UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

APPLE INC., a California corporation,

Plaintiff,

v.

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

Defendants.

Case No. 11-cv-01846-LHK

REBUTTAL EXPERT REPORT OF DR. KARAN SINGH, PH.D. REGARDING VALIDITY OF U.S. PATENTS NOS. 7,864,163, 7,844,915 AND 7,853,891

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

I. INTRODUCTION

1. I, Dr. Karan Singh, have been asked by counsel for Apple Inc. ("Apple") to provide additional opinions in the above-captioned case. I am the same Dr. Karan Singh who submitted an Expert Report regarding Samsung's infringement of U.S. Patent Nos. 7,864,163 (the "'163 patent"), 7,844,915 (the "'915 patent") and 7,853,891 (the "'891 patent"). I have been asked by counsel for Apple to review and respond to the opinions and assertions made in the Expert Report of Stephen Gray Regarding Invalidity of U.S. Patent Nos. 7,844,915 and 7,864,163 that generally concerns the validity of the '163 and '915 patents, and the Expert Report of Trevor Darrell, Ph.D. Regarding the Invalidity of U.S. Patent Nos. 6,493,002 and 7,853,891 generally concerning the validity of the '891 patent.

II. QUALIFICATIONS

2. I incorporate here by reference the description of my qualifications contained in my Expert Report Regarding Infringement of U.S. Patents Nos. 7,864,163, 7,844,915, and 7,853,891. As in my earlier Expert Report, I am being compensated at my standard hourly consulting rate of $450 and my compensation is in no way dependent upon the opinions I offer or upon the outcome of the litigation between Apple and Samsung.

III. MATERIALS REVIEWED

3. In forming the opinions provided in this Report, I considered the materials described in my Expert Report Regarding Infringement, the additional materials listed in Exhibit A to this Report, and any other materials referenced in this Report. In particular, I have reviewed the '163, '915 and '891 patents and their file histories, the Expert Reports of Dr. Gray and Dr. Darrell and the exhibits to those Reports, at least to the extent they concern the '163, '915 and '891 patents.

4. I have also reviewed the Court's claim construction Order dated April 4, 2012, and I will follow the Court's construction of claim terms for the '915 and '891 patents. I understand that the Court did not construe any claim terms for the '163 patent. I reserve the right to rely on any additional information or materials that may be provided to me or

that are relied on by any of Samsung's experts or witnesses, if called to testify or to give additional opinions regarding this matter.

5. I understand that discovery in this case is continuing, and I may consider additional facts and material produced through discovery to determine whether such additional material has an impact on my opinions. I may amend or supplement this Report as necessary based on such additional information. I reserve the right to supplement my Report if I receive additional information.

6. In addition to the materials specifically identified, I may provide further exhibits to be used at trial to support my opinions. For example, I may use as exhibits various documents produced in this Action that refer or relate to the matters discussed in this Report. I have not yet selected the particular exhibits that might be used. In addition, I may create or assist in the creation of certain demonstrative exhibits to assist in the presentation of my testimony and opinions as described herein or to summarize the same or information cited in this Report. Again, those exhibits have not yet been created.

7. Although I focus below on the particular alleged prior art references cited by Samsung's experts, I am also familiar more generally with the state of the art at the time that the inventions claimed in the '163, '915, and '891 patents were invented. I reserve the right to consider and testify about the general technological and marketplace background at the time of Apple's inventions to place my specific opinions below in context, and to respond to any arguments raised by Samsung's experts about the same.

IV. UNDERSTANDING OF THE LAW

8. I have not been asked to offer an opinion on the law; however, as an expert assisting the Court in determining patent validity, I understand that I am obliged to follow existing law. I have therefore been asked to apply the following legal principles to my analysis of patent validity:

9. My understanding of the law with respect to claim construction is set forth in my Expert Report Regarding Infringement. In addition, as noted above, I will apply any

constructions adopted by the Court in its claim construction order for the '163, '915 and '891 patents.

10. I have been informed by counsel that by United States statute, a patent is presumed valid. I understand that the patent challenger bears the burden of proving invalidity of the patent by clear and convincing evidence.

11. I have been informed by counsel that, for a finding of invalidity of a patent under 35 U.S.C. § 102, which is known as "anticipation," each and every element of a claim, as properly construed, must be found either explicitly or inherently in a single prior art reference, subject to the limitations imposed by § 102 in paragraphs (a)–(g). I understand that under principles of inherency, if the extrinsic evidence makes clear that the prior art necessarily functions in accordance with or includes the claimed limitations, it anticipates. I understand that inherency may not be established by probabilities or possibilities. I also understand that, in order to anticipate a patent claim, a prior art reference must also be enabling, such that a person of ordinary skill in the art could practice the invention without undue experimentation.

12. I have been informed by counsel that a claim is invalid under 35 U.S.C. § 102(a) if the claimed invention was known or used by others in the U.S., or was patented or published anywhere, before the applicant's invention. I further have been informed that a claim is invalid under 35 U.S.C. § 102(b) if the invention was patented or published anywhere, or was in public use, on sale, or offered for sale in the United States, more than one year prior to the filing date of the patent application. And I have been informed that a patent claim is invalid under 35 U.S.C. § 102(e), if an invention described by that claim was described in a U.S. patent granted on an application for a patent by another that was filed in the U.S. before the date of invention for such a claim. A claim is also invalid, as I understand, under 35 U.S.C. §102 (f) if the invention was invented by another prior to the claimed invention. It is also my understanding that a claim is invalid under 35 U.S.C. §102 (g)(2) if, prior to the date of invention for the claim, the invention was made in the U.S. by another who had not abandoned, suppressed or concealed the invention.

13. I have been informed by counsel that a claimed invention is only unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

14. In making a determination of obviousness, I understand that the following factors are to be considered: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness. I understand that a claim of obviousness may be based on one or more references, taken in combination. I understand that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was known in the prior art. There must be a reason for combining the elements in the manner claimed. That is, there must be a showing that a person of ordinary skill in the art at the time of the invention would have thought of either combining two or more references or of modifying a reference to achieve the claimed invention.

15. In determining whether an invention is obvious, I understand that it is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's invention as a template and selecting elements from the references to fill the gaps. In order for a combination of multiple references to be obvious, a person of ordinary skill in the art should have some reason to combine the references. When considering a reference for purposes of an obviousness analysis, the reference must be taken for everything it teaches, including information that diverges from or teaches away from the claimed invention.

16. I also understand that a combination of known elements can be obvious when it does no more than yield predictable results. In other words, where it is obvious to try a particular combination of known elements to solve a problem and there are a finite number of known, predicable solutions, the result is likely the product not of innovation but of ordinary kill and common sense. At the same time, a finding of obviousness may not be proper where the prior art merely provides a person of ordinary skill in the art a promising

field for experimentation. I have further been informed that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just to the patentee, at the time of the invention. I also understand that practical and common sense considerations should guide a proper obviousness analysis.

17. I also understand that the law distinguishes between one of ordinary skill in the art and inventors. Under this distinction, one should not go about determining obviousness by inquiring into what patentees or inventors would have known or would likely have done faced with the revelation of references. A person of ordinary skill in the art is one who thinks along the lines of conventional wisdom and is not one who undertakes to innovate.

18. I have been informed by counsel that secondary indicia of non-obviousness must be considered in an obviousness analysis. Such secondary indicia of non-obviousness may include, for example:

- long-felt and unmet need in the art that was satisfied by the invention of the patent;
- failure of others to achieve the results of the invention;
- commercial success or lack thereof of the products and processes covered by the invention;
- deliberate copying of the invention by others in the field; and
- praise of the invention by others skilled in the art.

19. I have been informed by counsel that the application for a patent must satisfy the written description requirement of 35 U.S.C. § 112. I have been informed that, to satisfy the written description as to a given claim, the disclosure must convey with reasonable clarity to those skilled in the art that, as of the filing date of the patent, the inventor was in possession of the invention as claimed.

20. I understand that a patent specification must conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant

regards as his or her invention. Claims are indefinite if they do not reasonably apprise those skilled in the relevant art of the applicant's intended scope of the invention when read in light of the specification. Claims that reasonably apprise those skilled in the art are, therefore, definite.

21. I understand that a claimed invention must be enabled. A claimed invention is enabled if a person of ordinary skill in the art, in light of everything that would be known to such a person and the information provided or incorporated by reference in the patent specification, would be able to make and use the invention without undue experimentation. I understand that a party challenging validity must prove indefiniteness, lack of a written description, or lack of enablement by clear and convincing evidence.

22. I understand that there are several significant dates that are relevant to my analysis. The first is the date of conception. Specifically, an invention is complete when the inventor(s) has formed a definite and permanent idea of the complete and operative invention, as it is to be applied in practice. I understand that conception must include every feature or limitation of the claimed invention.

23. A second significant date is that of reduction to practice. I understand that there are two types of reduction to practice. An actual reduction to practice requires that the inventor constructed an embodiment or performed a process that met all the limitations of the claim that would work for its intended purpose. A constructive reduction to practice is the filing of a patent application. I understand that for a patentee to be entitled to rely upon a conception date as of the date of invention for purposes of a prior art analysis, he or she must have been reasonably diligent from conception through reduction to practice.

24. The filing date of a patent is the date that the application for the patent was filed with the United States Patent and Trademark Office ("PTO"). That date is printed on the first page of the patent. I understand that, to claim the benefit of the date of an earlier patent application, the earlier application must disclose and support the subject matter of the Asserted Claims.

25. In my opinion, a person of ordinary skill in the relevant art of the '163 and '891 patents at the time of those inventions would have a Bachelor's degree in computer science or electrical engineering, or the equivalent, and one or more years of experience working on designing and/or implementing user interfaces. A person of ordinary skill in the relevant art of the '915 patent at the time of the invention would have a Bachelor's degree in computer science or electrical engineering or an equivalent, and one or more years of experience working with electronic devices with touch screen displays. I meet these requirements for all three patents discussed in this Report. I have interpreted the '163, '915, and '891 patent claims according to how I believe a person of ordinary skill would have understood the claims at the time of the inventions in light of the patent specifications and file histories.

26. My not analyzing or rebutting the asserted invalidity of any claim not asserted to be infringed in my Report Regarding Infringement should not be construed as an agreement or concession on invalidity. If the Court should determine that there is a case or controversy with respect to such claims, I reserve the right to respond to any invalidity arguments raised with respect to these claims by Samsung's experts.

V. THE ASSERTED CLAIMS OF THE '163 PATENT ARE VALID

27. As stated in my Report Regarding Infringement, I understand that the claims of the '163 patent that I analyze below were conceived of by Andre Boule, Scott Forstall, Greg Christie, Stephen O. Lemay, Imran Chaudhri, Richard Williamson, Chris Blumenberg, and Marcel van Os in or before March 2006, and reduced to practice in March/April 2006. I understand that the asserted claims were also constructively reduced to practice in a provisional patent application filed on September 6, 2006 and in U.S. Patent Application No. 11/850,013 filed September 4, 2007.

28. I have reviewed the Expert Report of Stephen Gray Regarding Invalidity of U.S. Patent Nos. 7,844,915 and 7,864,163, including its appendices and exhibits. Mr. Gray cites the following references to support his opinions that the asserted claims of the '163 patent are invalid as anticipated: the LaunchTile Publication, the LaunchTile System, the

XNav System, U.S. Patent No. 7,327,349 to Robbins et al. ("Robbins"), U.S. Patent No. 7,933,632 to Flynt et al. ("Flynt"), and U.S. Patent No. 6,211,856 to Choi et al. ("Choi"). Mr. Gray also cites these references in combination with six other named references to support his opinions that the asserted claims of the '163 patent are invalid as obvious. For the reasons discussed below, it is my opinion that none of these prior art references anticipates any of the claims of the '163 patent that I asserted were infringed in my Expert Report Regarding Infringement. Moreover it is my opinion that none of these references, alone or in combination with one another, renders the asserted claims obvious. Finally, it is my opinion that the asserted claims of the '163 patent are not invalid for lack of written description or enablement, or for indefiniteness.

A. The Asserted Claims of the '163 Patent Are Not Anticipated or Rendered Obvious by the LaunchTile or XNav Systems or the LaunchTile Publication

29. Three of the references that Mr. Gray asserts anticipate the '163 patent—the LaunchTile System, the XNav System, and a publication entitled AppLens and LaunchTile: Two Designs for One-Handed Thumb Use on Small Devices (the "LaunchTile Publication")—are closely related. I understand that the LaunchTile System is a prototype graphical user interface created by Benjamin Bederson and his colleagues for use on mobile devices such as Personal Digital Assistants and cell phones. (Bederson Decl. in Supp. of Samsung's Opp. to Apple's Mot. for Prelim. Inj. at 1.) The LaunchTile Publication describes how aspects of the LaunchTile System function. (*Id.*) The XNav System is a variant of the LaunchTile System that is adapted for use with different devices and operating systems. XNav is based on the same source code as LaunchTile, and it has many of the same features. (*Id.* at 7.)

30. Mr. Gray's own description of LaunchTile, which applies equally to XNav, shows that LaunchTile's functionality is fundamentally different from the functionality claimed in the '163 patent. Mr. Gray describes LaunchTile as follows:

> LaunchTile consisted of an "interactive zoomspace" consisting of 36 application tiles, divided into nine zones of four tiles each. The LaunchTile Publication referred to this "zoomspace" as the

> "World." When the entire zoomspace was in view, the LaunchTile Publication referred to the view as "World View."
>
> The zoomspace included a blue button ("Blue") in the center of each 4-tile "Zone" that could be selected by the user to enlarge and translate the four tiles that were adjacent to the selection button. When enlarged, the four tiles and the selection button [were] referred to as the "Zone View[.]"
>
> From the Zone View, LaunchTile permit[ted] the user to select any one of the 4 application tiles to launch the corresponding application.

(Gray Report at 89-90.) LaunchTile / XNav and the '163 patent address fundamentally different problems: LaunchTile and XNav address the use of a fixed set of applications in a predefined layout, whereas the '163 patent deals with the readability and navigation of arbitrarily sized and structured documents on a small screen.

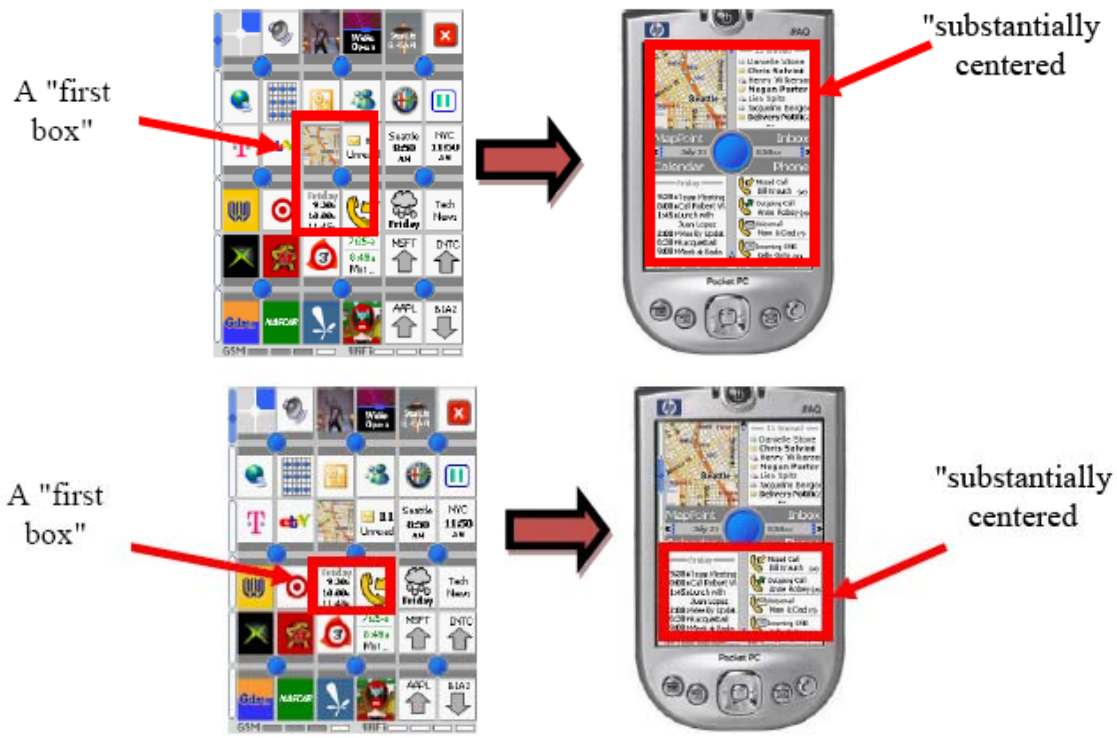
31. LaunchTile, as described above, discloses a method that purposely uses abstraction to provide three different layers of information. At each layer (World, Zoom, and Application) the system displays different content, which is distinct from the content in other layers, notwithstanding the fact that symbolic links may exist between layers (such as text and graphics that comprise, for example, an email icon in the Zone View launching a corresponding, but separate, email Application). By contrast, the '163 patent claims a method for viewing the content of the same structured electronic document effectively on a portable device's screen, even when the screen does not naturally accommodate the document's size. The '163 patent describes scaling and translating a structured electronic document to better allow a user to focus on different portions of it, but it is, at all relevant times, the same electronic document that is displayed on the screen. In contrast, moving to a different layer in LaunchTile and XNav does not merely enlarge or translate a structured electronic document, but instead displays different and additional content. For at least these reasons, LaunchTile and XNav do not anticipate claims 2, 6-7, 10, 12-13, 17-18, 27, 29-30, 32-35, 37-41, or 49-52. Mr. Gray's obviousness arguments that urge combinations with LaunchTile and XNav are addressed below in connection with the claims to which they apply.

1. Claim 2: "detecting a first gesture at a location on the displayed portion of the structured electronic document; determining a first box in the plurality of boxes at the location of the first gesture; enlarging and translating the structured electronic document so that the first box is substantially centered on the touch screen display"

32. I disagree with Mr. Gray's determination that LaunchTile and XNav disclose claim 2's recitation of "detecting a first gesture at a location on the displayed portion of the structured electronic document; determining a first box in the plurality of boxes at the location of the first gesture; enlarging and translating the structured electronic document so that the first box is substantially centered on the touch screen display."

33. The unambiguous language of claim 2 requires that the "structured electronic document" that is "enlarge[ed] and translate[ed]" (such that the enlarged portion of it is "substantially centered on the touch screen display") must be the same structured electronic document that includes a location where "a first gesture" is detected and "a first box" is determined. LaunchTile and XNav fail to disclose this recitation of claim 2 because the different zoom levels in LaunchTile and XNav do not display the same structured electronic document. In LaunchTile and XNav, the "substantially centered" Zone View is entirely distinct from the World View, or portion of it, that is initially displayed and tapped on by the user.[1] Transitioning from the World View to the Zone View does not involve "enlarging and translating" a portion of the World View. Rather, a Zone View entirely replaces the World View that was previously displayed. This replacement functionality is apparent in all of the LaunchTile screenshots included in part [2b] of the claim chart attached as Appendix 7 to Mr. Gray's report, which clearly show that the Zone View is not merely a translated and enlarged version of the World View, but entirely different content with a different visual appearance:

[1] I express no opinion as to whether the portions of the World View, Zone View, and Application View displayed by LaunchTile and XNav individually constitute "structured electronic documents" within the meaning of the '163 patent. Because it is clear that the different Views display distinct content, they cannot be the same structured electronic document.



Note, for example, that the single phone icon in the World View becomes a list of calls in the Zone View; the email and calendar cells similarly become detailed lists in the Zone View where they were merely iconic representations in the World View. The difference is more than mere enlargement and translation; it is substitution of entirely different content.

34. A review of the XNav source code confirms that the Zone View displays different content, not merely an enlarged and translated version of content displayed in the World View. Specifically, the XNav code calls entirely different graphical assets when a transition is made from World View to Zone View, rather than enlarging the World View graphical assets. (*See* Landscape.cs in Bederson Decl. in Supp. of Samsung's Opp. to Apple's Mot. for Prelim. Inj., Ex. G (hereinafter XNav Source Code Exhibit).)

2. Claim 2: "while the first box is enlarged, a second gesture is detected on a second box other than the first box; and in response to detecting the second gesture, the structured electronic document is translated so that the second box is substantially centered on the touch screen display"

35. I disagree with Mr. Gray's determination that LaunchTile and XNav disclose claim 2's recitation of "while the first box is enlarged, a second gesture is detected on a

second box other than the first box; and in response to detecting the second gesture, the structured electronic document is translated so that the second box is substantially centered on the touch screen display."

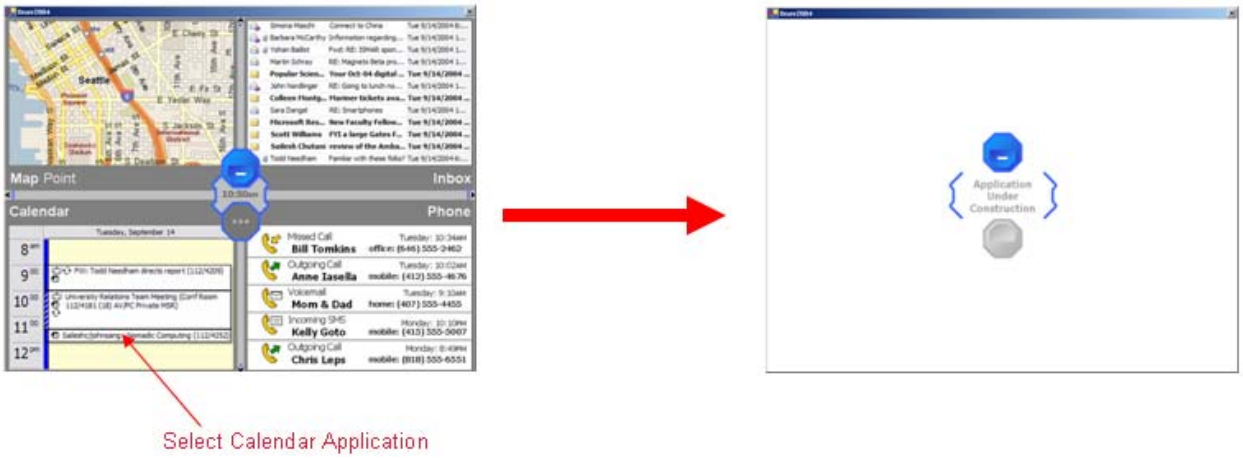
36. Mr. Gray provides the following support seeking to establish that LaunchTile and XNav disclose this recitation of claim 2:

> In both the LaunchTile and XNav systems, the user "taps any of the 4 notification tiles within Zone view to launch a corresponding application." Therefore, in response to a second gesture (user tap) at the location of a second box (notification tile), "[a]n animated zoom draws the zoomspace toward the user until the target application fills the entire display . . . ." See LaunchTile Publication at 205.

(Gray Report Appendix 7 at 5.) Mr. Gray advances several alternative theories in part [2c] of the Appendix 7 claim chart that differ slightly in how the "first box" is defined or in the precise series of steps that precede tapping on a notification tile. But all of these alternatives define the "second box" as a notification tile in the Zone View, which is allegedly "substantially centered" when the user taps on it and launches the corresponding Application.

37. In my opinion, the transition from Zone View to Application View in LaunchTile and XNav fails to disclose this recitation of claim 2 for reasons analogous to those discussed in the previous section (there, in connection with the World View-to-Zone View transition): Zone View and Application View do not display the same structured electronic document. Rather, an Application, such as the email application that Mr. Gray uses as his example (Gray Report Appendix 7 at 5-8), displays content entirely distinct from anything displayed in the Zone View. As a result, any centering of content displayed in the Application View has no bearing on the "second box" defined in the Zone View, which is defined with respect to a different electronic document. The Application View displays separate content, which is not the result of merely "translat[ing]," as claim 2 requires, any electronic document visible in the Zone View. The unimplemented Applications in the LaunchTile and XNav prototypes—which include 33 of the 36 notification tiles (all except the email application that Mr. Gray uses as his example and two others)—provide the best

illustration of the fact that the Zone View and the Application View display entirely distinct content. Selecting a notification tile in Zone View that corresponds to an unimplemented Application results in the display of a placeholder screen—shared by all of the unimplemented Applications—that says "Application Under Construction." It is readily apparent that no notification tile in Zone View displays this text, so it cannot be the case that an Application View displaying this text is the result of merely "translat[ing]" any electronic document displayed in Zone View.



As shown above, selecting the unimplemented Calendar Application in XNav brings up a mostly blank screen with the text "Application Under Construction" on it.

38. My review of XNav source code confirms that each Application View displays content distinct from anything displayed in Zone View. As with the transition from World View to Zone View, the transition from Zone View to display of an Application involves completely different graphical assets, rather than translation of the same graphical assets. (*See* Landscape.cs and EmailListNode.cs in XNav Source Code Exhibit.)

3. Claim 4: "The method of claim 2, wherein the structured electronic document is a web page."

39. In my opinion, LaunchTile and XNav do not expressly or inherently practice the method of claim 2 wherein the structured electronic document is a web page.

40. I disagree with Mr. Gray's assertion that it would have been obvious to one of ordinary skill in the art to combine LaunchTile with U.S. Patent Application 2002/0030699, filed by Van Ee ("Van Ee"), U.S. Patent Application 2004/0107403, filed by Tetzchner

rather starts processing such operations immediately (and can, for this period, even switch between them.).

172. Similarly, Mr. Gray's citation to a DiamondTouch device driver setting update_period is incorrect because update_period is not used to "determine whether the event object invokes a scroll or gesture operation," but instead indicates a period of time that the device waits for any user input. (*See* dt_io_win32.c, lines 477-481 and 563-582; Gray Report Appendix 3.6.) This time period is not used to determine any operation.

7. Claims 6-7.

173. Claims 6-7 depend on claim 1 and are valid for at least the same reasons.

8. Claims 8-14.

174. Claims 8-14 are apparatus claims that are similar to the methods in claims 1-7. Mr. Gray fails to raise any new invalidity arguments for claims 8-14. In my opinion, each of these claims is valid for the reasons explained in claims 1-7 above.

9. Claims 15-21.

175. Claims 15-21 are apparatus claims that are similar to the methods in claims 1-7. Mr. Gray fails to raise any new invalidity arguments for claims 15-21. In my opinion, each of these claims is valid for the reasons explained in claims 1-7 above.

B. The Asserted Claims of the '915 Patent Are Not Anticipated by Japanese Patent Publication No. 2000-163031A ("Yosuhiro")

176. In my opinion, Yosuhiro does not anticipate or render obvious the '915 patent.

1. Claim 1: "creating an event object in response to the user input;"

177. Yosuhiro fails to disclose "creating an event object in response to the user input." Mr. Gray fails to cite any portion of Yosuhiro as disclosing this feature, and my careful review of Yosuhiro indicates that no event object is present. Mr. Gray instead alleges that "inherently, Yosuhiro had to store the user input data in an event object or other similar structure." I understand that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. By acknowledging

that "Yosuhiro had to store the user input data in an event object *or other similar structure*," Mr. Gray admits that an "event object" is only one of multiple structures that can be used by Yosuhiro. (Emphasis added.) For example, I note that Yosuhiro may not be designed or implemented using object-oriented programming, may not use an "event" recognition system to handle incoming data, or may not implement a unified API to handle "events." Additionally, Yosuhiro would not be designed with an "event object" associated with a view, as explained further below. Indeed, Mr. Gray points out at paragraph 266 that he does not know of an "event object" that "invokes" a function, a position that is inconsistent with his position that an "event object" would inherently be the only way to handle this function. Thus, Yosuhiro fails to inherently disclose "creating an event object in response to the user input," as required by claim 1.

2. Claim 1: "determining whether the event object invokes a scroll or gesture operation by distinguishing between a single input point applied to the touch-sensitive display that is interpreted as the scroll operation and two or more input points applied to the touch-sensitive display that are interpreted as the gesture operation;"

178. As explained above, Yosuhiro fails to disclose an "event object," and thus also fails to disclose this feature of claim 1.

3. Claim 1: "issuing at least one scroll or gesture call based on invoking the scroll or gesture operation;"

179. Yosuhiro fails to disclose "at least one scroll or gesture call." Mr. Gray fails to cite any portion of Yosuhiro as disclosing this feature, and my careful review of Yosuhiro indicates that no "scroll or gesture call" is present.

180. Mr. Gray instead alleges that "inherently, Yosuhiro had to issue at least one scroll or gesture call based on invoking the scroll or gesture operation in order for the system to work as described in the Yosuhiro application." I understand that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Issuing a "scroll or gesture call" is only one of many possible ways for causing a device to operate as described by Yosuhiro. For example, I note that Yosuhiro may

198. In contrast, SmartSkin discloses a touch-sensitive table on which an image is projected by a projector. (*See, e.g.,* Gray Report Ex. V (SmartSkin) at Figure 1.) The projector and the touch-sensitive table are not "integrated with the device," and thus fail to disclose the "touch-sensitive display that is integrated with the device" as recited by claim 1.

2. Claim 1: "creating an event object in response to the user input;"

199. SmartSkin also fails to disclose "creating an event object in response to the user input." Mr. Gray fails to cite any portion of SmartSkin as disclosing this feature. Instead, Mr. Gray alleges that "inherently, the SmartSkin system had to store the user input data in an event object or other similar structure." By acknowledging that "the SmartSkin system had to store the user input data in an event object *or other similar structure*," Mr. Gray admits that an "event object" is only one of multiple structures that can be used by the SmartSkin system. (Emphasis added.) Thus, SmartSkin fails to inherently disclose "creating an event object in response to the user input," as required by claim 1.

3. Claim 1: "determining whether the event object invokes a scroll or gesture operation by distinguishing between a single input point applied to the touch-sensitive display that is interpreted as the scroll operation and two or more input points applied to the touch-sensitive display that are interpreted as the gesture operation;"

200. As explained above, SmartSkin fails to disclose an "event object," and thus also fails to disclose this feature of claim 1.

4. Claim 1: "issuing at least one scroll or gesture call based on invoking the scroll or gesture operation;"

201. SmartSkin fails to disclose "at least one scroll or gesture call." Mr. Gray fails to cite any portion of SmartSkin as disclosing this feature, and my careful review of SmartSkin indicates that no "scroll or gesture call" is present.

202. Mr. Gray instead alleges that "inherently, SmartSkin had to issue at least one scroll or gesture call based on invoking the scroll or gesture operation in order for the system to work as described in the SmartSkin paper." I understand that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of

ordinary skill. Issuing a "scroll or gesture call" is only one of many possible ways for causing a device to operate, as described by SmartSkin. For example, I note that SmartSkin may not be designed or implemented using object-oriented programming, may not use an "event" recognition system to handle incoming data, or may not implement a unified API to handle "events." Additionally, SmartSkin may not be designed with an "event object" associated with a view, as explained further below. Indeed, Mr. Gray points out at paragraph 266 of his report that he does not know of an "event object" that "invokes" a function, a position that is inconsistent with his position that an "event object" would inherently be the only way to handle this function. Thus, SmartSkin fails to inherently disclose "issuing at least one scroll or gesture call based on invoking the scroll or gesture operation," as required by claim 1.

5. Claim 1: "responding to at least one scroll call, if issued, by scrolling a window having a view associated with the event object based on an amount of a scroll with the scroll stopped at a predetermined position in relation to the user input;"

203. As explained above, SmartSkin fails to disclose an "event object" and "at least one scroll or gesture call," and thus also fails to disclose this feature of claim 1.

204. Furthermore, SmartSkin fails to disclose a "view associated with the event object." The '915 patent describes a user interface system and an API that keep track of which window or view is contacted by a user input by associating event objects to a view. (*See, e.g.*, '915 patent at 7:4-26.) The function call corresponding to the user input, *e.g.*, a gesture call, is sent to the software application associated with the view such that it is not necessary to determine which application should be activated each time a user input is received on a particular area of the display. (*See*, *e.g.*, *id.* at 12:29-54.) In contrast, SmartSkin may be directed to a more primitive system that lacks the advanced feature of associating a view with an event object and a software application, as I explain above with respect to Yosuhiro. Therefore, in my opinion, SmartSkin fails to disclose a "view associated with the event object."

multiPointViewTransf is an object "that is populated with incoming data from the FTIR Sense software." The cited portions fail, however, to show that multiPointViewTransf is an "event object" created in response to the user input being received by the touch sensitive device as required by claim 1. For example, as explained below, Mr. Gray fails to show that multiPointViewTransf is an object used to distinguish between a single input point and two or more input points applied to the touch-sensitive table.

3. Claim 1: "determining whether the event object invokes a scroll or gesture operation by distinguishing between a single input point applied to the touch-sensitive display that is interpreted as the scroll operation and two or more input points applied to the touch-sensitive display that are interpreted as the gesture operation;"

223. Han fails to disclose this feature. At most, the Han TED video may show panning images using a single finger and scaling/rotating using multiple fingers. The Han video fails to disclose *how* the determination is made to pan or scale/rotate, let alone that the determination is made using the number of input points applied to the touch-sensitive table.

224. I further note that, despite citing to Jefferson Han's source code for other limitations, Mr. Gray does not cite to *any* source code for "determining whether the event object invokes a scroll or gesture operation by distinguishing between a single input point applied to a touch-sensitive display that is interpreted as the scroll operation and two or more input points applied to the touch-sensitive display that are interpreted as the gesture operation." I also examined Mr. Gray's cited source code and did not identify any code showing this limitation. (*See* Photoboard code at HAN00253-00270.) Thus, the Han system does not perform this limitation.

4. Claim 1: "issuing at least one scroll or gesture call based on invoking the scroll or gesture operation;"

225. Han fails to disclose "at least one scroll or gesture call." Mr. Gray fails to cite any portion of the Han system or its source code as disclosing this feature, and my careful review of Han indicates that no "scroll or gesture call" is present.

226. Mr. Gray instead alleges that "inherently, the Jefferson Han multi-touch system had to issue at least one scroll or gesture call based on invoking the scroll or gesture

operation in order for the system to work as described in Han's articles and videos." I understand that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Issuing a "scroll or gesture call" is only one of many possible ways for causing a device to operate as described by Han. For example, I note that Han may not be designed or implemented using object-oriented programming, may not use an "event" recognition system to handle incoming data, or may not implement a unified API to handle "events." Indeed, Mr. Gray points out at paragraph 266 that he does not know of an "event object" that "invokes" a function, a position that is inconsistent with his position that an "event object" would inherently be the only way to handle this function. Thus, Han fails to inherently disclose "issuing at least one scroll or gesture call based on invoking the scroll or gesture operation," as required by claim 1.

5. Claim 1: "responding to at least one scroll call, if issued, by scrolling a window having a view associated with the event object based on an amount of a scroll with the scroll stopped at a predetermined position in relation to the user input;"

227. As explained above, Han fails to disclose an "event object" and "at least one scroll or gesture call," and thus also fails to disclose this feature of claim 1.

228. Han fails to disclose "scrolling a window having a view associated with the event object based on an amount of a scroll with the scroll stopped at a predetermined position in relation to the user input," as required by claim 1. (Emphasis added.) At best, Han shows that panning can be performed with one or more fingers, but fails to provide specific details regarding the stop location of the scroll with respect to the user input. (*See, e.g.*, Gray Report Ex. W (Han Multi-Touch Interactive Wall) at 1.)

6. Claim 1: "responding to at least one gesture call, if issued, by scaling the view associated with the event object based on receiving the two or more input points in the form of the user input."

229. As explained above, Han fails to disclose an "event object" and "at least one scroll or gesture call," and thus also fails to disclose this feature of claim 1.

commercially successful and have garnered widespread praise for their elegant and user-friendly interfaces.

E. The Asserted Claims of the '891 Patent are Not Invalid as Indefinite Under 35 U.S.C. § 112 ¶ 6

310. I disagree with Dr. Darrell's opinion that claims 51-52, 55-56, 64-71, and 73-74 are indefinite because the specification of the '891 patent lacks corresponding structure to adequately identify the scope of these claims.

311. It is my opinion that there is sufficient disclosure of structure in the '891 patent specification for performing the functionality claimed in these means-plus-function claims. I have identified the physical components (such as hardware) and the algorithmic components (such as flow diagrams) of structure in the '891 patent specification associated with each element of claims 51-52, 55-56, 64-71, and 73-74 in my Expert Report Regarding Infringement. (See Expert Report of Karan Singh, Ph.D. Regarding Infringement of U.S. Patents Nos. 7,864,163, 7,844,915 and 7,853,891 at 154-165.) The relevant disclosed structure includes at least the text at 2:42-3:14, 3:45-50, 4:28-5:31, 5:54-6:8, 6:21-40, 7:7-50, and 8:4-9:63 and Figures 1, and 7-21. This structure is, in my opinion, sufficient to render claims 51-52, 55-56, 64-71, and 73-74 definite, and therefore not invalid under 35 U.S.C. § 112 ¶ 6.

Dated: April 16, 2012

/s/ Karan Singh