its opening brief, for the first time, argues that the '547 patent, at 5:26-36, discloses a two-dimensional velocity vector, and Samsung responds that this new argument has not been timely raised inasmuch as Dr. Balakrishnan admitted at the hearing that he had not relied on this portion of the '547 patent in reaching his conclusion that the '547 patent discloses a "velocity vector." (*Id.* at 152-153 (citing Tr. (Balakrishnan) at 2778-79).) Instead, Dr. Balakrishnan, as well as Staff, relies on column 5, lines 42-45, as disclosing a velocity vector, stating: "Then, the system controller determines speed at which the finger has moved from right to left, for example, based on a change in the X-coordinate...." (*Id.* at 153 (citing SBr. at 130; RX-504 at 5:42-45).) Samsung reasons that, because the '547 patent does not calculate a change in the Y coordinate, it cannot disclose a two-dimensional vector, and therefore does not disclose the claimed "velocity vector." (*Id.*)

### (iii) "pan command" limitation

Samsung contends that the '547 patent does not describe a pan command as required by the '114 patent, because, as Dr. Abowd testified, the '114 patent describes simulating tactile control over a document, such as allowing the user to move a page or a series of pages in both the X and Y directions at the same time, which is panning. (*Id.* (citing Tr. (Abowd) at 3153-55).) Therefore, a pan command necessarily is based on two-dimensional movement. (*Id.*) Samsung argues that Apple's reliance on Dr. Abowd's hearing testimony stating that panning can refer to a

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single direction, is out of context because while Dr. Abowd said that while generally panning can refer to a single direction, the claims of the '114 patent contemplate two-dimensional panning.

(*Id.* (citing Tr. (Abowd) at 3153-55).) Samsung says that the '547 patent, as previously explained, at most, discusses scrolling solely in one direction based on a change of the X coordinate, and therefore does not disclose a pan command. (*Id.*)

Additionally, argues Samsung, Apple attempts to twist the record by asserting that Dr. Abowd testified that “scrolling” and “panning” are used interchangeably in the field of the '114 patent, because Apple ignores the following testimony of Dr. Abowd:

Q. Okay. Do you agree with Dr. Balakrishnan’s testimony from yesterday that scrolling is used interchangeably with panning?

A. His comment was with respect to the '114 patent, that scrolling and panning were used interchangeably. And I do not agree with that. There are several occurrences of the word “scrolling” in the '114 patent that occur outside of the paragraph that he pointed out is the description of the panning behavior.

(*Id.* at 153-154 (citing Tr. at 3105).)

### (iv) “series of pages” limitation

Samsung contends that the '547 patent does not disclose a “series of pages” as required by claims 3-5. (*Id.* at 154 (citing Tr. (Abowd) at 3111-12).) Samsung says that Apple failed to argue in its pre-hearing brief that the '547 patent discloses a “series of pages,” and is therefore precluded from making this argument by reason of Ground Rule 7.2. (*Id.*) Nevertheless, argues Samsung, Apple’s argument is fallacious because Apple fails to explain how the ability to display a single object in a plurality of different states is the same as displaying a document with multiple pages, each with its own data content and page layout. (*Id.*) Samsung says that Apple’s reliance on this disclosure falls far short of the clear and convincing evidence needed to

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overcome the presumption of validity, and moreover, Staff does not address this limitation in its post-hearing brief. (*Id.*)

### (b) *EP 0 880 091*

Samsung argues that the '091 patent is directed at a very different concept (“scrolling long lists” of “text and symbols”) than the '114 patent, inasmuch as the former accomplishes its aims by displaying a list using a three-dimensional rotating cylinder. (*Id.* (citing RX-512 at 2:1-3, 3:15-7, Figures 1, 2).) On the other hand, argues Samsung, the '114 patent is related to panning within a two-dimensional page or through a series of pages of a digital representation of a document, such as a Web page or an e-mail. (*Id.* at 154-155 (citing JXM-9 at 14:3-32).)

#### (i) *“digital representation of a document” limitation*

Samsung contends the '091 patent fails to describe a “digital representation of a document including data content and a page structure representative of a page layout of the document.” (*Id.* at 155 (citing JXM-9 at 16:19-22; Tr. (Abowd) at 3113-14).) According to the claims, the document must have “data content” and a “page layout,” which the specification describes as “page size, margins, and other page layout information.” (*Id.* (citing JXM-9 at 7:61-63).) In contrast, argues Samsung, the '091 patent is directed at “scrolling long lists,” in an imaginary cylinder with no page size, margins or any other page layout. (*Id.* (citing RX-512 at 2:1-3, 3:54-56, 4:60-5:1, 6:50-53, Figures 1, 2).) Samsung points to the fact that Apple contends that a list is a document, but Samsung counters that a three-dimensional cylindrical list is very different from a two-dimensional digital representation of a document and instead is similar to a page in a book. (*Id.* (citing Tr. (Abowd) at 3113-14).) A cylinder is necessarily different than a page, and for that reason, the '091 patent cannot disclose a “page structure.” (*Id.*) Also, argues Samsung, the '114 patent describes the capability of panning within a single document or a

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single page, whereas the '091 patent discusses displaying “new elements [in the list] into view.” (*Id.* (citing JXM-9 at 14:3-32; RX-512 at 4:22-25).)

### (ii) “velocity vector” limitation

Samsung contends that the '091 patent does not describe “determining a velocity vector” and panning a page at “a rate based on the determined velocity vector.” (*Id.* (citing Tr. (Abowd) at 3114-15).) According to Samsung, contrary to Apple’s assertion that the two-dimensional space described in the '114 patent will inevitably have X and Y components, the cylinder mentioned in the '091 patent can only scroll in one direction at a time, either vertically or horizontally. (*Id.* at 155-156 (citing RX-512 at 8:5-12, Figure 1).) Samsung says that Apple admits that the '091 patent does not disclose calculating a velocity vector in both the X and Y directions. (*Id.* (citing RBr. at 247).) According to Samsung, this is highlighted by the fact that an oblique movement will trigger horizontal or vertical scrolling. (*Id.* at 156 (citing Tr. (Balakrishnan) at 2770-74).) Additionally, the portion of the '091 patent that Apple points to only describes calculating a scalar speed of the pointer’s movement and not both the speed and direction of the user’s pointer, and this does not equate to determining a velocity vector. (*Id.* (citing JXM-9 at 2:37-40, 7:45-50).)

### (iii) “pan command” limitation

Samsung says the '091 patent does not describe an “interface process to detect one of a plurality of commands, wherein the plurality of commands includes a pan command.” (*Id.* (citing Tr. (Abowd) at 3115-18).) Samsung argues that the '114 patent describes a command as a “known” touch motion, which the interface process must be able to process and distinguish among commands. (*Id.* (citing (JXM-9 at 9:46-49).) The '091 patent does not describe any known commands, nor does it describe the ability to distinguish between different commands,

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says Samsung. (*Id.* (citing Tr. (Abowd) at 3115-18).) Samsung says that Apple has concocted a new argument, not raised at any time before or during the hearing, that an “alternative embodiment” is disclosed in the passage “[i]t is also possible to limit the movement so that a movement is possible only in a single direction at a time.” (*Id.* (citing RBr. at 248; RX-512 at 8:5-7).) According to Samsung, the passage that Apple quotes refers to a “transversal movement,” which Dr. Balakrishnan admits is ambiguous and which Staff says is synonymous with horizontal. (*Id.* (citing Tr. (Balakrishnan) at 2695, 2770; RX-512 at 7:55-8:13; SBr. at 127).) Samsung says the paragraph in which the passage appears states that movement causes a “vertical or horizontal scrolling[,]” and as Staff correctly noted, the ’091 patent does not describe the ability of the user to pan the object in both the X and Y directions simultaneously. (*Id.* at 156-157 (citing Tr. (Abowd) at 3115-18; SBr. at 127; RX-512 at 7:55-8:13).)

### (iv) “series of pages” limitation

Samsung says that the ’091 patent does not describe rendering a series of pages of a document at a rate based on the determined velocity vector and page inertia. (*Id.* at 157 (citing Tr. (Abowd) at 3118-19).) Samsung says that Apple failed to argue in its pre-hearing brief that the ’091 patent discloses a “series of pages,” and therefore is precluded from making the argument by reason of Ground Rule 7.2. (*Id.*) Nevertheless, says Samsung, Apple argued that the disclosure of any empty space to signify the end of the list denotes a page break to a new list; however, an empty space in a list merely denotes that nothing is in that container of the list. (*Id.* (citing Tr. (Abowd) at 3118-19, (Balakrishnan) at 2774-75; RX-512 at 5:1-6).) Even assuming that the list as disclosed in the ’091 patent is a page, the patent at most discloses a single page in a document since it explicitly states that the beginning of the list is repeated. (*Id.*)

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(c) *Japanese Publication No. S63-174125*

Samsung contends that the '125 publication is directed at a very different problem than what is claimed in the '114 patent: a “file retrieving system” in which a “stack of cards” is displaying and scrolling. (*Id.* (citing RX-511 at 149-150).)

(i) *“digital representation of a document” limitation*

Samsung argues that the '125 publication does not describe a “digital representation of a document including data content and a page structure representative of a page layout of the document.” (*Id.* at 158 (citing Tr. (Abowd) at 3120-21).) The '125 publication is anything but clear, according to Samsung, because it appears to disclose a list or stack of cards directed at a file retrieving device. (*Id.* (citing RX-511 at 149-50, Figure 3, 6; Tr. (Balakrishnan) at 2783-84).) The '125 publication does not, however, disclose a list or stack of cards with a page size, margins, or any other page layout information. (*Id.* (citing Tr. (Abowd) at 3120-21).) Samsung says the '125 publication figures indicate that the cards are nothing more than a list of ASCII characters. (*Id.* (citing RX-511 at 149-50, Figures, 3, 6; Tr. (Abowd) at 3120-21).)

Samsung claims the '114 patent contemplates the “data content” and the “page layout” being contained within the page, but do not represent the page itself. (*Id.* (citing JXM-9 at 16:5-9; Tr. (Abowd) at 3120-21).) Samsung notes that Apple contends that the “images” of the cards themselves are data content and the page layout. (*Id.* (citing RBr. at 252).) Samsung says that Apple argued the opposite at trial, contending that the image of each card represented a page in a series of pages. (*Id.* (citing Tr. (Balakrishnan) at 2705).) In its post-hearing brief, Apple now argues that the images of the cards are the data content and page layout in a single document. (*Id.* (citing RBr. at 252).) Samsung says Apple’s inconsistent positions and the ambiguous

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disclosure of the '125 publication are insufficient to provide clear and convincing evidence that this limitation has been met. (*Id.*)

### (ii) “velocity vector” limitation

Samsung contends that the '125 publication does not describe “determining a velocity vector” and panning a page at “a rate based on the determined velocity vector.” (*Id.* (citing Tr. (Abowd) at 3121-25; SBr. at 134-135).) The '125 publication only describes calculating a velocity in the Y direction and fails to calculate any X velocity component, according to Samsung. (*Id.* at 158-159 (citing RX-511 at 149-150, Figures 2, 5; Tr. (Balakrishnan) at 2784-86).) Because the '125 publication does not disclose calculating a velocity in both the X and Y directions, it cannot determine a velocity vector required by the claims of the '114 patent and cannot pan the document at a rate based on the velocity vector. (*Id.* (citing SBr. at 134).)

### (iii) “pan command” limitation

Samsung maintains that the '125 publication does not describe a “pan command.” (*Id.* at 159 (citing Tr. (Abowd) at 3122-23; SBr. at 134).) According to Samsung, the '125 publication does not describe any known commands that could be associated with panning a document. (*Id.*) Samsung notes that Apple argues that the '125 publication’s discussion of scrolling in the vertical direction is sufficient for a pan command. (*Id.* (citing RBr. at 253).) But Samsung says the '125 publication does not describe the ability of the user to pan the object in both the X and Y directions together, and therefore cannot disclose a pan command. (*Id.* (citing Tr. (Abowd) at 3122-23; RX-511 at 149-150, Figures 2, 5).) Samsung says that Staff correctly noted that the '125 patent does not satisfy the “plurality of commands” limitations of claims 1 and 3. (*Id.* (citing SBr. at 134).) Dr. Balakrishnan’s testimony that the “touch-on” and “touch-off” portions of the same gesture are separate commands is not supported by any evidence in the record,



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argues Samsung. (*Id.* (citing Tr. (Balakrishnan) at 2703).) In fact, says Samsung, the “touch-on” and the “touch-off” movements of the finger constitute a single gesture. (*Id.* (citing Tr. (Abowd) at 3122-23).)

### (iv) “series of pages” limitation

Samsung contends that the ’125 publication does not describe rendering a series of pages of a document at a rate based on the determined velocity vector and page inertia. (*Id.* (citing Tr.(Abowd) at 3119).) Samsung says Apple and Staff failed to argue in the pre- or post-hearing briefs that the ’125 publication discloses a “series of pages.” For this reason alone, Samsung says the ’125 patent cannot anticipate claims 3-5. (*Id.*)

### (3) Staff’s Partial Agreement and Opposition

#### (a) EP 0 880 091

Staff begins its discussion of the validity of the ’114 patent as it is affected by 35 U.S.C. § 102(a) by addressing the ’091 patent. Staff concludes that the ’091 patent does not anticipate the ’114 patent, because the ’091 patent does not disclose a pan command within the meaning of asserted independent claims 1 and 3 of the ’114 patent. (SBr. at 125, 128.) Therefore, Staff concludes that none of the five claims of the ’114 are anticipated by the ’091 patent. (*Id.* at 128.)

#### (b) U.S Patent 5,844,547

Staff concludes that the evidence demonstrates that the ’547 patent discloses each element of the ’114 patent’s claims and therefore anticipates those claims under 35 U.S.C. § 102(a). (*Id.* at 129.) Staff points to the testimony of Dr. Balakrishnan at 2678-79 as the basis for Staff’s conclusion that the evidence is sufficient to establish that the ’114 patent is invalid as anticipated by the ’547 patent. (*Id.* at 132.)

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### (c) *Japanese Publication S63-174125*

Staff concludes that the '125 publication does not disclose a pan command within the meaning of claims 1 and 3 and consequently does not anticipate the '114 patent. (*Id.* at 133.)

#### (4) *Apple's Responses to Samsung and Staff*

##### (a) *Waiver by Virtue of Samsung's failure to timely disclose*

###### (i) *"pan command" limitation*

Apple counters that Samsung for the first time at the hearing asserted that the '547 patent, the '091 patent, and the '125 publication do not disclose a "pan command," because the prior art lacks a specific type of panning—in the X and Y dimensions simultaneously. (RRBr. at 145 (citing CBr. at 217-222).) Apple contends that this argument of Samsung's has been waived, first, because Samsung failed to disclose it in its contention interrogatory responses regarding validity; second, because Dr. Abowd did not disclose this opinion in his reports or deposition testimony; and third, because Samsung failed to disclose it in its pre-hearing brief. (*Id.* (citing Order No. 86 (striking portions of an Apple expert report because based on a finding that positions were not disclosed in Apple's contention interrogatory responses); Order No. 43 (Ground Rules) at 9.5.6.))

###### (ii) *"velocity vector" limitation*

Apple additionally complains that Samsung newly, and unduly prejudicially, asserts that the '547 patent, the '125, and the '634 patent (see obviousness section below) do not disclose a "velocity vector" based on its new construction of "velocity vector" that requires a two-dimensional vector having both X and Y components. (*Id.* (citing CBr. at 216, 219, 221, 223-224).) This argument, raised by Samsung for the first time in its pre-hearing brief, according to Apple, also has been waived. (*Id.* (citing Samsung's pre-hearing brief at 137-138, 140-141).)

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First, Samsung failed to disclose the “velocity vector” argument in its contention interrogatory responses. (*Id.*) Second, Dr. Abowd did not opine in his reports or at his deposition that these prior art references lack a “velocity vector.” (*Id.*)

### (b) *U.S. Patent 5,844,547 [Claims 1-5]*

(i) *“digital representation of a document including data content and a page structure representative of a page layout of the document”*

In answer to Samsung’s assertion that the ’547 patent does not satisfy this limitation on the ground that it lacks “a document with data content or a page layout,” Apple highlights the fact that Samsung contends that the ’547 patent “simply refers to scrolling a vague ‘object’” with no “definable structure,” and “does not disclose what the object is or any characteristics associated with its content.” (*Id.* at 146.) Apple rejoins that Samsung is in error, for several reasons.

First, the ’547 patent does disclose a “document” with “data content,” and Samsung’s argument to the contrary relies solely on the ’547 patent’s use of the word “object,” instead of the word “document.” (*Id.* (citing Tr. (Abowd) at 3101-02).) Apple contends that, under the parties’ agreed definition of the term “document,” the “objects” disclosed in the ’547 patent unquestionably are “documents,” since they are a “form of data that can be processed and displayed by the computer process.” Apple reminds us that the parties’ agreed construction of the term “document” is this: “documents, streamed video, web pages, and any other form of data that can be processed and displayed by the computer process.” (*Id.* at n. 77 (citing JX-2 at 16).) Apple argues that both the ’547 and the ’114 patents use the term “object” in a similar way, to refer to anything that can be rendered on the screen, and the ’114 patent explicitly discuss a “document object” with content being displayed. (*Id.* (citing JXM-9 at 4:33-37 (“This

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abstraction layer includes a document object wherein a document object contains information, or content, that is to be displayed on the screen.”.) In addition, argues Apple, Dr. Abowd concedes that the ’547 patent discloses a “digital representation” of the “object.” (*Id.* at 147 (citing Tr. (Abowd) at 3149).)

Second, the ’547 patent includes an extensive disclosure of how content is laid out on the screen, which is how both sides’ experts interpreted the term “page layout.” (*Id.* (citing Tr. (Abowd) at 1507-08, (Balakrishnan) at 2681; RDX 9-35, 9-36).) The ’547 patent discloses a system controller that renders images in accordance with “object information” stored in a “display information table,” which includes the following “page layout” information: (1) object size, (2) object position (X, Y coordinates), (3) angle of object on display, (4) size of the whole object relative to the display screen size, and (5) position of the object portion being displayed, relative to the whole object whose data is stored in the system memory. (*Id.* (citing RX-504 at 3:31-54; Tr. (Balakrishnan) at 2681; RDX 9-35, 9-36).)

Apple notes that neither Dr. Abowd, nor Samsung in its post-hearing brief actually addressed any of the specific portions from the ’547 patent on which Dr. Balakrishnan relies as disclosure of this limitation. (*Id.* (citing Tr. (Balakrishnan) at 2680-83; RX-504 at Figure 7(b); RDX 9-35, 9-36).) Therefore, suggests Apple, there appears to be no genuine dispute that these portions of the ’547 patent disclose this limitation. (*Id.*)

### (ii) “velocity vector” limitation

In opposition to Samsung’s arguments that the ’547 patent does not disclose the “determining a velocity vector” and “rate based on the determined velocity vector” limitations on the ground that it “does not describe the ability to pan the object in both the X and Y directions together,” Apple protests that this argument is based entirely on Samsung’s new and erroneous

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construction of “velocity vector,” which attempts to limit the term to a two-dimensional vector requiring both X and Y components, thereby excluding either horizontal or vertical panning. (*Id.* (citing CBr. at 214-217; Tr. (Abowd) at 3102-03).)

Apple posits that Samsung’s new construction of “velocity vector” is incorrect for at least three reasons. First, Samsung’s and Dr. Abowd’s interpretation of “vector” ignores, and is contrary to, the parties’ Technology Stipulation, which defines a “vector” as “a quantity with both a magnitude and a direction.” (*Id.* at 147-148 (citing JX-4 at 10.) Apple notes that Dr. Abowd admits that this agreed definition of “vector” does not require that the “vector” be a two-dimensional vector or even have X and Y components. (*Id.* at 148 (citing Tr. (Abowd) at 1690).)

Second, Samsung’s contention that “velocity vector” refers to a two-dimensional vector ignores and is contrary to the disclosure of the ’114 patent. (*Id.*) Nothing in the claims or the specification requires a two-dimensional vector or circumscribes the direction of panning. (*Id.* (citing Tr. (Balakrishnan) at 2798).) And, significantly, the only disclosed embodiment of panning that is depicted in the patent is a one-dimensional movement. (*Id.* (citing JXM-9 at Figures 13A and 13B, shown above; Tr. (Balakrishnan) at 2634).) Apple points out the accompanying description to Figures 13A and 13B discloses making a “page velocity determination” based on that one-dimensional movement. (*Id.* (citing JXM-9 at 14:3-32).) Apple contends that there is no mention, in the ’114 patent of calculating the change in both the X direction and Y direction in order to determine a “velocity vector.” (*Id.*) For one-dimensional movements, as depicted in Figures 13A and 13B; the speed in the direction of movement, such as along the X or Y axis, defines the velocity vector, because the change in position in the direction orthogonal to the movement, is necessarily zero. (*Id.*)

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Third, Apple says that Samsung's position that both X and Y velocities must be calculated in order to determine a velocity vector, even for one-dimensional movement, ignores and is contrary to Dr. Abowd's own earlier opinions that the claims cover strictly one-dimensional movement. (*Id.*) For example, Dr. Abowd asserted in his expert report that iTunes and the App Store applications, which can only pan in one direction, infringe. (*Id.* (citing Tr. (Abowd) at 1719-20).) Similarly, Dr. Abowd alleged in his report that the Email application in Samsung's domestic industry products practice claim 1 by panning vertically, based on motion only the in the Y direction. (*Id.* at 148-149 (citing Tr. (Abowd) at 1723-26).)

Apple says the parties have stipulated that a "vector" refers to a quantity with a magnitude and a direction. (*Id.* at 149 (citing JX-4 at 10).) Under this definition, the '547 patent discloses "determining a velocity vector." (*Id.* (citing Tr. (Balakrishnan) at 2684-85; RDX 9-39).) Apple notes that Dr. Abowd agrees that if the speed in a particular direction is known, the velocity vector under the agreed definition of "vector" is also known. (*Id.* (citing Tr. (Abowd) at 1691).) The '547 patent discloses determining the speed at which the finger has moved from right to left, based on a change in the position coordinates of the user's finger. (*Id.* (citing RX-504 at 5:42-45; Tr. (Abowd) at 1691).) Applying the agreed definition, the '547 patent discloses "determining a velocity vector," because it describes determining the speed, or magnitude, at which the finger is moving in a specific direction. (*Id.* (citing Tr. (Balakrishnan) at 2684; RDX 9-39).)

Apple says the '547 patent discloses panning at a "rate based on the determined velocity vector." (*Id.* (citing RX-504 at 5:37-53; Tr. (Balakrishnan) at 2686-87; RDX 9-42, 9-43).) The patent discloses recognizing a pan command when it states that "the system controller 50 recognizes the manipulation as a scroll[,] and discloses the determining of a velocity vector

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when it states, “the system controller 50 determines the speed at which the finger has moved from right to left[.]” (*Id.*) Also, according to Apple, the ’547 patent discloses panning a displayed document at a rate based on the determined vector when it says, “depending on whether the finger has moved at a speed of more (high-speed) or less (normal-speed) than 20 dots...the object display position on the display screen is scrolled initially at corresponding intervals of 100 or 500 milliseconds, respectively[.]” (*Id.*)

In response to Samsung’s argument that “Dr. Balakrishnan admitted that he only relied on lines 42-45 of column 5 of the ’547 patent for evidence that that patent discloses a determined velocity vector[.]” Apple says that is not the case, because he also testified about the following passage, which shows that, even if “determining a velocity vector” requires calculating changes in both the X and Y positions, this, too, is explicitly disclosed in the ’547 patent:

As another touch screen information 21 comes in, the discriminator 51 sends a touch report 3R including, e.g., “continuous touch in progress” and “coordinates (780, 800)” (i.e., the movement to the left by the finger as shown in Fig. 7a), and thus from X = 800 to X = 780 while at a fixed Y = 800). When the touch screen information 21 is not sent for more than 100 milliseconds, for example, the discriminator 51 sends a touch report 3R including “continuous touch end” and, e.g., “coordinates (700, 800)” (i.e., the final X, Y coordinates as of the “touch end”) to the system controller 50.

(RRBr. at 149-50 (citing RX-504 at 5:26-36; Tr. (Balakrishnan) at 2684-85).) Apple says that this passage, which Samsung and Dr. Abowd have ignored, discloses tracking the X and Y coordinates of the user’s finger position (“coordinates (700, 800)” (i.e., the final X, Y coordinates”). (*Id.*) For instance, according to Apple, the passage describes the user’s finger starting at a position (800, 800), moving to (780, 800), and eventually stopping at position (700, 800). (*Id.*) And, further, argues Apple, it describes calculating changes in both the X direction (“from X = 800 to X = 780”) and Y direction (“while at a fixed Y = 800”—i.e., the change in Y

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is zero). (*Id.*) Apple says that even under Samsung's new, untimely, and incorrect claim construction, the '547 patent satisfies the "velocity vector" limitation. (*Id.*)

(iii) "*pan command*"

Apple argues that Samsung's new construction of "pan command," which requires movement on both the X and the Y directions at the same time, is untimely, as well as incorrect, for several reasons. (*Id.*)

First, Samsung's construction is contrary to the claim language and the specification, because, as previously discussed, nothing in the claims or specification requires movement in two dimensions or precludes movement exclusively in one direction. (*Id.* (citing Tr. (Balakrishnan) at 2798).) The only disclosed embodiment unmistakably shows one-dimensional scrolling from right to left, says Apple. (*Id.* (citing JXM-9 Figures 13A, 13B; Tr. (Balakrishnan) at 2634).)

Second, Dr. Abowd admitted at his deposition and at the hearing that panning can refer to movement strictly in one direction:

Q. Do you see the sentence that reads, "I also agree that while panning can refer to movement in a single direction (e.g. horizontally or vertically), panning can also refer to a dynamic range of movement, such as transverse and oblique movements"? Have I read that correctly?

A. Yes, you have.

Q. And you stand by that, correct?

A. Yes, I do.

Q. Panning can be in the horizontal direction, it can be in the vertical direction, it can be in the transverse direction, it can be in the oblique direction, correct?

A. That's correct.

(*Id.* at 150-151 (citing Tr. at 1683-84).)



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Third, Apple says that Samsung reads the claims differently for its infringement contentions than for its validity contentions, which is improper. (*Id.* (citing *Source Search Techs. LLC v. LandingTree, LLC*, 588 F.3d 1063, 1075 (Fed. Cir. 2009).) For infringement and domestic industry purposes, Dr. Abowd opined that one-dimensional panning is covered by the asserted claims. (*Id.* (citing Tr. (Abowd) at 1720, 3138).) Under the plain meaning of “panning,” which Dr. Abowd admits encompasses panning in a single dimension, the ’547 patent discloses a “pan command.” (*Id.* (citing Tr. (Abowd) at 1683-84).) Dr. Balakrishnan is in accord. (*Id.* (citing Tr. (Balakrishnan) at 2685-86).) Figure 7(b) discloses determining a “pan command” (i.e., “recognizes the manipulation as a scroll”) based on the movement of the user’s finger on the touch screen:

FIG. 7(a)

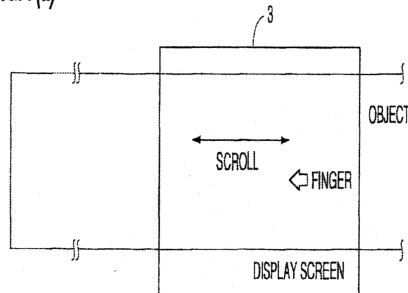


FIG. 7(b)

1T

OBJECT TYPE	DISPLAY POSITION INFORMATION					FILE INFORMATION				NORMAL DISPLAY FILE NAME	SPECIAL STATE FILE NAME
	TOP-LEFT COORD		SIZE		ANGLE	TOTAL SIZE		DISPLAY POSITION			
	X	Y	W	H		W	H	X	Y		
OUT-SCREEN	0	100	1152	700	0	3000	700	1000	0	BIG	—

When a "continuous touch start" is reported and the "object type" is defined as "out-screen" in the display information table 1T as shown in FIG. 7(b), the *system controller 50 recognizes the manipulation as a scroll* and the object as a large

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one extending beyond the display screen. Then, the system controller 50 determines the speed at which the finger has moved from right to left, for example, based on a change in the Xcoordinate in terms of data, between a touch report 3R and the following one.

Depending on whether the finger has moved at a speed of more (high-speed) or less (normal-speed) than 20 dots, for example, *the object display position on the display screen is scrolled* initially at corresponding intervals of 100 or 500 milliseconds, respectively. Then, the interval, at which the display update request 4Q is sent to the display controller 52, is increased by a factor of 1.5 at each touch report 3R and, when the interval reaches 2 seconds, the scrolling is stopped.

(*Id.* at 151-152 (citing RX-504 at Figure 7(b) and at 5:37-53; Tr. (Balakrishnan) at 2685-86; RDX 9-40, 9-41, 9-42).) Therefore, argues Apple, the '547 patent discloses that, in response to the user's finger moving on the touch screen, a scroll manipulation will be recognized resulting in the content on the screen scrolling. (*Id.*) This, argues Apple, is exactly the type of "pan command" shown in Figures 13A and 13B of the '114 patent. (*Id.* (citing JXM-9 at Figures 13A and 13B).)

### (iv) "series of pages" limitation

Apple disputes Samsung's contention that the '547 patent fails to disclose a "series of pages," because the "object" described in that patent does not contain pages or page breaks," and because "the '547 patent fails to accord the object any definable structure or properties." (*Id.* (citing CBr. at 218).) Apple says Samsung ignores the fact that the '547 patent expressly refers to displaying objects with a "plurality of different states," which a person of ordinary skill would understand to mean documents with multiple pages. (*Id.* (citing RX-504 at Abstract; Tr. (Balakrishnan) at 2688; RDX-45).) Furthermore, argues Apple, as previously discussed, the '547 patent discloses a "document." According to Dr. Abowd, a person of ordinary skill in the art would necessarily know that "documents" can encompass multiple pages. (*Id.* (citing Abowd '114 Reb. Rep. ¶¶ 55, 56 (App. A to RRBr.) ("Throughout the [priority application] the inventor describes scrolling and panning displayed digital representations of documents, which a person

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of skill in the art would necessarily know includes documents with multiple pages.”.) As for Samsung’s assertion that Apple failed to argue in its pre-hearing brief that the ’547 patent, the ’091 patent, the ’125 publication, and the ’634 patent disclose the “series of pages” limitation and therefore has waived this contention, Apple disputes this assertion. Apple notes that, in its pre-hearing brief, Apple said that each of these references discloses the “wherein, in response…” limitation of claim 3, which contains the “series of pages” limitation. (*Id.* at 153 (citing Apple’s pre-hearing brief at 145-146, 149-150, and 154).) Apple says it also provided a claim chart in Exhibit E identifying those portions of the references that disclose the limitations of the asserted claims. (*Id.*) Also, notes Apple, Samsung did not object at the hearing when Dr. Balakrishnan explained where the ’547 patent, the ’091 patent, the ’125 publication, and the ’634 patent disclose the “series of pages” limitation. (*Id.* (citing Tr. (Balakrishnan) at 2688-89, 2697-98, 2705, 2717).)

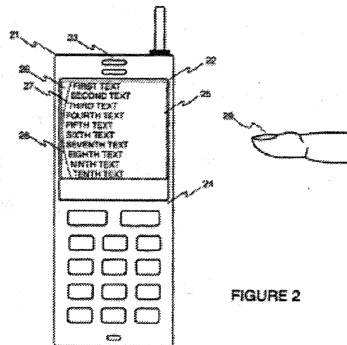
### (c) *EP 0 880 091*

(i) *“digital representation of a document including data content and a page structure representative of a page layout of the document” limitation*

Apple counters Samsung’s contention that the ’091 does not disclose “a document with data content or a page layout. (*Id.* at 153.) According to Apple, the ’091 patent discloses displaying a digital representation of a document (such as a list) that has “data content” (such as text, symbols, patterns), and a “page layout” that describes how content is laid out on the screen (e.g., in the form of a cylinder, size of elements, spacing of elements, line spacing). (*Id.* (citing RX-512 at Figure 2, and at 3:51-4:2, 4:57-5:8; Tr. (Balakrishnan) at 2691-93; RDX 9-54, 9-55, 9-56).) Further, argues Apple, Figure 2 shows an example of a document (i.e., a list) with data

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content (i.e., text) and a page layout (i.e., form of cylinder, size of elements, spacing of elements, line spacing, margins):



(*Id.* at 153-154.)

Apple says Dr. Abowd failed to address any of these disclosures relied on by Dr. Balakrishnan in support of his conclusion that they met this limitation. (*Id.* at 154 (citing Tr. (Abowd) at 3113-14; CDX 29.11: Tr. (Balakrishnan) at 2691-93; RDX 9-54, 9-56).) Apple complains that Samsung’s post-hearing brief appears to argue, without any explanation, that a “long list” cannot be a “digital representation of a document including data content and a page structure representative of a page layout of the document.” (*Id.* (citing CBr. at 218).) According to Apple, whether a list consumes one page or many, no one would doubt that lists are written on pages, and Dr. Abowd admitted that the list in the ’091 patent is a digital representation and has data content (*id.* (citing Tr. (Abowd) at 3145-46), and text and images (disclosed in the figure above as part of the list) are data content that is representative of a page layout. (*Id.* (citing Tr. (Abowd) at 1521-22).)

(ii) “velocity vector” limitation

Apple says that Samsung admits that the ’091 patent discloses a cylinder that scrolls; however, Samsung argues that this feature does not satisfy the “determining velocity vector” and “rate based on the determined velocity vector” limitations, by reason of Samsung’s new and incorrect construction of “velocity vector” as a two-dimensional vector that requires both X and

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Y components. (*Id.* (citing CBr. at 219).) Apple repeats its previously discussed contention that Samsung has waived this argument, and Apple argues that, moreover, Samsung's new construction of "velocity vector" should be rejected because it is contrary to the agreed definition of "vector," the disclosure of the '114 patent, and Dr. Abowd's infringement and domestic industry opinions, discussed above with respect to the '547 patent. (*Id.*)

Apple contends that if it is determined that Samsung has not waived this contention, Samsung's argument fails because the '091 patent plainly discloses the "determining a velocity vector" and "rate based on the determined velocity vector" limitations. (*Id.* (citing Tr. (Balakrishnan) at 2694; RDX 9-58).) According to Apple, the '091 patent discloses a computer device

arranged to scroll at a rate measured for, or proportional to, the speed of the pointing means at the last moment before it was removed. The speed of the pointing means in the direction of the control area of the display, when the pointing means is removed, determines the initial scrolling speed of the displayed part and the scroll direction.

(*Id.* at 154-155 (citing RX-512 at 2:37-45; Tr. (Balakrishnan) at 2694; RDX 9-58).) Apple contends that the '091 patent thereby discloses measuring both the speed and direction of the user's pointer on the touch-sensitive display, which is determining both the speed and the direction of the user's pointer on the touch-sensitive display, and this is determining a "velocity vector" under the agreed construction of "vector." (*Id.* (citing JX-4 at 10; RX-512 at 2:37-45; Tr. (Balakrishnan) at 2694; RDX 9-58).) Apple says this passage from the '091 patent describes determining the speed of the user's pointer in any direction, thereby disclosing a two-dimensional vector, and also discloses panning at a "rate based on the determined velocity vector" at column 2, lines 37-45 ("The speed of the pointing means in the direction of the control

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area...determines the initial scrolling speed...and the scroll direction.”). (*Id.* (citing Tr. (Balakrishnan) at 2696-97).)

*(iii) “pan command” limitation*

Apple says that, based on Samsung’s new construction of “pan command” as requiring movement in both the X and Y directions at the same time, Samsung claims the ’091 patent does not disclose this limitation. (*Id.* (citing CBr. at 219-220).) Aside from its contention that Samsung has waived this position, Apple says Samsung’s argument should be rejected because it is contrary to the disclosure of the ’114 patent and Dr. Abowd’s infringement and domestic industry opinions, as previously discussed in regard to the ’547 patent. (*Id.*) Apple argues that if Samsung’s new contention is determined not to be waived, it fails on the merits, nevertheless. (*Id.*)

First, according to Apple, the ’091 patent discloses a two-dimensional “pan command”; for example, in the following passage:

The object of the invention is a method to scroll data presented on the display of a mobile station. According to the invention the control area of the display is touched with a pointing means, the pointing means is moved in contact with the control area of the display, and the displayed part of the presented information is scrolled in the display in the direction of the movement of the pointing means.

(*Id.* (citing RX-512 at 2:14-21; Tr. (Balakrishnan) at 2694-96; RDX 9-60).) Apple says the ’091 discloses that the content will scroll in any direction that the pointing means is moved on the touch-sensitive display, which includes two-dimensional scrolling. (*Id.* at 155-156.) In fact, according to Apple, to emphasize that the ’091 patent discloses panning in any direction, an alternative embodiment is disclosed where “[i]t is also possible to limit the movement so that a movement is possible in only a single direction at a time.” (*Id.* (citing RX-512 at 8:5-7).) This alternative embodiment, which limits panning to one dimension, is contrasted against the

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previously disclosed embodiments, which allow panning in any direction. Apple says that it is the alternative embodiment on which Samsung and Staff have erroneously focused on in arguing that the '091 patent only discloses panning in a single direction. (*Id.* (citing CBr. at 219-220; SBr. at 127).) Apple argues that Dr. Abowd, during his testimony at the hearing, did not even acknowledge, much less rebut, Dr. Balakrishnan's testimony regarding the above passage in the '091 patent and thereby conceded that this passage does disclose a "pan command," even under Samsung's new construction. (*Id.* (citing CBr. at 219-22; Tr. (Abowd) at 3115-18).)

### (iv) "series of pages" limitation

Apple rejects Samsung's argument that the '091 patent does not disclose a "series of pages," because its disclosure of an empty space at the end of a list "merely denotes that nothing is in that container of the list" and "the '091 patent is explicit that it is the same repeated beginning of a list, not a new list." (*Id.* (citing CBr. at 220).) Apple says this is untrue, because, as Dr. Balakrishnan testified, the '091 patent describes arranging "an empty space" at the end of a list so that the "beginning of the list is clearly perceived," and thus, at least two lists (the end of one and the beginning of another) are contemplated (i.e., a series of pages). (*Id.* (citing RX-512 at 4:57-5:8; Tr. (Balakrishnan) at 2697; RDX 9-63).) Apple says that the '091 patent states that the object of the invention is to "facilitate the scrolling of a long list," which is itself a disclosure of scrolling a series of pages of a list. (*Id.* (citing RX-512 at 2:1-6).) Furthermore, according to Apple, as previously discussed, the '091 patent discloses a "document," which a person of ordinary skill in the art would necessarily know can include documents with multiple pages. (*Id.* at 156-157 (citing Tr. (Balakrishnan) at 2688).)

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(d) *Japanese Publication No. S63-174125*

(i) *“digital representation of a document including data content and a page structure representative of a page layout of the document” limitation*

Apple counters that Samsung’s opposing arguments appear to rest on an improperly narrow interpretation of “page layout.” (*Id.* at 157.) According to Apple, both experts agree that “page layout” refers to how content is presented on a screen. (*Id.* (citing Tr. (Abowd) at 1507-08, (Balakrishnan) at 2681; RDX 9-35, 9-36.) The ’125 publication discloses a computer device that stores and displays: the “content of a file 1 is displayed by a controlling portion 2 on a displaying portion 3 in an image of a stack of cards.” (*Id.* (citing RX-511 at 150; Tr. (Balakrishnan) at 2700-01; RDX 9-71).) This is illustrated in Figures 1 and 6 of the ’125 publication, which is shown in Section *A1(c)(i)* above. (*Id.* (citing RX-511 at Figure 6, 150; Tr. (Balakrishnan) at 2700-01; RDX 9-71).)

In his infringement analysis, Dr. Abowd stated that “images” are data content, notes Apple, and as Figures 1 and 6 show, the ’125 publication discloses displaying images of cards, which are data content. (*Id.* at 157-158 (citing RX-511 at Figures 1 and 6, 150; Tr. (Balakrishnan) at 2700-01; RDX 9-71).) Apple notes that, in his infringement analysis, Dr. Abowd said that “where the other images are positioned on the screen...that’s all page layout that’s determining how information laid out in the digital representation of the document.” (*Id.* at 158 (citing Tr. (Abowd) at 1522).) Apple points out that Figures 1 and 6 of the ’125 publication disclose a display of images of cards of different shapes at different positions relative to each other, which is clearly a “page layout.” (*Id.* (citing RX-511 at Figures 1 and 6, 150; Tr. (Balakrishnan) at 2700-01; RDX 9-71).) Therefore, concludes Apple, Dr. Abowd’s own interpretation of the claims, the ’125 publication discloses this limitation. (*Id.*) At the hearing,



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Dr. Abowd did not address or rebut any of the passages of the '125 publication relied on by Dr. Balakrishnan for this limitation, apparently conceding that these passages disclose the “digital representation of a document including data content and a page structure representative of a page layout of the document” limitation. (*Id.* (citing Tr. (Abowd) at 3120-21, (Balakrishnan) at 2700-01; RDX 9-71).)

According to Apple, Samsung makes the nonsensical argument that the '125 publication figures are “nothing more than a list of ASCII<sup>82</sup> characters and therefore cannot be a digital representation of a document.” (*Id.* (citing CBr. at 221).) However, Apple argues that under the parties' agreed construction of “document,” that is what a stack of cards is, since it is a “form of data that can be processed and displayed by the computer process.” (*Id.* (citing JX-2 at 16).) Further, the cards are shown on a computer screen and are therefore a digital representation. (*Id.* (citing Tr. (Abowd) at 3143).) Moreover, according to Apple, Samsung admits that the '125 publication figures have cards with a list of ASCII characters (i.e., text characters) and this confirms that the cards have data content and a page layout. (*Id.* (citing CBr. at 221).)

### (ii) “velocity vector” limitation

Apple rejects Samsung's contention that the '125 publication does not disclose the “determining a velocity vector” and “rate based on the determined velocity vector” limitations, based on Samsung's new constructions of “velocity vector” as a two-dimensional vector that requires both X and Y components. (*Id.* at 158-159 (citing CBr. at 221).) Apple again claims that Samsung has waived this contention by having failed to timely raise it. (*Id.* at 159.) Also, according to Apple, Samsung's new construction of “velocity vector” should be rejected because it is contrary to agreed definition of “vector,” the disclosure of the '114 patent, and Dr. Abowd's

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<sup>82</sup> American Standard Code for Information Interchange. (*Merriam-Webster's Ninth New Collegiate Dictionary* (1985)).

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infringement and domestic industry opinions, as previously discussed by Apple, and related above in connection with the '547 patent. Even if determined not to have been waived, Samsung's argument fails anyway, argues Apple, noting that the '125 publication discloses taking position measurements from the touch-screen at regular intervals (i.e., sampling) using those measurements to determine a velocity vector (i.e.,  $Y_{-1}$ ,  $(Y_0 - Y_{-1}) / t_s$ ) and panning at a rate based on the determined velocity vector  $v$ :

That is, in Step 30 in FIG. 2, with  $y$  coordinate at the time of touch-off defined as  $Y_0$  and the  $y$  coordinate at the time of the sampling one prior to the sampling at the time of touch-off defined as  $Y_{-1}$ ,  $(Y_0 - Y_{-1}) / t_s$  (where  $t_s$  is the sampling interval of the touch panel) is calculated in Step 31, and this is defined as the velocity  $v$ . In Step 32, the display screen is scrolled at this velocity  $v$ .

(*Id.* at 159 (citing RX-511 at 150; Tr. (Balakrishnan) at 2702; RDX 9-74).) Once again, complains Apple, Dr. Abowd did not address or rebut the above passage cited by Dr. Balakrishnan, thereby conceding that the '125 publication discloses this limitation. (*Id.* (citing Tr. (Abowd) at 3121).)

### (iii) "pan command" limitation

Apple contends that Samsung's construction of "pan command" insofar as it requires simultaneous movement in both the X and the Y directions is new and untimely and therefore should be disallowed on that ground and should be rejected on the ground that it is contrary to the disclosure of the '114 patent and Dr. Abowd's infringement and domestic industry opinions, as previously argued by Apple in connection with the '547 patent. (*Id.*) If not deemed waived, Samsung's newly minted argument should be waived, argues Apple, for reasons that follow.

Apple contends that the following excerpts from the '125 publication disclose a "pan command":

where the card corresponding to the pointing position coordinate is scrolled by the controlling portion 2 following the pointing movement coordinate, wherein: the

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scrolling velocity of the screen that is displayed on the displaying portion 3 is gradually reduced by the control of the controlling portion 2.

\* \* \*

In the case of the present invention, the program illustrated in FIG. 2 is stored in advance in the ROM 12 by the controlling portion 2 of the file searching device illustrated in FIG. 4, and after the finger touch has been removed, the scrolling display by this program is continued, and the scrolling is stopped by gradually decreasing the scrolling velocity.

(*Id.* at 160 (citing RX-511 at 150; Tr. (Balakrishnan) at 2702; RDX 9-75).) Therefore, according to Apple, the '125 publication discloses panning a stack of cards in response to a pan command (i.e., in response to the touch input from the user.) (*Id.*)

### (iv) "plurality of commands" limitation

Apple disputes Samsung's assertion that the evidence does not support Dr.

Balakrishnan's testimony that the "touch-on" and "touch-off" portion of the same gesture are separate commands. (*Id.* (citing CBr. at 222).) Apple counters that Samsung's assertion is unfaithful to Dr. Balakrishnan's actual testimony, in which he explained that the '125 publication discloses not only a pan command, but also a "stop" command, as confirmed by the following colloquy:

Q. Can we have the next slide. What do you say is the disclosure of plurality of commands in the '125 publication?

A. In my opinion as one of skill in the art, reading the disclosure on Page 150, where it talks about how the touch-on coordinates are inputted and the movement magnitude  $dy$  equals  $Y1$  minus  $Y0$  is calculated and scrolling is performed by the amount  $dy$ . So that would perform scrolling if there actually was a movement.  $Y1$  minus  $Y0$  gives you a nonzero value. But if a user puts his finger down and doesn't move and lifts up, that would be a stop, which would be a  $Y1$  minus  $Y0$  equals zero, would result in a stop command. That would be a second command.

(*Id.* at 160-161 (citing Tr. (Balakrishnan) at 2703; RX-511 at 150).) Therefore, if a user places a finger on the screen while the displayed content is scrolling and does not move it between sampling intervals, the calculated  $dy$  would be zero, which would cause the displayed content to

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stop scrolling. (*Id.* at 161.) Therefore, the '125 publication discloses a plurality of commands, namely, both a pan and a stop command, according to Apple. (*Id.*)

### (5) *Findings and Conclusions of the Administrative Law Judge*

The Administrative Law Judge concludes that the asserted claims of the '114 patent are invalid as anticipated by U.S. Patent 5,844,547. This patent, which was not before the USPTO during the prosecution of the '114 patent, discloses each of the elements of the asserted claims, as both Apple and Staff contend. The Administrative Law Judge rejects Samsung's contention that Apple failed to adequately disclose its invalidity contentions in a timely manner and finds, rather, that it is Samsung who failed to timely disclose its contentions that panning as it is included in the '114 invention is strictly a two-dimensional operation. The record reveals that Samsung and Dr. Abowd's contentions in that regard are contrary to the parties' Joint Stipulation and are inconsistent with respect to their infringement and domestic industry arguments on the one hand and their validity arguments on the other, as noted by Apple. The Administrative Judge concludes, however, that the preferable course in this instance is to treat the issues on their merits, rather than procedurally, as doing so ultimately does not prejudice Apple; noting, of course, that Apple's waiver argument is found to be meritorious.

The Administrative Law Judge concludes that the evidence recited by Apple and referred to by Staff, shows that each element of all five claims of the '114 patent is present in the '547 patent. The '547 patent discloses a "document" with "data content"; Samsung's argument to the contrary pertains to the '547 patent's use of the word "object," instead of the word "document. The parties agreed that the term "document" should be construed as "documents, streamed video, web pages, and any other form of data that can be processed and displayed by the computer process." (JX-2 at 16.) Although claim construction is a matter of law, the Administrative Law

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Judge finds that this construction is consistent with the plain and ordinary meaning of the word and should be adopted for purposes of this Investigation.<sup>83</sup>

The '547 patent discloses how content is laid out on the screen, which is how both sides' experts interpreted the term "page layout." (Tr. (Abowd) at 1507-08, (Balakrishnan) at 2681; RDX 9-35, 9-36.) The '547 patent discloses a system controller that renders images in accordance with "object information" stored in a "display information table," which includes the following "page layout" information: (1) object size, (2) object position (X, Y coordinates), (3) angle of object on display, (4) size of the whole object relative to the display screen size, and (5) position of the object portion being displayed, relative to the whole object whose data is stored in the system memory. (RX-504 at 3:31-54; Tr. (Balakrishnan) at 2681.)

The '547 patent anticipates the velocity vector limitation. The parties have stipulated that a vector refers to a quantity consisting of magnitude and direction. (JX-4 (Technology Stipulation) at 10.) Dr. Abowd admits that this agreed definition of "vector" does not require that the "vector" be a two-dimensional vector or have X and Y components. (Tr. (Abowd) at 1690.) Under this definition of "vector," the '547 patent discloses "determining a velocity vector," as shown by Dr. Balakrishnan. (Tr. (Balakrishnan) at 2684-85.) The '547 patent discloses determining the "speed at which the finger has moved from right to left" based on a change in position coordinates of the user's finger. (Tr. (Balakrishnan) at 2684-85.) The '547 patent discloses "determining a velocity vector," because it describes determining the speed (magnitude) at which the finger is moving in a specific direction, such as right to left. (Tr. (Balakrishnan) at 2684-85.)

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<sup>83</sup> One of the general definitions of the word "document" is: "a computer file containing information input by a computer user and usu[ally] created with an application (as a word processor)." (*Merriam-Webster's Collegiate Dictionary*, 11 ed.)

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The Administrative Law Judge rejects Dr. Abowd's contention that a "vector" must be two-dimensional, because neither the claims nor the specification of the '114 patent requires calculation of both the X and Y velocities when determining the "velocity vector," nor limits the direction of panning in any way. Nothing in the patent precludes movement that is exclusively in one dimension, such as strictly along the X axis or strictly along the Y axis. (Tr. Balakrishnan) at 2798.) Dr. Abowd's position on this element has been inconsistent. In his expert report he contended that the iTunes and App Store applications used by the Accused Products, which can only pan in one direction, infringe the asserted claims of the '114 patent. (Tr. (Abowd) at 1719-20.) Similarly, in asserting that the Email application in Samsung's domestic industry products practice claim 1, Dr. Abowd testified that the Email application calculates and uses the velocity only in the Y direction; and he testified that this was sufficient to satisfy the "velocity vector" limitation. (Tr. (Abowd) at 1723-26.) His contrary positions are unreliable and do not stand up in the face of the countervailing opinions of Dr. Balakrishnan.

The Administrative Law Judge notes that the '547 patent recites that "the system controller 50 recognizes the manipulation as a scroll and the object as a large one extending beyond the display screen." (Tr. (Balakrishnan) at 2685-86; RX-0504 at 5:39-41.) This scroll manipulation is a "pan command." Samsung disputes this limitation because Samsung contends that panning requires simultaneous movement in the X and Y directions, while the '547 patent only discloses panning in one direction. (Tr. (Abowd) at 3109-10.) Dr. Abowd's contentions in this respect are not consistent and are found not to be supported by the evidence: the "velocity vector" disclosed in the '114 patent applies to movement in any direction. Nothing in the patent precludes movement that is exclusively in one dimension, such as strictly along the X axis or strictly along the Y axis. (Tr. (Balakrishnan) at 2798.) Figures 13A and 13B, the only disclosed

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embodiment of panning in the patent, depict one-dimensional movement is a strictly horizontal direction, as shown here:

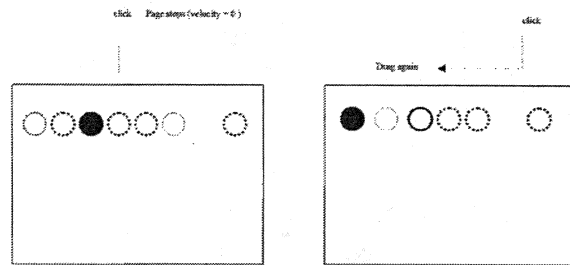


Figure 13A

Figure 13B

(Tr. (Balakrishnan) at 2634.) The description accompanying Figures 13A and 13B discloses that the “page velocity determination” is based on one-dimensional movement; there is no mention of calculating change in both the X and the Y directions in order to make that determination.

(JXM-9 at 14:3-32.) For strictly one-dimensional movements, as depicted in Figures 13A and 13B, the speed in the direction of movement, along the X or Y axis, defines the velocity vector, because the change in position in the direction orthogonal to the movement (change in Y when moving X, or change in X when moving Y) will be zero. Even if Dr. Abowd were correct in his opinion that the claims require calculating changes in both the X and Y positions in order to determine a velocity vector, this is disclosed in the ’547 patent:

As another touch screen information 21 comes in, the discriminator 51 sends a touch report 3R including, e.g., “continuous touch in progress” and coordinates (780, 800)” (i.e., the movement to the left by the finger as shown in Fig. 7(a), and thus from X=800 to X=780 while at a fixed Y=800). When the touch screen information 21 is not sent for more than 100 milliseconds, for example, the discriminator 51 sends a touch report 3R including “continuous touch end” and, e.g., “coordinates (700, 800)” (i.e., the final X, Y coordinates as of the “touch end”) to the system controller 50.

(Tr. (Balakrishnan) at 2684-85.) This passage, according to Dr. Balakrishnan, discloses tracking the X and Y coordinates of the user’s finger position (“coordinates (700, 800)” (i.e., the “final X, Y coordinates”). This passage describes the user’s finger starting at a position (800,

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800), moving to (780, 800), and eventually stopping at position (700, 800). (*Id.*) It describes calculating changes in both the X direction (“from X = 800 to X = 780”) and Y direction (“while at a fixed Y = 800”—i.e., the change in Y is zero). The ’547 patent thus discloses calculating changes in both the X and the Y directions and therefore even if Samsung and Dr. Abowd’s claim construction were valid, the ’547 patent would still satisfy the “velocity vector” limitation.

The Administrative Law Judge concludes that the ’547 patent discloses the pan command limitation of the ’114 patent, because the ’547 patent discloses that “the system controller 50 recognizes the manipulation as a scroll and the object as a large one extending beyond the display screen.” (Tr. (Balakrishnan) at 2685-86.) This scroll manipulation is found to be a pan command. Given that Dr. Abowd has read the claims differently for infringement and validity and that his construction of “pan command” as requiring two-dimensional movement is contrary to his earlier opinion, which he calls a mistake, Samsung’s opposing evidence does not overcome Dr. Balakrishnan’s testimony that “scrolling” and “panning” are used interchangeably in the field as well as in the ’114 patent. (Tr. (Balakrishnan) at 2633-34.) It is also noted that Dr. Abowd admits that panning can refer to movement in one direction:

Q. Do you see the sentence that reads, “I also agree that while panning can refer to movement in a single direction (e.g. horizontally or vertically), panning can also refer to a dynamic range of movement, such as transverse and oblique movements”? Have I read that correctly?

A. Yes, you have.

Q. And you stand by that, correct?

A. Yes, I do.

Q. Panning can be in the horizontal direction, it can be in the vertical direction, it can be in the transverse direction, it can be in the oblique direction, correct?

A. That’s correct.



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(Tr. (Abowd) at 1683-84.)

The '547 patent discloses the “wherein, in response...” clauses of claims 1 and 3, by reason of the following passage:

When a “continuous touch start” is reported and the “object type” is defined as “out-screen” in the display information table 1T as shown in FIG. 7(b), the system controller 50 recognizes the manipulation as a scroll and the object as a large one extending beyond the display screen. Then, the system controller 50 determines the speed at which the finger has moved from right to left, for example, based on a change in the X-coordinate in terms of data, between a touch report 3R and the following one.

Depending on whether the finger has moved at a speed of more (high-speed) or less (normal-speed) than 20 dots, for example, the object display position on the display screen is scrolled initially at corresponding intervals of 100 or 500 milliseconds, respectively. Then, the interval, at which the display update request 4Q is sent to the display controller 52, is increased by a factor of 1.5 at each touch report 3R and, when the interval reaches 2 seconds, the scrolling is stopped.

(Tr. (Balakrishnan) at 2686-87.) This passage discloses recognizing a pan command (“the system controller 50 recognizes the manipulation as a scroll”), determining a velocity vector (“the system controller 50 determines the speed at which the finger has moved from right to left”), and panning the displayed document at a rate based on the determined velocity vector (“depending on whether the finger has moved at a speed of more (high-speed) or less (normal-speed) than 20 dots...the object display position on the display screen is scrolled initially at corresponding intervals of 1000 or 500 milliseconds, respectively”). (Tr. (Balakrishnan) at 2687; RX-504 at 5:37-53.) It also discloses the “page inertia” limitation of claim 3, which Samsung does not dispute, as the passage describes the rate of scrolling slowing down and eventually stopping. (Tr. (Balakrishnan) at 2687.)

Samsung and Dr. Abowd dispute that the '547 patent discloses the “wherein, in response...” clauses of claims 1 and 3, for the same reasons previously discussed in relation to

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“pan command” and “velocity vector.” (Tr. (Abowd) at 3110-11.) These validity contentions likewise lack merit here as well, for similar reasons.

The Administrative Law Judge finds the '547 patent also discloses a “series of pages.” (Tr. (Balakrishnan) at 2688.) The patent contemplates displaying objects with a “plurality of different states.” (RX-504 at Abstract.) Under the parties' agreed construction, these objects are documents, which a person of ordinary skill would understand to mean a document that has multiple pages. (Tr. (Balakrishnan) at 2688.)

For the foregoing reasons, and the additional reasons argued by Apple, recited above, the Administrative Law Judge concludes that the '547 patent anticipates the asserted claims of the '114 patent and renders it invalid.

The Administrative Law Judge concludes that the evidence does not demonstrate that EP 0 880 091 anticipates the '114 patent. The '091 patent fails to describe a “digital representation of a document including data content and a page structure representative of a page layout of the document.” (JXM-9 at 16:19-22; Tr. (Abowd) at 3113-14.) According to the '114 claims, the document must have “data content” and a “page layout,” which the specification describes as “page size, margins, and other page layout information.” (JXM-9 at 7:61-63.) The '091 patent is directed at “scrolling long lists,” in an imaginary cylinder with no page size, margins or any other page layout. (RX-512 at 2:1-3, 3:54-56, 4:60-5:1, 6:50-53, Figures 1, 2.)

Also, the evidence pointed to by Apple does not show clearly and convincingly that the '091 patent discloses the “series of pages” limitation of the '114 patent. Apple and Dr. Balakrishnan's argument that, by virtue of showing the end of a list, an empty space, and the beginning of the same list, the '091 patent discloses a series of pages as disclosed in the '114 patent does not constitute clear and convincing evidence. Their arguments are not adequate

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proof that a “series” exists, even assuming the “page” aspect of the limitation exists by virtue of some property ascribed to the ’091’s cylindrical list that might, in some situation, be considered a page. Apple and Dr. Balakrishnan’s contentions here do not overcome the presumption of validity.

The Administrative Law Judge finds that Japanese Publication No. S63-174125 does not anticipate the ’114 patent, because it does not disclose a digital representation of a document including data content and a page structure representative of a page layout of the document with page size, margins, or any other page layout information. (Tr. (Abowd) at 3120-21.)

The ’114 patent contemplates the “data content” and the “page layout” being contained within the page, and do not represent the page itself. (JXM-9 at 16:5-9; Tr. (Abowd) at 3120-21.) While Apple contends that the “images” of the cards themselves are data content and the page layout, at trial Apple contended that the image of each card represents a page in a series of pages. (Tr. (Balakrishnan) at 2705.) Apple’s vacillating positions and the ambiguous disclosure of the ’125 publication are insufficient to provide clear and convincing evidence that this limitation has been met.

### **b) Obviousness**

#### *(1) Obviousness over combinations of the ’547 patent with either the ’091 patent or the ’125 publication [Claims 1-5]*

Apple argues that if any limitation of the ’114 patent is found not to be disclosed by the ’091 patent, the ’547 patent, or the ’125 publication, the asserted claims are still invalid because they would have been obvious based on any one of those references and the knowledge of a person of ordinary skill in the art, and a combination of the ’547 patent and either the ’091 patent or the ’125 publication would render claims 1-5 invalid for obviousness. (RBr. at 255.) All of these references relate to computer devices with touch-sensitive displays that allow for panning

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of digital content. (*Id.* (citing Tr. (Balakrishnan) at 2679, 2685-86, 2690-91, 2699-70).) Thus, argues Apple, a skilled artisan would have been motivated to combine these references because they are all directed to the same field, computing devices that allow users to pan and scroll, and a sub-field, computing devices with touch-sensitive user interfaces and aim to solve the same problem—more natural user interfaces. (*Id.* at 255-256 (citing RX-0504 at 1:10-12, 4:3-5:13, 5:14-6:11; RX-0512 at Figures 1 and 2, and at 2:1-6, 2:14-21, 2:37-45, 4:17-27, 4:57-5:8, 6:14-19, 6:26-39, 7:55-8:12, 8:42-46; RX-0511 at Figures 2, 6, 150-151).)

Samsung adopts its arguments regarding Apple's anticipation contentions in opposing Apple's obvious arguments and says that, whether considered alone or in combination, the references cited by Samsung do not render the asserted claims of the '114 patent obvious. (CRBr. at 160.) Moreover, according to Samsung, Apple has provided no reason to combine the '547 patent with either the '091 patent or the '125 publication. (*Id.*) Samsung says that Dr. Balakrishnan failed to provide testimony regarding motivation to combine these references and Apple has not identified any motivation to combine. (*Id.* (citing Tr. (Balakrishnan) at 2706-10).)

Samsung argues that Apple attempts to cure this through attorney argument that: a skilled artisan would have been motivate to combine these references because they are all directed to the same field, which is computing devices that allow users to pan and scroll, and a sub-field, which is computing devices with touch-sensitive user interfaces, and aim to solve the same problem, which is a more natural user interface. (*Id.* (citing RBr. at 255-256).) However, according to Samsung, the technological fields of touch-sensitive displays and scrolling and panning are very broad fields of interface design in computer science and each reference belongs to a different technological sub-field. (*Id.*) Samsung argues that Apple's assertion overlooks the stated purposes of the cited references, specifically, the '091 patent is directed at scrolling long

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lists, while the '125 publication is described as a “file retrieving device.” (*Id.* at 160-161 (citing Tr. (Balakrishnan) at 2763, 2783).) Also, according to Samsung, the '547 patent is directed at manipulating or maneuvering physical objects having physical properties such as weight, hardness, frictional resistance, etc. (*Id.* at 161 (citing Tr. (Balakrishnan) at 2679; RX-504 at 8:23-26).) Thus, the three references are all directed at different fields within touch-based computing with very different stated purposes. (*Id.*)

Samsung disputes Apple's contention that no expert testimony on motivation to combine is necessary because the technology is “easily understandable,” without any evidence or explanation. (*Id.* (citing RBr. at 256, n. 90).) Samsung argues that the legal standard that Apple offers applies to “situations in which the technology at issue is at such a level that it does not require technical expert testimony, and the failure to identify a level of skill in the art will be harmless.” (*Id.* (citing *Byrne v. Wood, Herron & Evans, LLP*, 450 F. Appx. 956, 964 (Fed. Cir. 2011)).) In this Investigation, says Samsung, technical expert testimony was needed to decipher the thousands of lines of relevant source code relating to complex algorithms involved in the user interfaces and touch detection. (*Id.*) The '114 patent is directed to complex computer devices and source code running on those devices, such that a person of skill in the relevant art would have had a bachelor's degree in computer science or electrical engineering, or the equivalent, and three years' experience in interface design. (*Id.* (citing JXM-9 at 14:3-33, 16:1-64).) This, argues Samsung, stands in stark contrast to a determination that the person be “an ordinary layman of average intelligence” required to invoke the “easily understandable” standard. (*Id.* (citing *Ball Aerosol and Specialty Container, Inc. v. Limited Brands, Inc.*, 555 F.3d 984, 992 (Fed. Cir. 2009)).)

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Apple replies that if any limitation is found not to be disclosed by the '091 patent, the '547 patent, or the '125 publication, claims 1-5 of the '114 patent would have been obvious based on the combination, noting that Staff agrees that the combination of the '547 patent with either the '091 patent or the '125 publication renders the asserted claims obvious. (RRBr. at 163 (citing SBr. at 124).) All of these references relate to computer devices with touch-sensitive displays that allow for panning digital content. (*Id.* (citing Tr. (Balakrishnan) at 2679, 2685-86 2691, 2699-70).) Thus, argues Apple, a skilled artisan would have been motivated to combine these references because they all are directed to the same field and sub-field. (*Id.*)

### (2) *Obviousness Based on Combinations Involving U.S. Patent 4,839,634*

Apple says that U.S. Patent 4,839,634 (“the '634 patent”) was filed on December 1, 1986 and issued on June 13, 1989. (RBr. at 256.) This patent in combination with either the '547 patent, the '091 patent, or the '125 publication renders the '114 patent obvious. (*Id.*) The only element of claims 1-5 that is not present in the '634 patent is “page inertia,” which Samsung does not contest is disclosed in each of the anticipatory references, according to Apple. (*Id.*) According to Apple, Samsung claims that the following additional limitations are not disclosed in the '634 patent: (1) “velocity vector,” (2) “pan command,” and (3) “wherein, in response...” (*Id.*)

According to Samsung, the '634 patent is directed at a very different concept than what is claimed in the '114 patent: it is directed at “page flipping” (the incrementing and decrementing of pages) on a device based on movement on a horizontal bar below the screen. (CRBr. at 161-162 (citing RX-500 at 39:55-40).) Also, the '634 patent in combination with the '091 patent, the '547 patent and the '125 publication does not render claims 1-5 obvious, inasmuch as the '634 patent fails to disclose a “page inertia.” (*Id.* (citing Tr. (Balakrishnan) at 2716).) The '634

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patent also fails to disclose other limitation from the '091 patent, the '547 patent, and the '125 publication and a person of skill in the art would not have been motivated to combine these references. (*Id.*)

### (a) *Addressing the various claim elements*

#### (i) *“velocity detector for determining a velocity vector...” limitations*

Apple claims that the '634 patent discloses the “determining a velocity vector” limitations. (RBr. at 257 (citing Tr. (Balakrishnan) at 2712-13; RDX 9-89).) The '634 patent describes scrolling based on both the speed and direction (velocity) of the user's pointer on the touch-sensitive display and by moving the input pen 3 across region 50 to the right or left, pages are scrolled forward or backward at a rate that is proportional to the speed at which the input pen is moved. (*Id.* at 257-258 (citing RX-0500 at 11:30-33; Tr. (Balakrishnan) at 2712-13; RDX 9-93).) Apple points out that the Technology Stipulation states that the speed, or magnitude, and direction are the velocity vector. (*Id.* at 258 (citing JX-4 at 10).) Although Dr. Abowd disputes this, Apple contends that his opinion, for reasons previously mentioned by Apple, lacks merit. (*Id.*)

Samsung counters that the '634 patent does not describe “determining a velocity vector” and panning a page at “a rate based on the determined velocity vector.” (CRBr. at 162 (citing Tr. (Abowd) at 3125-26).) The '634 patent only describes calculating a speed of the pointer's movement along the horizontal “PAGE\_SCAN” bar. (*Id.* (citing RX-500 at 39:55-40).) There is no indication that the speed and direction are calculated together, as required to constitute a velocity vector, according to Samsung. (*Id.* (citing JXM-4 at 10; Tr. (Abowd) at 3125-26).) The '634 patent does not disclose calculating a velocity in both the X and Y directions and therefore

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cannot determine a velocity vector required by the claims of the '14 patent and cannot pan the document at a rate based on the velocity vector. (*Id.*)

Apple replies, as before, that Samsung's two-dimensional requirement for vector is a new theory and should not be considered because Samsung has waived this contention by not having timely interposed it. (RRBr. at 161.) Moreover, it should be rejected because it is contrary to the parties' agreed definition of "vector," the disclosure of the '114 patent, and Dr. Abowd's infringement and domestic industry opinions, as previously discussed in connection with the parties' anticipation arguments. (*Id.*) However, Apple contends that even if Samsung's velocity vector argument is not found to have been waived, it fails because the '634 patent discloses "determining a velocity vector" and "rate based on the determined velocity vector." (*Id.* (citing Tr. (Balakrishnan) at 2712-13).) For instance, the '634 patent describes scrolling based on both the speed and direction of the user's pointer on the touch-sensitive display. (*Id.* (citing RX-500 at 11:30-33 ("By moving the input pen 3 across region 50 to the right or left, pages are scrolled forward or backward, respectively, at a rate proportional to the speed at which the input pen is moved."); Tr. (Balakrishnan) at 2712-13).)

### (ii) "pan command" limitation

Apple notes that the '634 patent discloses a "pan command" such as this provision: "By moving the input pen 3 across region 50 to the right or left, pages are scrolled forward or backward." (RBr. at 258 (citing Tr. (Balakrishnan) at 2714-15; RDX 9-94; RX-0500 at 11:27-33).) The '634 patent's disclosure of scrolling pages in response to a movement of the input pen is a "pan command," says Apple. (*Id.*) Despite what Apple believes to be clear and convincing proof that this recites a pan command, Dr. Abowd disputed that this limitation is shown in the '634 patent, because what that patent shows is only directed at "flipping between pages." (*Id.*



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(citing Tr. (Abowd) at 3126-27.) Apple says that, even if that were the case, Dr. Abowd and Samsung previously took the position with respect to the priority application to the '114 patent, GB 0009129.8, that page flipping meets the limitation of “render[ing] a series of pages” in response to a pan command and that it also describes a “series of pages” in that the GB '129 application discloses turning a page on a document. (*Id.*) Apple says that this is another instance of Dr. Abowd’s applying the claims inconsistently across his different opinions in this Investigation. (*Id.*)

Samsung counters that the '634 patent does not disclose a pan command, because, as Dr. Balakrishnan explained, the '634 patent describes “page flipping” or “turning a page,” which is a fundamentally different action than panning. (CRBr. at 162 (citing Tr. (Balakrishnan) at 2711, 2786-87; RBr. at 258).) Samsung says Dr. Balakrishnan admitted that pages in the '634 patent were “incremented” or “decremented” in the horizontal direction. (*Id.* (citing Tr. (Balakrishnan) at 2787; RX-500 at 39:55-58).) This is very different than what is described by the invention of the '114 patent, says Samsung. (*Id.* (citing Tr. (Abowd) at 3126-28).) The '114 patent describes different views within a document, rather than flipping pages of the document. (*Id.* at 162-163 (citing JXM-9 at 14:3-32, 16:24-26).) This, says Samsung, is highlighted by the fact that the '114 invention can display portions of two pages in a document simultaneously. (*Id.* at 163 (citing Tr. (Abowd) at 3126-28).) It can also pan within a single page of a document or through multiple pages without being limited to incrementing or decrementing a single page at a time. (*Id.* (citing Tr. (Balakrishnan) at 2788-89; JXM-9 at 14:3-32, 16:1-65).) Additionally, the '634 patent only describes page flipping in the horizontal direction, and therefore cannot disclose a pan command since it cannot detect movement or pan a document in both the X and Y directions. (*Id.* (citing Tr. (Abowd) at 3126-28; RX-500 at 11:30-33, 39:55-58).)

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Apple replies that the '634 patent discloses the pan command when it declares that “[by] moving the input pen 3 across region 50 to the right or left, pages are scrolled forward or backward.” (RRBr. at 161-162 (citing RX-500 at 11:27-33; Tr. (Balakrishnan) at 2714-15).) The '634 patent's disclosure of scrolling pages in response to a movement of the input pen is a “pan command” argues Apple. (*Id.* at 162.) As for Samsung's argument to the contrary, Apple points out that Samsung is being inconsistent, because Samsung contended, in addressing whether the '114 patent was entitled to the priority date of the Great Britain '129 application, Samsung took the opposite position in its pre-hearing brief:

Similarly, the GB '129 application provides support for a “page inertia” because it describes decelerating a displayed page after the pointer is removed from the screen. (*Id.* at 4:10-16, 13:26-31, 17:11-22, 18:1-18, 19:6-10.) It also describes a “series of pages” in that the GB '129 application discloses turning a page on a document. (*Id.* at 18:4-9).

(*Id.* (citing Samsung's pre-hearing brief at 149).) This, argues Apple, is yet another example of Samsung taking inconsistent positions regarding the interpretation of the asserted claims. Under Samsung's own interpretation of the claims, for purposes of demonstrating priority, the '634 patent indisputably discloses a pan command, argues Apple.

(iii) “wherein, in response...” [Claims 1 and 3]

Apple argues that, aside from the “page inertia” element, the '634 patent discloses the “wherein, in response...” clauses of claims 1 and 3, such as in the patent's description of the act of determining a velocity vector in response to a pan command, and panning a displayed document at a rate based on that determined velocity vector: “By moving the input pen 3 across region 50 to the right or left, pages are scrolled forward or backward, respectively, at a rate proportional to the speed at which the input pen is moved.” (RBr. at 258-259 (citing RX-0500 at 11:30-33; Tr. (Balakrishnan) at 2715-16: RDX 9-95, 9-97).) Apple again contends that Dr.

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Abowd's arguments to the contrary lack merit for reasons previously stated by Apple and discussed above. (*Id.* at 259.)

Samsung does not address these limitations in its post-hearing brief.

Staff notes its contention that the '547 patent anticipates the claims of the '114 patent; however, according to Staff, if a determination were to be made that the '547 patent does not anticipate, the combination of that patent and the '091 or the '125 publication render the '114 patent obvious. (SBr. at 135 (citing Tr. (Balakrishnan) at 2678-79).) According to Staff, a person of ordinary skill in the art would have been motivated to combine these prior art references. (*Id.*) All of these reference relate specifically to computer devices with touch-sensitive displays. (*Id.* at 135-136.) They are all directed to the same technological field—computer devices having a system for simulating tactile control over a document—and aim to solve the same problem of providing an efficient and natural method of interacting with digital content on a touch-sensitive display. (*Id.* at 136.) Thus any combination of any of these three references would render asserted claims 1-5 invalid for obviousness. (*Id.*)

Furthermore, Staff says that it is also of the view that the claims of the '114 patent would have been obvious in light of U.S. Patent 4,839,634 in combination with any of the other three prior art references noted by Apple. (*Id.*) According to Staff, the '634 patent, which was filed on December 1, 1986 and issued on June 13, 1989, before the effective priority date of the '114 patent, discloses an electronic tablet that allows for handwritten input on a touch-sensitive device. (*Id.* (citing RX-500).) Dr. Balakrishnan testified that the only element of the asserted claims that is not explicitly disclosed in the '634 patent is “page inertia,” which is a simulated force that decreases velocity. (*Id.* (citing Tr. (Balakrishnan) at 2711-16).) Staff notes that this element is present in the other three cited references, though. (*Id.* (citing RX-504 at 5:37-53;

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RX-512 at 2:50-54; 5:48-49; 7:44-54; 8:52-54; RX-511 at APL794-N0000002381 to -2382.)

Thus, in Staff's view the combination of the '634 patent with any of the other three would read on every limitation of the asserted claims of the '114 patent. (*Id.*)

Staff points out that Dr. Balakrishnan testified that a person of ordinary skill in the art at the time of the '114 patent would have been motivated to combine the '634 patent with any of the other three prior-art references:

Q. What motivation, if any, would there be for one of ordinary skill in the art to combine the '634 patent with each of the '547, '091, and '125 patents?

A. The motivation is, A, it's in the same technological field. These are dealing with touch-sensitive displays, where the users manipulate documents on the display. And within the subarea of scrolling and panning documents, these are clearly all talking about the same topic area. Finally, the purpose is to be able to scroll through these documents. It's all achieving the same purpose.

(*Id.* at 136-137 (citing Tr. (Balakrishnan) at 2718 and *PharmaStem Therapeutics, Inc. v. Viacell, Inc.*, 491 F. 3d 1342, 1360 (Fed. Cir. 2007) (respondent must "show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device,... and would have had a reasonable expectation of success in doing so"))). For these reasons, Staff believes that there is clear and convincing evidence that claims 1-5 are invalid for obviousness in light of the '634 patent in combination with any of the other three prior art references cited by Apple. (*Id.* at 137.)

### (b) *Motivation to Combine*

Apple says there were reasons to combine the '125 publication and either or both the '091 and the '547 patent, thereby rendering the '114 patent obvious. (RBr. at 259.) As for motivation, Apple says these references are in the same technological field as the '114 patent, dealing with touch-sensitive displays, where users manipulates documents on the display, and with respect to subjects of scrolling and panning documents, all are concerned with these, too.

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(*Id.*) Apple argues that the purpose involved in each case is to be able to scroll documents. (*Id.* (citing Tr. (Balakrishnan) at 2718).) Therefore, according to Apple, a person of ordinary skill in the art would have been motivated to combine the cited references because they are directed to the same technological field—computing devices that allow users to pan and scroll documents—and to the same subsidiary field—computing devices with touch-sensitive user interfaces—and aim to solve the same problems—more natural user interfaces. (*Id.* at 259-260 (citing Tr. (Balakrishnan) at 2718; RX-0504 at 1:10-12, 4:6-10, 4:36-5:13-6:11; RX-0512 at Figures 1 and 2, 2:1-6, 2:14-21, 2:37-45, 4:17-27, 4:57-5:8, 6:14-19, 6:26-39, 7:55-8:12, 8:42-46; RX-051 at Figures 2, 6 and 150-151; RX-0500 at Abstract, 3:25-41, 7:27-35, 11:27-33, 39:55-68)).)

Samsung says Apple failed to identify any motivation to combine the '634 patent with the '547 patent, the '091 patent, or the '125 publication, other than to say they are the same technological field of “touch-sensitive displays” and “scrolling and panning documents.” (CRBr. at 163 (citing RBr. at 259).) Samsung says that each of these references belongs to a different technological sub-field with a different stated purpose. (*Id.*) The '634 patent is directed at a touch-screen device for creating and editing textual content. (*Id.* (citing Tr. (Balakrishnan) at 2711).) However, the '091 patent is directed at scrolling long lists, the '125 publication is described as a “file retrieving device,” and the '547 patent is directed at manipulating or maneuvering physical objects having physical properties. (*Id.* (citing Tr. (Balakrishnan) at 2679, 2763, 2783; RX-504 at 8:23-26).) The four references are therefore directed at different sub-fields within touch-based computing with very different stated purposes and a person of skill in the art would not have been motivated to combine the '634 patent with the '547 patent, the '091 patent, or the '125 publication. (*Id.* (citing Tr. (Abowd) at 3128-29).)

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Apple protests that Samsung's argument that there would be no motivation to combine the '634 patent with the other three prior art references that have been discussed herein is a new contention, which should be rejected under Order No. 43 (Ground Rules) at 7.2. (RRBr. at 162.) Furthermore, because Dr. Abowd did not offer any testimony that the references belong to different technological sub-fields, there is no evidence or testimony in the record that supports Samsung's new argument about a lack of motivation to combine. (*Id.*)

Apple says that Samsung's argument here defies common sense and the clear guidance of *KSR*, 550 U.S. at 421 that a "person of ordinary skill is also a person of ordinary creativity, not an automaton." (*Id.* at 162-163.) Apple says that each of the cited prior art references focuses on improving panning and scrolling on a touch-sensitive display. (*Id.* (citing Tr. (Balakrishnan) at 2717-18; RX-504 at 4:6-10; 5:37-45; RX-512 at 150; RX-500 at 10:19-36).) Moreover, each of these references describes a number of similar features: computer devices (RX-503 at 1:10-12; RX-512 at 4:17-27; RX-511 at 7:27-35); with processor, memory, and touch-sensitive display (RX-504 at 3:12-27; RX-512 at 2:21-24, 6:21-23, 6:28-30; RX-511 at 150; RX-500 at 20:36-470); an engine for rendering an image on the touch-sensitive display (RX-504 at 4:18-26; RX-512 at 6:50-7:2; RX-511 at 149; RX-500 at 7:27-35); a display monitor (RX-504 at 3:63-4:5; RX-512 at 6:26-39; RX-511 at 150; RX-500 at 10:1-4); an interface process for processing a pan command (RX-504 at 4:6-10, 5:37-45; RX-512 at 6:26-29; RX-512 at 150; RX-500 at 10:19-36). Apple notes that Dr. Balakrishnan explained that, in light of overwhelming similarities in the technology at issue, it would have been obvious to a person of ordinary skill and creativity working on panning a document on a touch-sensitive display to examine and combine these references. (*Id.* (citing Tr. (Balakrishnan) at 2717-18).)

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### (c) *Secondary Considerations*

Apple argues that Samsung presented no evidence that any secondary factors of non-obviousness exist. (RBr. at 260 (citing Tr. (Balakrishnan) at 2718-19).) Apple notes that despite Dr. Abowd's years of experience in the art, he had never heard of the '114 patent or its inventor before he was approached by Samsung's lawyers in connection with this Investigation. (*Id.* (citing Tr. (Abowd) at 1650-51).) Nor had Dr. Balakrishnan. (*Id.* (citing Tr. (Balakrishnan) at 2719).) According to Apple, Samsung never established "a nexus between the evidence and the merits of the claimed invention." (*Id.* (citing *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) ("If the feature that creates the commercial success was known in the prior art, the success is not pertinent."))).) At most, argues Apple, Dr. Abowd merely contends that the success of Samsung's smartphones is related to the "ability to reveal the unseen parts of [a] document" through manipulation of the touch screen. (*Id.* (citing Tr. (Abowd) at 3129-31).) However, Apple says that panning is a feature that Dr. Abowd admits is in the prior art, and he never tied the claimed invention to commercial success of any product. (*Id.* (citing Tr. (Abowd) at 1680, 3129-32).)

Samsung responds that Dr. Abowd explained at the hearing that the Samsung domestic industry products that implement the functionality of the '114 patent have enjoyed significant commercial success, selling over ten million units last year. (CRBr. at 164 (citing Tr. (Abowd) at 3126-32).) The '114 invention has been an important factor in that success and users are able to display and manipulate documents on their phones, which usually have small spaces. (*Id.*) Samsung says that Apple has failed to articulate and apply the proper legal standard when it asserts that there is no nexus between the commercial success of the Samsung domestic industry products and the '114 patent. (*Id.* (citing RBr. at 260).) According to Samsung, the Federal

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Circuit applies a burden-shifting analysis to determine whether there is a nexus between the asserted patent and the commercial success of the product:

A prima facie case of nexus is made when the patentee show both that there is commercial success, and the product that is commercially successful is the invention disclosed and claimed in the patent. Once the patentee demonstrates a prima facie nexus, the burden of coming forward with evidence in rebuttal shifts to the challenger.

(*Id.* (citing *Crocs Inc. v. Int'l Trade Comm'n*, 598 F.3d at 1294, 1310-11 (Fed. Cir. 2010)).

Samsung asserts that it has demonstrated that the domestic industry products practice claim 1 of the '114 patent and that these products have been commercially successful. (*Id.*)

Samsung argues that Apple has offered no evidence in rebuttal of the following prima facie showing. (*Id.*) Dr. Abowd testified that the '114 patent invention allows users to more easily view and manipulate documents such as web pages and emails by panning the document. (*Id.* (citing Tr. (Abowd) at 3129-32).) This has been implemented on every smartphone released in the last five years and a user would unlikely purchase a smartphone that lacked this capability today. (*Id.*) Thus, argues Samsung, the commercial success of Samsung's domestic products demonstrates that the invention of the '114 patent was not obvious to one of skill in the art. (*Id.* at 164-165.)

### (3) Findings and Conclusions of the Administrative Law Judge

The Administrative Law Judge, having found that the '547 patent anticipates the '114 patent, further finds that a combination of the '547 patent with the '634 patent, or with any of the other three cited prior art references, renders the claims of the '114 patent obvious and, therefore, invalid under 35 U.S.C. § 103(a). Accordingly, the Administrative Law Judge concludes that the evidence cited by Apple and Staff, as recited and discussed above, supports a finding and determination that a person of ordinary skill in the art would have been motivated to combine



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one or more of the several prior art references, as they demonstrably involve similar subject matter.

### C. Validity under Section 101.

Apple says that under the infringement and technical prong arguments advanced by Samsung, the asserted claims of the '348 patent are invalid as directed to unpatentable subject matter, because they purport to cover the use of all (30, 10) subcodes of the second-order Reed-Muller codes, which are a set of purely mathematical relationships. (RBr. at 61.) Apple says the Supreme Court has repeatedly held that such claims are unpatentable attempts to monopolize an abstract idea or mathematical formula. (*Id.* (citing *Bilski v. Kappa*, 130 S. Ct. 3218, 3231 (2010) (mathematical formulas, like algorithms, are unpatentable “abstract idea[s]”)).) To be patentable, argues Apple, the claims must add something inventive beyond this abstract idea, citing *Mayo Collaborative Svcs. V. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1298 (2012):

[T]he [asserted] claims inform a relevant audience about certain laws of nature; and additional steps consist of well understood, routine, conventional activity already engaged in by the scientific community; and those steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately. For these reasons we believe that the steps are not sufficient to transform unpatentable natural correlations into patentable applications of those regularities.

(*Id.* at 62.) In this Investigation, says Apple, Samsung's only attempts to defend the validity of its claims consist of arguments that a (30, 10) subcode of a second-order Reed-Muller code was not known for encoding TFCI information. (*Id.* (citing Tr. (Min) at 3002).) According to Apple, Samsung cannot patent subcodes of second-order Reed-Muller codes, because they are simply sets of mathematical relationships, as described in the MacWilliams textbook. (*Id.* (citing Tr. (Davis) at 1968).)

In response, Samsung says that the inventions of the '348 patent present functional and palpable applications in the field of mobile communications technology. (CRBr. at 37.) The

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inventions disclosed in the '348 patent are far more than merely abstract ideas not tied to any physical embodiment, as Apple claims. (*Id.* at 37-38.) Samsung says the asserted claims of the '348 patent recite specific apparatus for TFCI encoding in a mobile communication system. (*Id.* at 38.) The plain language of the claims of the '348 patent is intimately tied to machines, encoding apparatus and C[D]MA mobile communication systems. (*Id.* (citing JXM-1 at claims 75 and 82 (“A Transport Format Combination Indicator (TFCI) encoding apparatus in a C[D]MA mobile communication system....”))).)

Furthermore, argues Samsung, even if the asserted claims recite formulae, as Apple incorrectly claims, the use of formulae does not render the invention unpatentable subject matter. (*Id.* (citing *In re Comiskey*, 544 F.3d 967, 979 (Fed. Cir. 2009) (“[W]e have found processes involving mathematical algorithms used in computer technology patentable because they claimed practical applications and were tied to specific machines.”))).) The inventors of the '348 patent claimed encoding apparatus in a C[D]MA mobile communication system, not just any algorithm, says Samsung. (*Id.*)

Samsung says the '348 invention's use of software does not bring the asserted claims of the patent outside the permissive categories of patentable subject matter. (*Id.* (citing *Bilski*, 545 F.3d at 943, 954 (reaffirming that a process claim, including a claim that utilizes a mathematical formula or a computer program, is patent-eligible under Section 101 if it “is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to preempt the principle itself”))).) The asserted claims of the '348 patent involve the encoding of data in a CDMA mobile communication system: for example, claim 75 recites a TFCI encoding apparatus that receives control information in a mobile communication system. (*Id.*) The receipt, manipulation, and transmission of cellular communication data cannot be completed via

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“mental steps” alone, argues Samsung. (*Id.* at 38-39.) These steps require intricate and complex computer programming. In addition, these steps require specific application to a mobile communication environment. (*Id.* at 39.)

The Administrative Law Judge concludes that the '348 patent discloses patentable subject matter. The invention concerns an information transmitting apparatus and method for transmitting a transport format combination indicator. (JXM-1 at 1:20-25.) It involves more than mathematical calculations: it provides an apparatus and method for encoding TFCI in an IMT 2000 system that requires rate-matching convolution encoding and decoding. The fact that it involves an encoding process that is included among a broader range of encoding methods that are recognized in the field of encoding generally does not foreclose its application in the field of telecommunications systems and apparatus. The patent does not seek to pre-empt the use of the particular encoding process that is employed as part of the invention, but rather, the specific application of it with respect to mobile communication systems using controllers for encoding input words of a certain length and outputting words of a different length, which are equivalent to the words that were input. This is similar to the Supreme Court's ruling in *Diamond v. Diehr*, 450 U.S. 175, 188 (1981):

[T]he respondents here do not seek to patent a mathematical formula. Instead, they seek patent protection for a process of curing synthetic rubber. Their process admittedly employs a well-known mathematical equation, but they do not seek to pre-empt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process. These include installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time. Obviously, one does not need a “computer” to cure natural or synthetic rubber, but if the computer use incorporated in the process patent significantly lessens the possibility of “overcuring” or “undercuring,” the process as a whole does not thereby become unpatentable subject matter.

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The Court also said: “Our earlier opinions lend support to our present conclusion that a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer.” (*Id.*) The Court also said: While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be. (*Id.*)

The invention of the '348 patent similarly employs a type of formulaic mathematics, but with respect to encoding; however, it does so in the context of methods and apparatus for mobile telecommunication systems involving a TFCI encoding apparatus. This is different from *Bilski* in which the concept of hedging, which was described in claim 1, and was reduced to a mathematical formula in claim 4, was found to be an unpatentable abstract idea and would have allowed the patent applicants to patent risk hedging and would pre-empt use of this approach in all fields, effectively granting a monopoly over an abstract idea. *Bilski*, 130 S. Ct. 3218, 3231 (2010).

For these reasons, the Administrative Law Judge concludes that the arguments raised by Apple do not demonstrate that the invention of the '348 patent is unpatentable subject matter.

### **D. Validity under Section 112**

Apple contends that the asserted claims of the '114 patent are invalid under 35 U.S.C. § 112, paragraph 2. (RBr. at 260.) Apple says that a claim that “recites both a system and the method for using that system...does not apprise a person of ordinary skill in the art of its scope, and it is invalid under section 112, paragraph 2.” (*Id.* (citing *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005)).) Apple asserts that, in *IPXL Holdings*, an apparatus claim contained the limitation “wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction

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type, and the user uses the input means to either change the predicted transaction information or accept the displayed transaction type and transaction parameters.” (*Id.*) Apple says the Federal Circuit held that the claim, which covered both an apparatus and a method of using the apparatus, was indefinite because it was unclear “whether infringement...occurs when one creates a system that allows the user [to use the input means], or whether infringement occurs when the user actually uses the input means.” (*Id.*)

According to Apple, the Federal Circuit also found apparatus claims containing a “wherein” limitation that required the user input to be indefinite in the case of *In re Katz Interactive Processing Patent Litigation*, 639 F.3d 1303, 1318 (Fed. Cir. 2011).) The limitation at issue in *Katz* was “wherein said certain of said individual callers digitally enter data.” (*Id.* at 261.) Relying on the rationale of *IPXL Holdings*, the Federal Circuit found in *Katz* that the claims were indefinite for combining “both an apparatus and a method of use.” (*Id.*) Apple says the Federal Circuit in that case rejected the patentee’s argument that the “wherein” clause merely defined functional capability of the claimed device, rather than a method step, by saying this:

Katz seeks to distinguish *IPXL* on the ground that the term “wherein” does not signify a method step but instead defines a functional capability. We disagree and uphold the district court’s ruling. Like the language used in the claim at issue in *IPXL* (“wherein...the user uses), the language used in *Katz*’s claims (“wherein...callers digitally enter data” and “wherein...callers provide...data”) is directed to user actions, not system capabilities.

(*Id.*)

Apple argues that the same rationale applies in this Investigation. (*Id.*) Apple argues that independent claims 1 and 3 and dependent claim 5 are directed to an apparatus, a computer device, but each claim also includes a “wherein” limitation that, like *IPXL Holdings* and *Katz*, add method-of-use steps that require the user to provide an input to the claimed apparatus—entering a pan command—thereby rendering the claims indefinite, according to the two cited

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cases. (*Id.*) As an example, Apple says that claim 1 is directed to “a computer device” that includes certain components, such as a “processor,” “memory,” “a touch-sensitive display,” “system code,” “an engine.” (*Id.*) However, argues Apple, the “wherein” clause of the claim requires the user to input an actual pan command, and for the claimed engine to actually pan the displayed document “in response” to the input command, states as follows:

Wherein, in response to the command detected by the interface process being a pan command, the engine pans the displayed document on the display at a rate based on the determined velocity vector.

(*Id.* at 261-262 (citing JXM-9 at 16:23-26).)

Therefore, according to Apple, because claim 1 requires an actual user to input an actual pan command (i.e., “the command detected by the interface process being the pan command”) and requires the engine to actually pan in response to that command (“in response...the engine pans”), it improperly combines method-of-use steps into an apparatus claim. For this reason, argues Apple, claim 1 is indefinite as a matter of law, as is claim 2, which depends from claim 1.

(*Id.* at 262 (citing *IPXL Holdings* and *Katz*).)

According to Apple, the same analysis applies to claim 3, an apparatus claim directed to a “computer device” that requires certain components, along with the following “wherein” limitation:

wherein, in response to the command detected by the interface process being the pan command, the engine renders a series of pages of the document on the touch-sensitive display at a rate based on the determined velocity vector and a page inertia.

(*Id.* (citing JXM-9 at 16:52-56).) As in the case of claim 1, this claim requires a user to input a pan command (i.e., “the command detected by the interface process being the pan command”), and requires the engine to render pages on the display in response to that command (i.e., “in