

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS

AMERICA, INC. AND APPLE, INC.,

Petitioners

v.

NEONODE SMARTPHONE LLC,

Patent Owner

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Case IPR2021-00145

U.S. Patent No. 8,812,993

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**DECLARATION OF CRAIG ROSENBERG, Ph.D.**

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1. I, Craig Rosenberg, Ph.D., declare as follows:

## I. INTRODUCTION

2. I have been retained by Neonode Smartphone LLC (“Respondent”) as an independent expert consultant in this *inter partes* review (“IPR”) proceeding before the United States Patent and Trademark Office (“PTO”).

3. I have been asked by Respondent’s counsel (“Counsel”) to consider whether certain references cited by Samsung and Apple (“Petitioners”) in combination render Claim 1 of U.S. Patent No. 8,812,993 (“the ‘993 Patent”) obvious (EX1001). My opinions and the bases for my opinions are set forth below.

4. I am being compensated at my ordinary and customary consulting rate for my work, which is \$450 per hour. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no financial interest in this proceeding.

## II. QUALIFICATIONS

5. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. In forming my opinions, I have relied on my knowledge and experience in human factors, user interface design, user interaction design, human-computer interaction, and software engineering.

6. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. My qualifications to testify about the '993 patent and the relevant technology are set forth in my curriculum vitae ("CV"), which I have included as EX2002. In addition, a brief summary of my qualifications is included below,

7. I hold a Bachelor of Science in Industrial Engineering, a Master of Science in Human Factors, and a Ph.D. in Human Factors from the University of Washington School of Engineering. For 30 years, I have worked in the areas of human factors, user interface design, software development, software architecture, systems engineering, and modeling and simulation across a wide variety of application areas, including aerospace, communications, entertainment, and healthcare.

8. I graduated from the University of Washington in 1988 with a B.S. in Industrial Engineering. After graduation, I continued my studies at the University of Washington. In 1990, I obtained an M.S. in Human Factors. In 1994, I graduated with a Ph.D. in Human Factors. In the course of my doctoral studies, I worked as an Associate Assistant Human Factors Professor at the University of Washington Industrial Engineering Department. My duties included teaching, writing research proposals, designing and conducting funded human factors experiments for the National Science Foundation, as well as hiring and supervising

students. While studying at the University of Washington, I also worked as a human factors researcher and designed and performed advanced human factors experiments relating to virtual environments and interface design, stereoscopic displays, and advanced visualization research, which was funded by the National Science Foundation. My duties included user interface design, systems design, software development, graphics programming, experimental design, as well as hardware and software interfacing.

9. I have published twenty-one research papers in professional journals and proceedings in the areas of user interface design, computer graphics, and the design of spatial, stereographic, and auditory displays. I also authored a book chapter on augmented reality displays in the book “*Virtual Environments and Advanced Interface Design*” (Oxford University Press, 1995). In addition, I created one of the first virtual spatial musical instruments called the MIDIBIRD that utilized the MIDI protocol, two six-dimensional spatial trackers, a music synthesizer, and a computer graphics workstation to create an advanced and novel musical instrument.

10. For the past 21 years, I have served as a consultant for Global Technica, Sunny Day Software, Stanley Associates, Tchrizon, CDI Corporation, and the Barr Group. In this capacity, I have provided advanced engineering services for many companies.

11. I consulted for the Boeing Company for over 16 years as a senior human factors engineer, user interface designer, and software architect for a wide range of advanced commercial and military programs. Many of the projects that I have been involved with include advanced software development, user interface design, agent-based software, and modeling and simulations in the areas of missile defense, homeland security, battle command management, computer aided design, networking and communications, air traffic control, location-based services, and Unmanned Aerial Vehicle (“UAV”) command and control. Additionally, I was the lead system architect developing advanced air traffic controller workstations and air traffic control analysis applications, toolsets, and trade study simulations for Boeing Air Traffic Management.

12. I was also the architect of the Boeing Human Agent Model. The Boeing Human Agent Model is an advanced model for the simulation of human sensory, cognitive, and motor performance as applied to the roles of air traffic controllers, pilots, and UAV operators. In another project, I was the lead human factors engineer and user interface designer for Boeing’s main vector and raster computer aided drafting and editing system that produces the maintenance manuals, shop floor illustrations, and service bulletins for aircraft produced by the Boeing Commercial Aircraft Company. Additional responsibilities in my time as a consultant include system engineering, requirements analysis, functional

specification, use case development, user stories, application prototyping, modeling and simulation, object-oriented software architecture, graphical user interface analysis and design, as well as UML, C++, C#, and Java software development.

13. In 1995 and 1996, I was hired as the lead human factors engineer and user interface designer for the first two-way pager produced by AT&T. Prior to this technology, people could receive pages but had no way to respond utilizing their pager. This new technology allowed users to use a small handheld device to receive and send canned or custom text messages, access and update an address book, and access and update a personal calendar. This high-profile project involved designing the entire feature set, user interface/user interaction design and specification, as well as all graphical design and graphical design standards.

14. From 1999–2001, I was the lead human factors engineer and user interface designer for a company called Eyematic Interfaces that was responsible for all user interface design and development activities associated with real-time mobile handheld 3D facial tracking, animation, avatar creation and editing software for a product for Mattel. My work involved user interface design, human factors analysis, requirements gathering and analysis, and functional specifications.

15. In 2001, I was the lead user interface designer for a company called Ahaza that was building IPv6 routers. I designed the user interfaces for the

configuration and control of these advanced network hardware devices. My responsibilities included requirements analysis, functional specification, user interface design, user experience design, and human factors analysis.

16. In 2006-07, I was the lead user interface designer for a company called ObjectSpeed that developed a portable handheld telephone for use in homes and businesses that had many of the same capabilities that we take for granted in mobile cellular phones. This portable multifunction device supported voice, email, chat, video conferencing, internet radio, streaming media, Microsoft Outlook integration, photo taking and sharing, etc. The ObjectSpeed device was specifically designed and developed as a portable handheld device.

17. I am the founder, inventor, user interface designer, and software architect of WhereWuz. WhereWuz is a company that produces advanced mobile software running on GPS-enabled smartphones and handheld devices. WhereWuz allows users to record exactly where they have been and query this data in unique ways for subsequent retrieval based on time or location. WhereWuz was specifically designed and developed to run on small handheld devices.

18. I am the co-founder of a medical technology company called Healium. Healium developed advanced wearable and handheld user interface technology to allow physicians to more effectively interact with electronic medical records.

19. I am the co-founder of a medical technology company called StratoScientific. StratoScientific is developing an innovative case for a smartphone that turns a standard handheld smartphone into a full featured digital stethoscope that incorporates visualization and machine learning that can be utilized for telemedicine and automated diagnosis.

20. In 2012-13, I designed and developed a large software project for Disney World called xVR that allowed the operational employees of Disney World to utilize a handheld device to view the current and historical status of all of the guests of Disney World within multiple attractions as well as within one of their restaurants. The application could run in a real-time/live mode where it would display data collected from sensors that showed the location and status of all guests within the attraction; the application could also be run in a fast-time/simulated mode. The application was developed on a laptop computer and was specifically designed to run on a variety of devices, including laptops, PCs, smartphones, and tablets.

21. I have received several awards for my engineering work relating to interface design, computer graphics, and the design of spatial, stereographic, and auditory displays, including a \$10,000 scholarship from the I/ITSEC for advancing the field of interactive computer graphics for flight simulation and a Link Foundation award for furthering the field of flight simulation and virtual interface

design. I have also created graphics for several popular book covers as well as animations for a movie produced by MIRAMAR.

### III. TESTIFYING EXPERIENCE

- *Foursquare Labs v. Silver State Intellectual Technologies*, IPR2014-00159
- *Silver State Intellectual Technologies v. Garmin*, District of Nevada, 2:11-cv-01578-PMP-PAL
- *Select Retrieval v. Overstock*, District of Delaware, 1:11-cv-00812-RGA
- *Location Labs v. LocatioNet*, IPR2014-00199
- *Intellectual Ventures v. Google*, IPR2014-00787
- *FTC v. Amazon*, 2:14-cv-01038-JCC (Eastern District of Texas)
- *Valmont v. Lindsay*, IPR2015-01039
- *Ford Class Action*, 13-cv-3072-EMC (N.D. California.)
- *BeUbiq v. Curtis Consulting Group*, 1-14-cv-270691 (S.D.N.Y.)
- *Edulog v. DML*, DV-06-1072 (Montana Fourth Judicial Court, Missoula)
- *GEMSA v. Alibaba*, 6:16-cv-00098 (M.D. Florida)
- *Level One Technologies v. Penske Truck Leasing*, 4:14-cv-1305-RWS (E.D. Missouri)
- *Title Source v. HouseCanary*, 016-CI-06300 (Texas Dist. (state court), Bexar Co.)
- *Sony v. Arris, Pace*, 337-TA-1049 (International Trade Commission case)
- *Tatsoft v. InduSoft*, D-1-GN-14-001853 (Texas state court case)

- *Courthouse News Service v. Yamasaki*, 8:17-cv-00126 AG (KESx) (C.D. Cal.)
- *Princeton Digital Image Corp. v. Konami*, 12-1461-LPS-CJB (D. Del)
- *FCA US LLC Monostable Electronic Gearshift Litigation*, 16-md-02744 (E.D. Michigan)
- *Barbaro Technologies, LLC. v. Niantic, Inc.*, 3:18-cv-02955-RS (N.D. California)
- *Blackberry Limited. v. Facebook, Inc.*, 2:18-cv-01844 (C.D. California)
- *Blackberry Limited. v. Snap, Inc.*, 2:18-cv-02693 (C.D. California)
- *Saracen LLC v. Marginal Unit, Inc.*, 4:18-cv-3714 (S.D. Texas)
- *Fidelity Information Services, LLC v. Groove Digital, Inc.*, IPR2019-00050
- *U.S. Oil & Refining Co., v. City of Tacoma*, 18-2-07232-3 (Superior Court of Washington)
- *X One v. Uber*, 5:16-CV-06050-LHK (N.D. California, San Jose Div.)
- *Kipu Systems, LLC v. ZenCharts, LLC*, 1:17-cv-24733-KMW-EGT (S.D. Florida)
- *Maxell, LTD., v. Apple Inc.*, 5:19-cv-0036-RWS (E.D. Texas)
- *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 3:15-cv-00164-J-IOMCR (M.D. Florida)
- *Universal Electronics Inc. v. Roku, Inc.*, 337-TA-1200 (I.T.C)

#### IV. INFORMATION CONSIDERED

22. In preparing this declaration, I have considered the materials discussed in this declaration, including, for example, the ‘993 Patent, the references cited by the ‘993 Patent, the prosecution histories of the ‘993 Patent and

applications derived therefrom (including the references cited therein), various background articles and materials referenced in this declaration, and the prior art references identified in this declaration. And my opinions are further based on my education, training, experience, and knowledge in the relevant field.

23. In addition, I have considered the exhibits filed concurrently with my declaration, including the following:

<b>Exhibit Number</b>	<b>Description</b>
<b>Exhibit 2003</b>	MicroTouch Mac-‘n-Touch Technical Data Sheet
<b>Exhibit 2004</b>	US Patent No. 5,406,307 (Hirayama, et al.)

## V. RELEVANT LEGAL STANDARDS

24. I am not an attorney and offer no legal opinions. For the purposes of this Declaration, I have been informed about certain aspects of the law that are relevant to my analysis, as summarized below.

### A. Claim Interpretation

25. I have been informed and understand that in an IPR proceeding, claims are to be interpreted according to the *Phillips* claim construction standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). I have been informed and understand that claim construction is a matter of law and that the final claim

constructions for this proceeding will be determined by the Patent Trial and Appeal Board (“PTAB”).

**B. Perspective of one of Ordinary Skill in the Art**

26. I have been informed and understand that a patent is to be understood from the perspective of a hypothetical “person of ordinary skill in the art” (“POSA”). Such an individual is considered to possess normal skills and knowledge in a particular technical field (as opposed to being a genius). I understand that in considering what the claims of a patent require, what was known prior to that patent (prior art), what a prior art reference discloses, and whether an invention is obvious or not, one must use the perspective of such a POSA.

**C. Obviousness**

27. I have been informed and understand that a patent claim is obvious under 35 U.S.C. § 103, and is therefore invalid, if the claimed subject matter, as a whole, would have been obvious to a POSA as of the date of the invention claimed in the patent based on one or more prior art references and/or the knowledge of a POSA.

28. I understand that an obviousness analysis must consider (1) the scope and content of the prior art, (2) the differences between the claims and the prior art, (3) the level of ordinary skill in the pertinent art, and (4) secondary considerations,

if any, of non-obviousness (such as unexpected results, commercial success, long felt but unmet need, failure of others, copying by others, and skepticism of experts.

29. I understand that a prior art reference may be combined with other references to disclose each element of the invention under 35 U.S.C. § 103. I understand that a reference may also be combined with the knowledge of a POSA, and that this knowledge may be used to combine multiple references. I further understand that a POSA is presumed to know the relevant prior art. I understand that the obviousness analysis may take into account the inferences and creative steps that a POSA would employ.

30. In determining whether a prior art reference would have been combined with other prior art or other information known to a POSA, I understand that the following principles may be considered:

- a. whether the references to be combined involve non-analogous art;
- b. whether the references to be combined are in different fields of endeavor than the alleged invention in the Patent;
- c. whether the references to be combined are reasonably pertinent to the problems to which the inventions of the Patent are directed;
- d. whether a POSA would have been motivated to combine the specified references, and would have had a reasonable expectation of success in doing so;
- e. whether a reference “teaches away” from a particular combination or solution;

- f. whether the combination requires modifications that render the prior art unsatisfactory for its intended use;
- g. whether the combination requires modifications that change the principle of operation of the reference;
- h. whether the combination is of familiar elements according to known methods that yields predictable results;
- i. whether a combination involves the substitution of one known element for another that yields predictable results;
- j. whether the combination involves the use of a known technique to improve similar items or methods in the same way that yields predictable results;
- k. whether the combination involves the application of a known technique to a prior art reference that is ready for improvement, to yield predictable results;
- l. whether the combination is “obvious to try;”
- m. whether the combination involves the known work in one field of endeavor prompting variations of it for use in either the same field or a different one based on design incentives or other market forces, where the variations are predictable to a POSA;
- n. whether there is some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill in the art to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention;
- o. whether the combination is reasonably expected to be a success; and
- p. whether the combination possesses the requisite degree of predictability at the time the invention was made.

31. I understand that in determining whether a combination of prior art references renders a claim obvious, it is helpful to consider whether there is some teaching, suggestion, or motivation to combine the references and a reasonable

expectation of success in doing so. I understand, however, that a teaching, suggestion, or motivation to combine is not required.

**D. Summary of my Opinions**

32. I have been asked to consider whether the claims of the '993 Patent identified in the Petition are unpatentable for the reasons asserted in the Petition and in Dr. Bederson's declaration. As explained below in detail in this declaration, it is my opinion that none of the claims of the '993 Patent identified in the Petition and in Dr. Bederson's declaration are unpatentable for the reasons asserted therein.

**VI. THE '993 PATENT**

**A. Priority Date.**

33. I assume that the priority date for the invention claimed in the '993 Patent is December 10, 2002. Accordingly, when I reference the knowledge of a POSA, or how a POSA would understand various disclosures, I do so as of December 10, 2002. If the priority date of the '993 Patent were to be determined to be an earlier date in 2002, or in 2000 or 2001, my opinions expressed herein would not change.

**B. Level of Skill Ordinary in the Art.**

34. Dr. Bederson contends that "A POSA for the '993 patent during the relevant time period would have had at least a bachelor's degree in computer science, computer engineering, or the equivalent education and at least two years

of experience in user-interface design and development. Additional years of experience could substitute for formal education, and vice versa.” For the purpose of this declaration, I will apply the same definition of the level of skill of a POSA.

35. Based on my experience, education, and training, I met the definition of a POSA in December 2002, the time of filing of the application that issued as the '993 Patent. I also had greater knowledge and experience than a POSA. I worked with POSAs in 2002, and I am able to render opinions from the perspective of a POSA based on my knowledge and experience. My opinions concerning the '993 Patent claims and the prior art are from the perspective of a POSA, as set forth above.

### **C. Claim Construction**

36. I interpret the claims of the '993 Patent according to the *Phillips* claim construction standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). I have reviewed the specification and file history of the '993 patent from the point of view of a POSA, which informs my understanding of the scope of the claims.

## **VII. DETAILED EXPLANATION OF PATENTABILITY**

37. This declaration focuses on the obviousness combinations that Petitioners assert for Claim 1 of the '993 patent, as supported by the Declaration of Dr. Benjamin B. Bederson filed as Exhibit 1002.

38. Petitioners and Dr. Bederson assert that all of the limitations of Claim 1 of the '993 Patent are disclosed in two combinations of prior art references. For Ground 1A, they argue that the combination of Hisatomi and POSA knowledge or Ren disclose all of the limitations of Claim 1. For Ground 2A, they argue that the combination of Hansen and Gillespie disclose all of the limitations of Claim 1. I disagree as to both combinations, and I address each combination in the following paragraphs.

**A. Claim 1 is not Rendered Obvious by the combination of Hisatomi in view of POSA Knowledge and/or Ren.**

39. IClaim 1 recites, e.g., a “non-transitory computer readable medium storing instructions, which, when executed by a processor of an electronic device having a touch-sensitive display screen cause the processor to enable a user interface of the device.” EX1001 6:50-54. The claimed user interface must have at least “two states.” *Id.*, 6:54. The two claimed states are defined in part by the presence and absence of tap-activatable icons respectively: (1) “a tap-present state, wherein a plurality of tap-activatable icons for a respective plurality of pre-designated system functions are present, each system function being activated in response to a tap on its respective icon;” and (2) “a tap-absent state, wherein tap-activatable icons are absent....” *Id.*, 6:54-59. In the tap-present state, the tap-activatable icons must represent “pre-designated system functions.” *Id.*, 6:56.

40. As discussed in more detail in the following paragraphs, the combination of Hisatomi and POSA knowledge and/or Ren do not disclose (1) a tap-present state with tap-activatable icons, (2) two states of which one is a tap-present state, and (3) tap-activatable icons that represent pre-designated system functions. Consequently, the invention of Claim 1 of the '993 patent would not have been obvious over Hisatomi in view of Ren and/or POSA knowledge.

1. **Hisatomi does not disclose a “*tap-present state*” wherein “*a plurality of tap-activatable icons [...] are present, each [...] being activated in response to a tap on its respective icon.*”**

41. Dr. Bederson cites Hisatomi's menu display as the “tap-present state” and cites the GUI function buttons shown on each menu as the “plurality of tap-activatable icons.” EX1002 at ¶ 127-132. I do not agree.

42. Hisatomi discloses pull-out menus called “function lists” for the “image display” of an “information processing device.” EX1005 ¶ [0007-9]. Hisatomi addresses the problem where, when a main image is displayed on a “portable information terminal with a narrow display screen,” the pull-out menu will cover the main image. EX1005 ¶ [0004]. If the menu is made smaller, it will be difficult to read, but if a large menu is displayed more of the main image is covered. *Id.* And the more “function items” on the menu, the more these problems increase. *Id.* Hisatomi's purpose is to provide function list pull-out menus that do

not hinder any editing work on an image where both are simultaneously displayed on a small image display. EX1005 ¶ [0005].

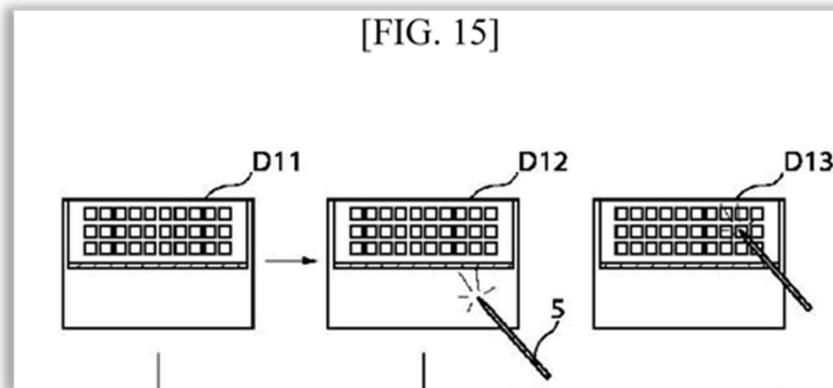
43. The information processing device could be a personal digital assistant (PDA) or notebook computer (EX1005 ¶¶ [0012; 0243]), a still camera, video camera, head mounted display, car navigation system (EX1005 ¶ [0243]), or a computer workstation (EX1005 ¶ [0244]). The image display may be that of either a portable device or a full sized display. EX1005 ¶ [0242]. The image display screen has a “touch panel sensor.” EX1005 ¶¶ [0015, 0017, FIG 5].

44. Hisatomi’s information processing device requires a “coordinate designation means for designating a coordinate position on the screen.” EX1005 ¶ [0007]. The coordinate designation means is a “pen-type input device” with a portable-sized display (EX1005 ¶ [0012], FIG 4 input device 05). When “the touch panel sensor 11 on the image display screen 09 is touched by the pen-type input device 05, the coordinate is designated by this touch, and various functions can be selected.” EX1005 ¶ [0015].

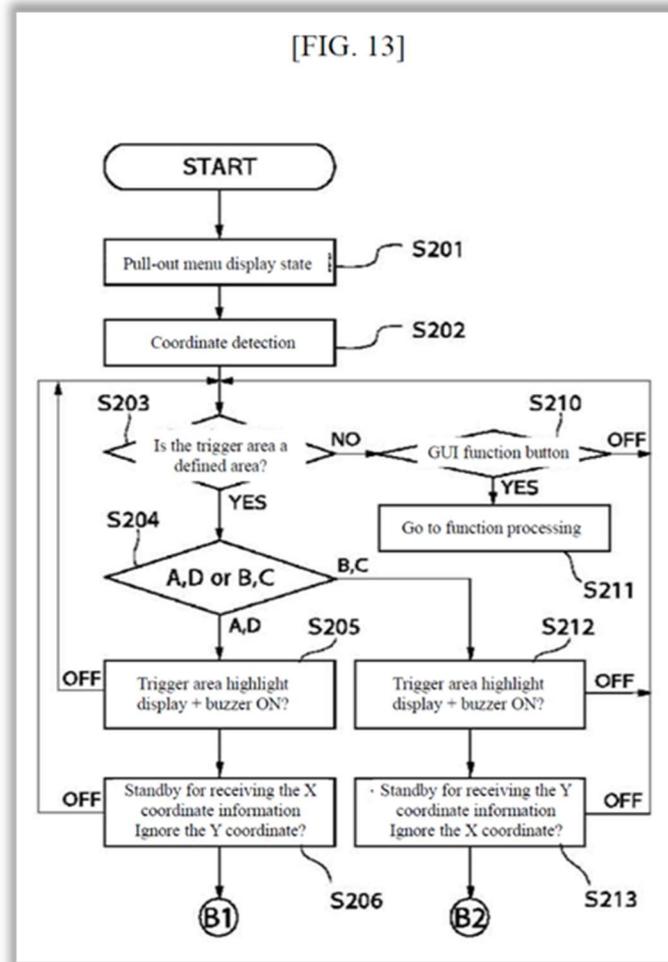
45. In Hisatomi, the touch panel sensor has a central image display area. EX1005 FIG 5. It is bordered by “the pullout menu display trigger areas 11A to 11D.” EX1005 ¶ [0018]. “[W]hen it is determined that the coordinate information generated by the input device 05 exists in the pull-out menu display trigger areas,” the program goes into a standby mode, and “when it is detected that the input

device 05 was scrolled toward the center of the touch panel sensor 11, the pull-out menu will be displayed.” *Id.*, Figs. 12, 15. This gesture is commonly known as a “drag” gesture, in which the desired pull-out menu to be displayed is selected by a touch of the input device in the desired pullout menu display trigger area followed continuously by dragging the input device tip towards the center of the display. *Id.*, ¶[0039], Figs. 10, 11, 13.

46. The content of the displayed pull-out menu is “a list of buttons based on icons or text display,” or “icons and characters [] written together.” EX1005, ¶[0021], *e.g.*, FIG 7. Hisatomi explains that “[t]he touch panel sensor 11 on the image display screen 09 is touched by the pen-type input device 05, the coordinate is designated by this touch, and various functions can be selected.” *Id.*, ¶[0015]. Hisatomi details the processing of GUI function button selection with reference to FIG 15, reproduced in pertinent part below:



EX1005, FIG 15. And the processing steps are illustrated in Figure 13, reproduced below:



EX1005, FIG 13.

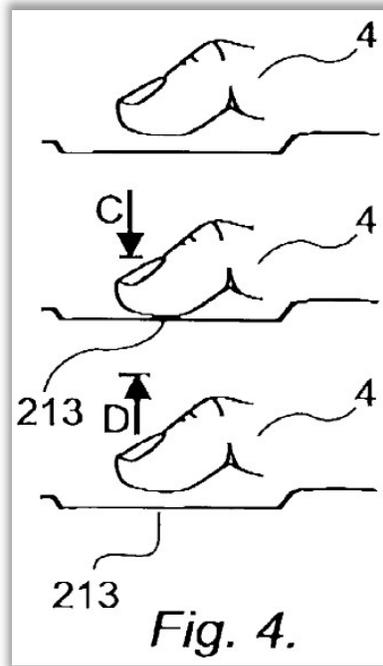
47. On Image D11 of FIG 15, the pull-out menu has been displayed, with the corresponding processing step shown as S201 on FIG 13. In the next step, “S202, the position coordinate on the touch panel sensor 11 touched by the input device 05 will be detected.” EX1005, ¶[0054]; FIG 13. Hisatomi determines next

whether “the coordinate value detected in step S201 is included in any of the pull-out menu display trigger areas 11A to 11D.” *Id.*, ¶[0055]; FIG 13. If the coordinate value detected at S202 is not in the pull-out menu display trigger area as shown in Image D13 of FIG 15, the processing determines whether the coordinates of the touch detected at step S202 is included in a GUI function button (“whether or not the specific function button (GUI function button) in the pull-out menu was selected by the input device 05 (S210)”). *Id.* “[I]f it is selected, the selected function will be processed (S211).” *Id.*

48. Hisatomi defines the term “OFF” to mean “that the touch panel sensor 11 will no longer be in contact with the input device 05 and the coordinate will no longer be detected.” EX1005, ¶[0039]. Figure 13 shows that if an “OFF” event occurs in the process of determining whether the coordinate value of the touch is in a menu pull-out target area or a GUI function button, the processing loops back to step S203—determining the location of the coordinate value of the touch. *Id.*, FIG 13.

49. A POSA at the time of the invention would have understood Hisatomi to teach that the processing associated with a GUI function button is activated (FIG 13, step S210-211), when the detected coordinate value of the input device’s *touch* correspond to the coordinate value of a GUI function button stored in memory. At the time of the invention, a POSA would have distinguished the touch-activated

GUI function icon or button selection process of Hisatomi from the tap-activated icons taught in the '993 patent. EX1001, 2:35-36; 2:66-3:2; 4:41-42; FIG 4. The '993 patent discloses tap-activation in at least Figure 4:



EX1001, FIG 4.

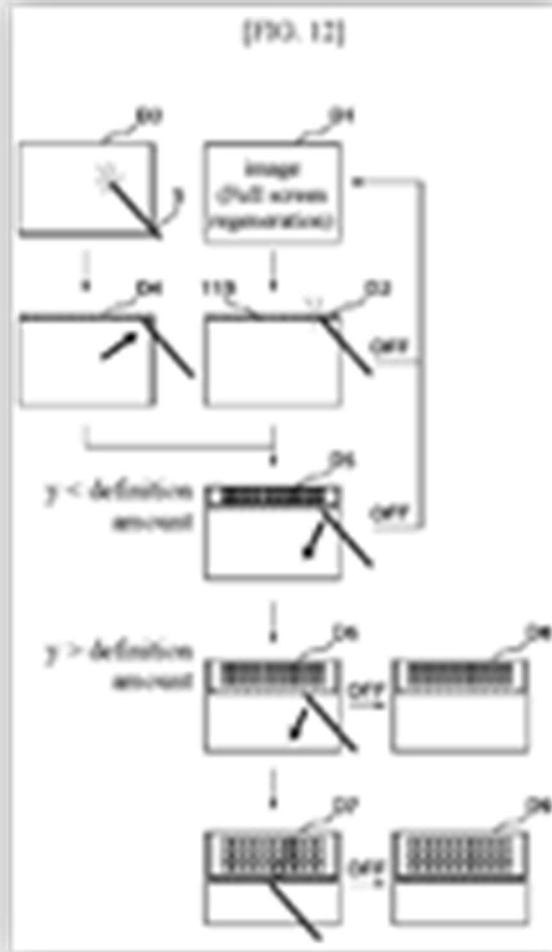
50. A POSA would have understood that in touch activated selection, the processing of a function is activated upon the event of detecting the coordinates of the initial touch of the input device on the touch sensitive display within the coordinates of the desired button or icon. In programming, this event is referred to as “mouse down.” It corresponds to a downward press on the left button of a mouse with processing activated upon completion of the left button depression. A POSA would have understood, in contrast, that in tap-activatable selection, the

processing of a function is commenced upon the event of the input device lifting *off* of the touch sensitive display from the coordinates of the desired button or icon. In programming, this event is referred to as “mouse up.” It corresponds to a downward press on the left button of a mouse, followed by a release of the left button at a predetermined cursor location on a conventional monitor and desktop system with a mouse as the input device, with processing activated upon the release.

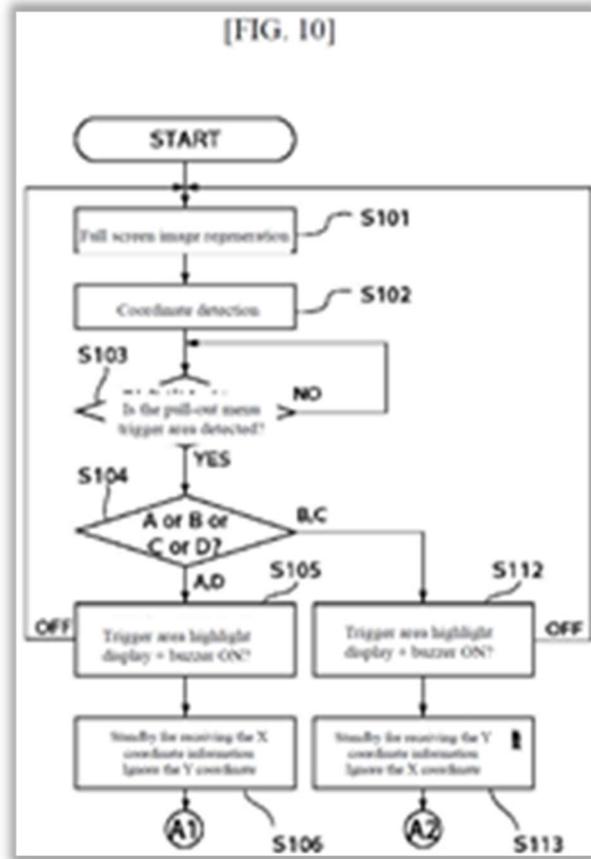
51. In Hisatomi, all processing, whether of the menu displays or the GUI function buttons, is activated upon the event of detecting the coordinate value of the touch within the coordinates of either the pull-out menu activation area or the GUI function button. There is no disclosure in Hisatomi of processing being activated by an “OFF” event (mouse up).

52. As shown in FIG 13 reproduced in paragraph 46, above, activation of processing represented by a GUI function button (step S211) occurs based upon detection of the coordinate value of the input device’s touch (step S202) within the coordinates of a selected GUI function button (step S210). EX1005, FIG 13. In every instance shown on Figure 13, the occurrence of an “OFF” event does not activate processing, but to the contrary causes the processing to loop back to the coordinate detection steps at S202, S203 and 210. *Id.*

53. Hisatomi teaches repeatedly that an “OFF” event does not activate processing. Another example is illustrated in Image D2 of FIG 12, reproduced below:

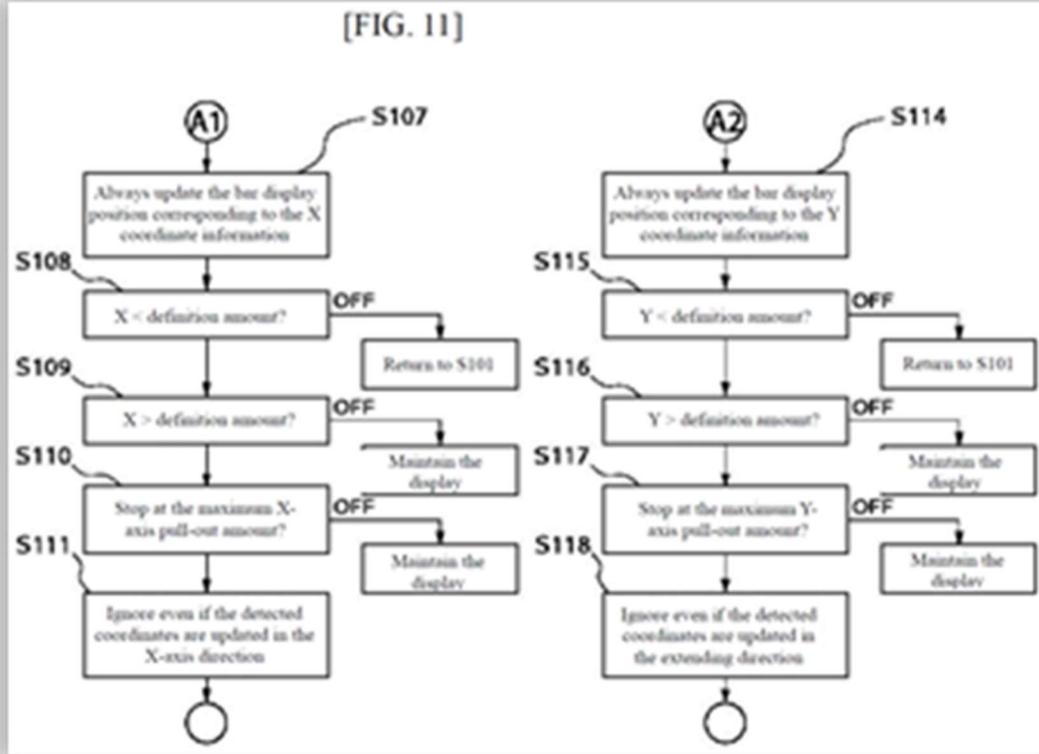


EX1005, FIG 12. The associated processing is illustrated in FIG 10, reproduced below:



EX1005, FIG 10. Hisatomi explains “as shown on screen D2 in FIG 12, even if the detected coordinate value is included in one of the pull-out menu display trigger areas 11A to 11D, if it went OFF, the process will return to step S101.” *Id.*, ¶[0041]. Similarly, in steps S105 and S112, a touch in the pull-out menu display trigger area followed by a drag will cause the pull-out menu to be displayed, but “if it went OFF during this period, the process will return to step S101.” *Id.*, ¶[0043]. There are many more such examples in Hisatomi. *Id.*, e.g., ¶¶[0048, 0052, 0057].

54. The processing associated with the drag gesture to open the pull-out menu, as illustrated in Figure 12, is shown in Figure 11, reproduced below:



EX1005, FIG 12. Hisatomi explains that in step 114, “the display amount of the pull-out menu will be updated according to the Y coordinate value generated by the input device 05,” but if “the menu pull-out amount y is less than the defined amount, if it became OFF as shown on screen D5 in FIG. 12, the process of pulling out the menu will be cancelled midway and the process will return to step S101 (S115).” Id., ¶[0048, 0052]. Step S101 is the full-image display mode that precedes coordinate detection. Id., FIG 10. If the Y coordinate exceeds the defined amount when the OFF event occurs, “the process of pulling out the pull-out menu will be stopped....” Id., ¶[0048, 0052].

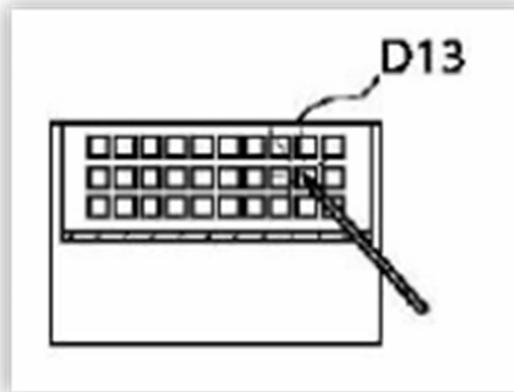
55. In each instance disclosed in Hisatomi, processing is activated by detecting the coordinates of the input device's touch on the touch sensitive screen (mouse down), and an "OFF" event (mouse up), terminates any active processing and loops back to the coordinate detection step.

56. The touch of Hisatomi specifies that an action happens when the input device makes contact with the touch screen. The tap of the '993 patent specifies that an action happens when the input device is lifted off from the touch screen. User interface designers and programmers know that they have options when designing and implementing a user interface and can specify actions happening with either a touch event or a tap event. A POSA would understand that the touch disclosed in Hisatomi is not the same as the tap disclosed in '993.

57. Petitioners cite the Bederson declaration for the proposition that "each icon is capable of selection (activation) by a user touching or tapping the icon with the pen device." Petition, 34; EX1002, ¶130. But in paragraph 130, Bederson fails to distinguish between touch activation (mouse down) and tap activation (mouse up). He states that "touching an icon on the screen with the pen (i.e., performing a tap) will select an icon and its related function." EX1002, ¶130. But for support, he cites Hisatomi's disclosure that "[t]he touch panel sensor 11 on the image display screen 09 is touched by the pen-type input device 05, the coordinate is designated by this touch, and various functions can be selected." *Id.*, quoting

EX1004, ¶[0015]. This quote describes touch activation (mouse down) because it is the coordinates of the touch that selects the function, not the event of lifting off of those coordinates (mouse up).

58. Bederson cites Image D13 in Figure 15 of Hisatomi as illustrating “a user touch on an icon within a pull-out menu,” reproduced in pertinent part below:



EX1005, FIG 15. But the issue here is whether Image D13 discloses touch activation, as Bederson appears to acknowledge, or tap-activation.

59. The accompanying text for Image D13 makes clear that activation is by touch, not tap. There, Hisatomi discloses that if “the coordinate value detected at step S102” (of Figure 13, reproduced above) is not in the pullout menu trigger areas, “it is determined whether or not the specific function button (GUI function button) in the pull-out menu was selected by the input device 05 (S210); if it is selected, the selected function will be processed.” EX1005, ¶[0055]. Selection is determined by “the coordinate value detected at step S102” in Hisatomi, and

activation is based on the coordinate value of the touch (“if it is selected, the selected function will be processed”), not by an “OFF” event (mouse up). *Id.*

60. For at least the reasons described above, Hisatomi does not disclose a “tap-present state” wherein “a plurality of tap-activatable icons for a respective plurality of pre-designated system functions are present, each system function being activated in response to a tap on its respective icon.”

**2. There would have been no motivation at the time of invention to modify Hisatomi with either POSA knowledge of tap or Ren.**

61. Dr. Bederson states that tap was a known user interface activation strategy at the time of the invention and a POSA would have modified Hisatomi with tap. He argues also that Ren discloses tap, and that a POSA would have modified Hisatomi according to the teachings of Ren. I disagree for the following reasons.

62. Dr. Bederson states that tap was a known user interface activation strategy at the time of the invention. In addition to tap, touch was another known user interface activation strategy at that time. *E.g.*, EX1006, at 391. When the interface is configured to utilize touch (as opposed to tap), the activation happens at the moment that the user touches the element on the screen. If the software designers wanted whatever desired action to happen at the moment that the user makes contact, they would utilize touch instead of a tap. One common example of

a class of programs that utilize touch extensively is computer games. This interaction style of utilizing touch over tap for interactive computer gaming was the case in March 2001 and before as it is also the case now. In computer games, the game is usually designed to be as responsive as possible so programming any resultant actions to be associated with a touch, and makes more sense than programming any actions to be associated with a tap, where the user would need to lift the finger, stylus, or mouse button before any action would happen.

63. Other activation strategies that would have been known to the POSA include a drag where a user would select an icon or an object (e.g. a button) with a touch and then keep the finger or stylus down on the display as they drag the finger or stylus to another location wherein they would lift the finger or stylus. Drag was typically used to move or copy items from one location to another location.

Another interface activation strategy that was known at the time was a long-press. When a user held a finger or stylus down over an icon or object for more than a given amount of time, the system could activate an alternative function associated with the long-press. In this way, system designers and implementers could have multiple various actions that were associated with icons or objects. Action 1 could be associated with a touch (e.g. the action happens at the time that a finger or stylus touches the display), Action 2 could be associated with the tap (e.g. the action happens at the time that the finger or stylus is lifted from the display).

Action 3 could be associated with a drag (e.g. the action happens when the icon or object is dragged from one place to another place). The action could be associated with surpassing a minimum distance of dragging or it could be associated with releasing the icon or object over a specific target. Action 4 could be associated with a long-touch (e.g. the action happens when the finger or stylus is down over the target for greater than a predetermined amount of time).

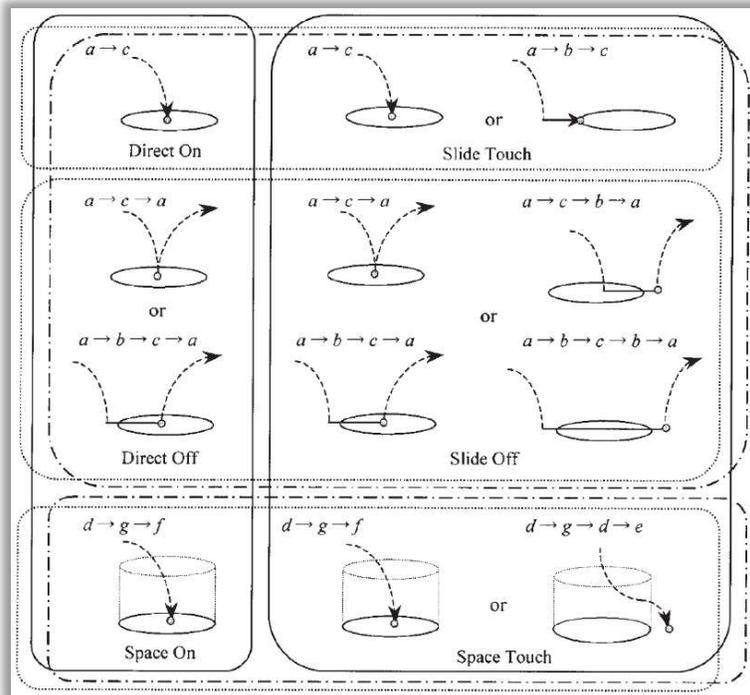
64. A POSA at the time of the invention would have no motivation to modify the touch activation strategy taught in Hisatomi. Dr. Bederson states that tap's "ubiquity" would have motivated Hisatomi's modification, but touch was also widely used at the time of the invention and would not have been unfamiliar to users. Nor does he account for any of the other known activation strategies.

65. A POSA would have perceived no deficiency in Hisatomi that would have been remedied by modifying touch-activation for GUI function buttons with tap-activation. Touch on the coordinates of a GUI function button is sufficient to select the desired function for activation. Hisatomi's GUI function buttons cannot be dragged with the input device, so a POSA would have perceived no benefit in delaying activation after the initial touch to detect an "OFF" event (mouse up). And Ren teaches that touch-activation is measurably faster than tap-activation, as discussed in more detail below.

66. As further support for motivation to modify Hisatomi to substitute tap activation (mouse up) for touch activation (mouse down), Petitioners and Dr. Bederson rely on Ren (EX1006), but again, I disagree.

67. Ren is a September 2000 publication. EX1006 at 1. It discloses the results of, and conclusions drawn from, two experiments comparing “pen-based selection strategies and their characteristics.” *Id.* Ren “looks at selection strategies suitable for selecting small targets, and identifies and quantifies the influential factors that make strategies more or less efficient with a view to improving selection performance on pen-based systems.” *Id.*, at 3.

68. Six activation strategies were tested in the Ren experiments, illustrated in Figure 3 and reproduced below:

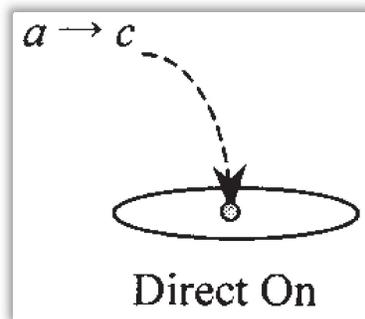


EX1006, FIG 3. The arrows in Figure 3 show the direction of pen-tip movement.

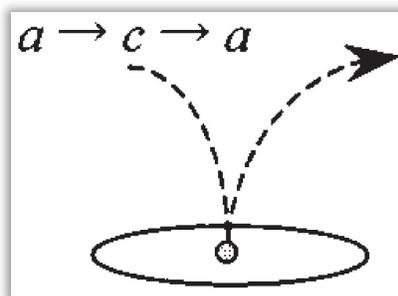
*Id.*, at 6. Dashed lines indicate that the pen-tip is not in contact with the screen surface, and solid lines show that the pen-tip is in contact with the surface.

According to Ren, all six strategies were known as of the ‘993 patent’s time of invention. *Id.* at 8.

69. In the Ren taxonomy, “*Direct On*” is an example of the touch activation (mouse down) strategy taught by Hisatomi, illustrated in Figure 3:



EX1006, FIG 3. The “*Direct Off*” strategy illustrated in Figure 3 is an example of the tap activation (mouse up) strategy taught by the ‘993 patent:



*Id.*

70. In the first Ren experiment, subjects were given a touch sensitive display and stylus pen. EX1006, at 10. Each device was configured to test a single activation strategy. *Id.* Subjects were told to select a target as quickly and accurately as possible using the strategy provided. *Id.* The results were tabulated to evaluate how quickly subjects could select the target and the accuracy of the selection. *Id.* In addition, subjects filled out a questionnaire in which they were asked to rate the strategy on a scale of 1 to 5 regarding selection accuracy, selection speed, selection ease, learning ease, satisfaction, and desire to use. *Id.*

71. Dr. Bederson states that Ren “teaches the desirability of using the tap or *Direct Off* technique, for example, in dense displays where targets are close together.” Exhibit 1002 ¶136. But in fact, Ren teaches that both *Direct On* (touch/Hisatomi) and *Direct Off* (tap/’993 Patent) “can be used” in dense displays. EX1006, at 20. Ren states no preference for one over the other, consistent with its experimental conclusions. It follows that Ren provides no motivation for a POSA at the time of the ‘993’s invention to modify Hisatomi’s *Direct On*/touch teaching with the *Direct Off*/tap teaching of Ren and the ‘993 Patent.

72. Furthermore, a POSA working as of the date of the ‘993 patent’s invention would have perceived no advantage in modifying Hisatomi’s touch (mouse down) activation strategy over the tap (mouse up) strategy taught by the ‘993 patent. The associated activation happens faster with *Direct On* because the

processing begins immediately. With *Direct Off*, the user has to first perform a *Direct On* before lifting the finger or stylus to execute a *Direct Off* and begin the processing. In the context of Experiment 1 in Ren, Figure 5 shows that the selection time was faster with *Direct On* (1027.5ms) compared to *Direct Off* (1543.9ms). Similarly, in the context of Experiment 2 in Ren, where smaller icons comparable to those described in the '993 patent were used, Figure 11 shows that the selection times were even faster with *Direct On* (1079.5ms) compared to *Direct Off* (1615.3ms). Both experiments in Ren concluded that in terms of activation time, *Direct On* was preferred over *Direct Off*.

73. For at least the foregoing reasons, the teachings of Ren do not suggest a motivation for the POSA at the time of the invention to modify Hisatomi's touch (mouse down) activation strategy to substitute the tap activation (mouse up) strategy described in the '993 patent.

**3. Hisatomi does not disclose a “user interface comprising at least two states, namely, (a) a tap-present state ... and (b) a tap-absent state.”**

74. It follows from the preceding section that Hisatomi does not disclose “at least two states” in which one state is “tap-present” and the other state is “tap-absent.” Dr. Bederson identifies Hisatomi's home screen as the “tap-absent” state. EX1002 ¶ 123; EX1005 FIG 5. And he identifies the activated pull-out menus as the “tap-present” state with the buttons/icons within the pull-out menus as the

“plurality of tap-activatable icons.” EX1002 ¶ 124; EX1005 FIG 7. But as shown in the preceding section, neither “state” has any tap-activatable icons. In the home screen “state,” the pull-out menus are activated by a touch and drag gesture.

EX1005 ¶¶[0018, 0039], Figs. 5, 10-13, 15. They are not tap-activatable. And in the pull-out menu display “state,” the icons within the displayed menu are not tap-activatable, but rather touch-activatable as shown in the preceding section.

75. In both of the Hisatomi “states” identified by Dr. Bederson, there are no tap-activatable icons. So Hisatomi does not disclose two states defined by tap activation: (1) presence and (2) absence.

76. Dr. Bederson asserted that if Neocode argues that Hisatomi does not disclose “states,” the disclosure of “states” in Hisatomi is “at least commensurate in scope with the disclosure of the ‘993 Patent.” EX1002 ¶125. This is not correct. Hisatomi does not disclose a tap-present state, as shown above. But the ‘993 Patent clearly illustrates the tap-present state in Figure 4, and at 4:41-42.

77. Furthermore, my point here is not that Hisatomi does not disclose “states.” The term “states” would have been understood by the POSA as of the time of the invention without need for a definition in the specifications of Hisatomi or the ‘993 Patent. But in contrast to Hisatomi, gliding on an icon in the ‘993 Patent opens a second state in which tap-activatable icons are present. EX1001

Figs. 3, 4. In Hisatomi, there are no tap-activatable icons present in either of the two states that Dr. Bederson identifies.

78. For at least the foregoing reasons, Hisatomi does not disclose a “user interface comprising at least two states, namely, (a) a tap-present state ... and (b) a tap-absent state.”

4. **Hisatomi does not disclose “icons for a respective plurality of pre-designated system functions, each system function being activated in response to a tap on its respective icon.”**

79. The ‘993 Patent describes a user interface for an electronic device, for example, a mobile handheld computer unit, having a processor, a touch-sensitive display screen, and a non-transitory computer readable medium. EX1001 3:57-65; 6:50-65. The user interface is a computer program product “stored within the computer readable medium.” EX1001 6:34-40. “[T]he computer program product is adapted to function as a shell upon an operations system.” EX1001 6:41-43. And the electronic device “is adapted to run several applications simultaneously and to present an active application on top of any other application on the display area.” EX1001 3:66-4:1.

80. The specification of the ‘993 Patent discloses at least two embodiments of the user interface as claimed. In one embodiment, if the first function 21 as shown in Figure 3 is activated, “then the display area 3 is adapted to display icons 211, 212, 213, 214, 215, 216 representing services or functions

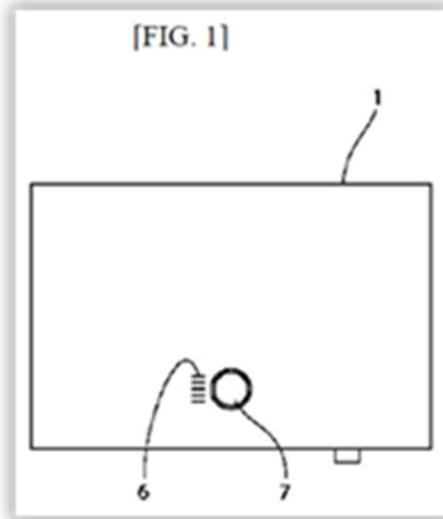
depending on the current active application.” EX1001 4:20-23; 2:25-29. The specification gives an example of such an active application of the first embodiment, a photo editing application that “handles a picture,” where “the icons that are shown when the first function is activated can be services such as ‘save to disk’, ‘send as SMS’, or ‘delete’ and they can be settings such as ‘resolution’, ‘colour’, or ‘brightness’.” EX1001 4:31-35.

81. In the second embodiment, if the first function 21 as shown in Figure 3 is activated and “no application is currently active on the computer unit, then the icons 211, 212, 213, 214, 215, 216 are adapted to represent services or settings of the operations system of the computer unit, such as background picture, clock, alarm 215, users 213, help 211, etc.” EX1001 4:36-40; 2:31-34.

82. Dr. Bederson provides no support for the GUI function buttons of Hisatomi corresponding to the “system function” icons of Claim 1. With reference to dependent claim 6, however, he argues that Hisatomi discloses “system functions” in paragraphs [0013-14] and Figure 1 (for Hisatomi, Bederson confusingly cite to EX1004, which is his own *curriculum vitae*). EX1002, ¶178. I disagree that Hisatomi discloses this limitation.

83. Hisatomi paragraphs [0013-0014] describe hardware—that the disclosed device is equipped with a camera 07, microphone 06, and shutter switch 08. EX1005, [0013-14]. The shutter switch is a two-position mechanical switch.

*Id.* Figure 1 illustrates the side of the device that contains the camera and microphone hardware, as shown below:



EX1005, FIG 1. The “GUI function buttons” taught by Hisatomi are not disclosed in paragraphs [0013-0014], nor are they illustrated on Figure 1, and they are not identified as icons for “system functions” as described and claimed in the ‘993 patent.

84. Neither the Petition nor Dr. Bederson’s declaration provide any citation to Hisatomi, or any other reference, that would support a disclosure of the “tap-activatable icons for ... system functions” claimed in the ‘993 Patent.

**B. Claim 1 is not rendered obvious by Hansen in view of Gillespie.**

85. As discussed in more detail below, the combination of Hansen and Gillespie does not disclose (1) “a processor of an electronic device having a touch-sensitive screen,” (2) “a tap-present state, wherein a plurality of tap-activatable

icons for a respective plurality of pre-designated system functions are present, each system function being activated in response to a tap on its respective icon;” (3) “a tap-absent state, wherein tap-activatable icons are absent...”; and (4) tap-activatable icons that represent “pre-designated system functions.”

**1. Hansen does not disclose “a processor of an electronic device having a touch-sensitive display screen.”**

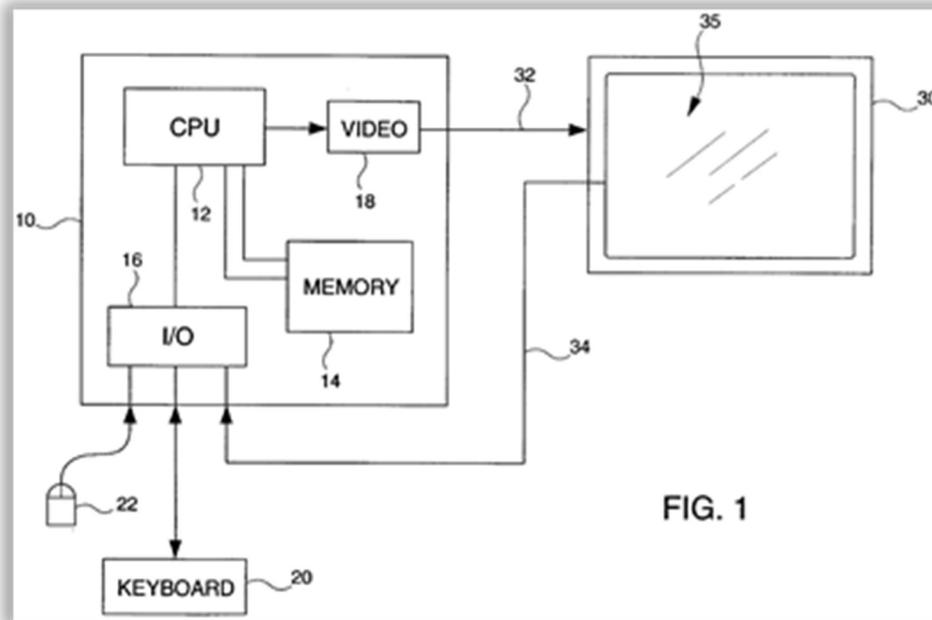
86. The invention of the ‘993 patent “relates to a user interface for a mobile handheld computer unit, which computer unit comprises a touch sensitive area.” EX1001, 1:14-16. A problem the invention solves is “to provide a user-friendly interface that is adapted to handle a large amount of information and different kinds of traditional computer-related applications on a small handheld computer unit.” *Id.*, 1:59-62. Another problem is “to provide a small handheld computer unit with an easily accessible text input function.” *Id.*, 1:66-67. And another problem it solves is “to provide a simple way to make the most commonly used functions for navigation and management available in the environment of a small handheld computer unit.” *Id.*, 2:1-4.

87. Claim 1 recites “a non-transitory computer readable medium storing instructions” that “cause the processor to enable a user interface of the device.” EX1001, 6:50-53. The “processor” is “a processor of an electronic device having a touch-sensitive display screen.” *Id.*, 6:51-52. A POSA at the time of the invention

would have understood Claim 1 to be drawn to a unitary electronic device, having storage, a processor, and a touch sensitive display, like the “mobile handheld computer unit” described in the specification.

88. Hansen discloses a method “for generating a working window in a computer system having a video monitor with a touch-sensitive screen operable to generate electrical signals corresponding to user input strokes thereon.” EX1029 2:25-31. One of the problems it attempts to overcome is that the user of a graphics-based operating system using a mouse “is required by the operating system to perform extra steps using a mouse that are not normally done by hand in the real world.” *Id.*, 1:67-2:2.

89. The Hansen method is performed by a conventional desktop computer system, comprising a computer board having a central processing unit (CPU), an input/output port, and a video controller. EX1029 3:51-54. Input devices include an external keyboard and mouse. *Id.*, 3:54-57. The display is an external conventional video monitor coupled to the computer board’s video controller by a lead. *Id.*, 4:10-13. Figure 1 of Hansen illustrates the components of such a system:



EX1029, FIG 1.

90. In Hansen’s Figure 1, Element 10 is a computer board “which includes a Central Processing Unit (CPU) 12, a memory unit 14, an input/output port 16 and a video controller 18.” EX1029, 3:51-54. Element 30 is the video monitor, and “the video monitor 30 is equipped with a touch-sensitive screen 35, which overlays the video monitor.” *Id.*, 4:8-10. The touch-sensitive screen is coupled to the input/output port by a lead 34, which carries an electrical signal that “is read by the CPU 12 to produce an X,Y signal that indicates where a user has touched the touch-sensitive screen 35.” *Id.*, 4:15-19. Hansen provides an example of the touch-sensitive screen 35 (EX1029, 4:20-23), the “Mac-n-Touch” made by the Micro-Touch company, shown below:



EX2003 (Copyright 1988)

<http://vintagecomputer.ca/files/MicroTouch/MicroTouch%20Mac%20n%20Touch%20Brochure.pdf>

91. In Hansen, the CPU, video monitor, and touch-sensitive screen are three distinct electronic devices. The “electronic device” with the processor disclosed in Hansen, the CPU, does not have a touch-sensitive display screen, and the “touch-sensitive display” disclosed in Hansen does not have a processor. Rather, the electronic device with the processor, the CPU, is connected by leads to a separate display monitor and a separate touch-sensitive overlay.

92. Dr. Bederson does not cite Gillespie as disclosing the “processor of an electronic device having a touch-sensitive display screen” missing from Hansen.

He cites to Hansen, EX1029, 3:49-4:25, for this element, but I do not agree that this element is disclosed in Hansen. The cited text states clearly that “[t]he computer system comprises a computer board 10, which includes a Central Processing Unit (CPU)” and “an input output port 16 and a video controller 18.” EX1029, 3:49-54. “[T]he video monitor 30 is equipped with a touch-sensitive screen 35, which overlays the video monitor.” EX1029, 4:8-10. “The video monitor 30 is coupled to the video controller 18 by a lead 32” and “[a] lead 34 couples the touch-sensitive screen 35 to the input/output port 16.” EX1029, 4:10-11, 13-14. In other words, Hansen discloses a first electronic device comprising a processor, a second electronic device comprising a video monitor, and a third electronic device comprising a touch-sensitive overlay, interconnected by leads. Nor does Dr. Bederson offer any motivation for a POSA to have modified Hansen to operate on a unitary “processor of an electronic device having a touch-sensitive display screen.”

93. A POSA working at the time of the invention claimed in the ‘993 patent would not have been motivated to modify Hansen to operate on a unitary “processor of an electronic device having a touch-sensitive display screen.” The design and implementation of mobile devices like those to which the ‘993 patent is directed was different from the design and implementation of general purpose computer systems and personal computer systems like those to which Hansen is

directed. General purpose computers including PCs did not have the same design considerations and constraints that were present when designing a mobile unit. Two primary such constraints were size and weight of mobile units. Nor does Hansen identify any problem that could be solved by translating Hansen's full sized components to an integral mobile device. In fact, a POSA would have understood that attempting to integrate these separate components into a single device would have substantially increased the cost and diminished the utility to the user, for no countervailing benefit. Also, for desktop systems there is no imperative to reduce power consumption, unlike with a mobile device where power consumption is a critical design consideration.

94. Components for mobile units needed to be much smaller than general purpose computers and PCs so that they could be easily carried. Due to the small size of displays, the user interfaces of mobile devices had far more constraints than the user interfaces of full-sized computer systems that had larger displays. And due to the small size of mobile devices, physical and virtual buttons needed to be smaller and fewer, resulting in reduced interaction possibilities for the user. Also, components for mobile units needed to be much lighter than those of full-sized computer systems because mobile devices had to be easily carried.

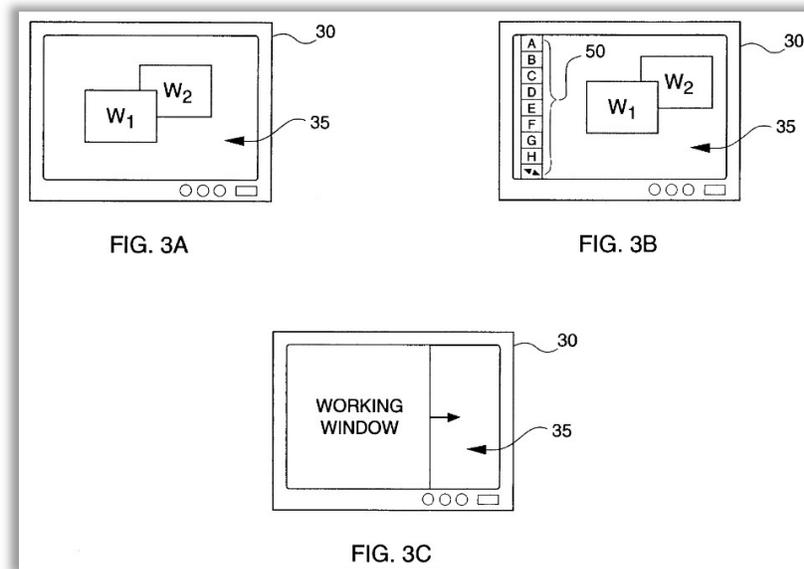
95. In sum, the design premise of Hansen is completely different from the design premise of mobile devices such as those to which the '993 patent is

directed. A POSA would not been motivated to start with Hansen and re-engineer it for operation within the design and implementation constraints of a mobile handheld device. Because of all of the above, the design and implementation of mobile devices is a specialized field that is very different from the design of general purpose computer systems and PCs so practitioners that are working in the area of general purpose computer systems and PCs would not be motivated to look to the field of mobile units for inspiration.

96. For at least the foregoing reasons, Hansen does not disclose “a processor of an electronic device having a touch-sensitive display screen,” and this limitation would not have been obvious to a POSA.

**2. Hansen does not disclose a “tap-present state” wherein “a plurality of tap-activatable icons [...] are present, each [...] being activated in response to a tap on its respective icon.”**

97. Dr. Bederson relies on Hansen’s Figure 3B as a disclosure of a “tap present” state. Figures 3A through 3C are reproduced below:



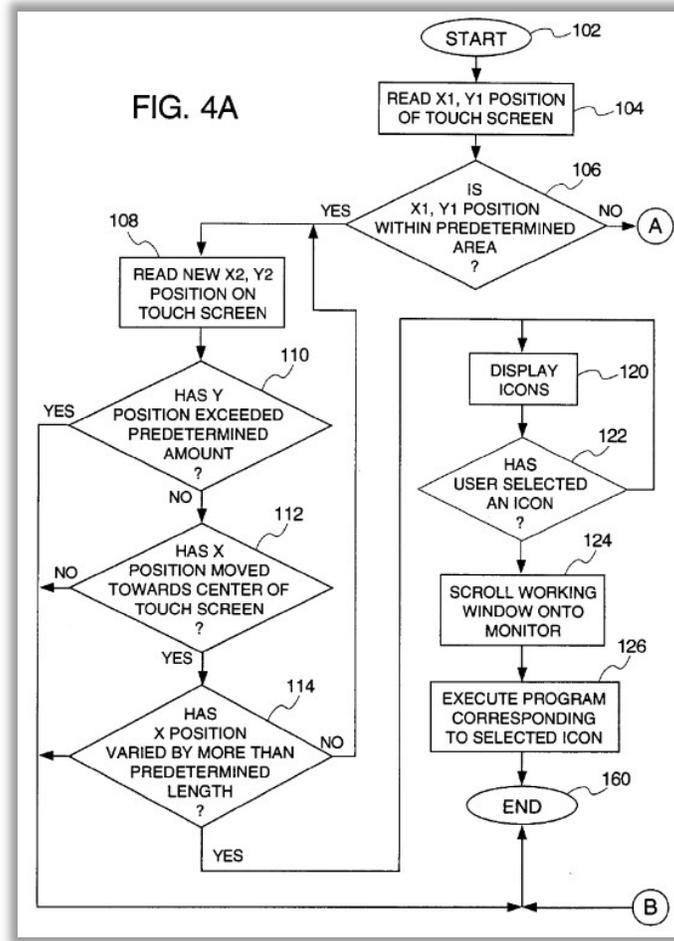
EX1029, Figs. 3A-3C.

98. Figure 3A “illustrates the video monitor 30 before the user has drawn the first predetermined input stroke to bring forth the working window.” *Id.*, 5:9-11. When the user performs the “first predetermined input stroke,” the “CPU displays a plurality of icons 50,” and “[e]ach icon A-H corresponds to a computer program that can be run in the working window ....” *Id.*, 5:14-19. The display illustrated by Figure 3B “remains on the video monitor until the CPU 12 detects a second predetermined user input stroke.” *Id.*, 5:23-25. Dr. Bederson asserts that the “second predetermined user input stroke” is a tap that is executed by the user on the icons A-H illustrated in Figure 3B. EX1002 ¶ 186. I do not agree.

99. In Hansen’s specification “[t]he second predetermined user input stroke is defined as momentarily touching one of the plurality of icons displayed

on the screen.” EX1029 at 2:56-58; 5:33-35; 7:52-54. “Upon touching the touch-sensitive screen 35, the CPU generates a second electrical signal corresponding to [the] second user input stroke.” EX1029 at 5:26-28. The CPU then “compares the second electrical signal to a second predetermined electrical signal” (EX1029 at 5:28-30) to determine which, if any, of the icons was selected by the second predetermined user input stroke (EX1029 at 5:30-33), displays a “working window on the screen 35” (EX1029 at 5:36-40), and “executes the computer program corresponding to the icon selected by the second predetermined user input stroke” (EX1029 at 5:48-51). The program represented by the selected icon runs in the working window. EX1029 at 5:52-53.

100. The processing flow is illustrated by Figure 4A of Hansen, reproduced below:



EX1029 FIG 4A.

101. After the icons are displayed in step 120, the method determines whether the user has selected an icon using the second predetermined user input stroke in step 122. EX1029 at 7:50-65. This is determined “by reading the X,Y coordinates corresponding to where the user has touched the touch-sensitive screen 35 and comparing those coordinates to a list of X,Y coordinates for each icon.” EX1029 at 7:54-59. “If the user has touched the touch-sensitive screen 35 at a point that is occupied by one of the icons displayed on the video monitor 30, the

CPU 12 determines that the user has selected that icon.” EX1029 at 7:59-62. The method proceeds to block 124 to open the working window, and 126 to execute the program corresponding to the selected icon. EX1029 at 7:67-8:6.

102. A POSA as of the date of the ‘993 invention would have understood that Hansen discloses icon selection in Figure 3B by touch, not tap. The flow chart of Figure 4A and the corresponding explanatory text rely upon the X,Y coordinates of the user’s touch exclusively to determine the selected icon representing the program to be executed in the working window. There is no determination of whether the input device has lifted off of the touch-sensitive display as a step in the processing related to selection of icons A-H.

103. Dr. Bederson asserts that “[i]n response to icon selection, a ‘working window associated with the icon selected by the user is scrolled onto the video monitor 20’ such that the computer program is ‘activated in response to a tap on its respective icon,’ as recited.” This collection of quotes is very misleading to the reader. The first internal quote (“working window associated with the icon selected by the user is scrolled onto the video monitor 20”) is from Hansen, and it corresponds to Dr. Bederson’s citation of EX1029, 5:36-46, however, this quote says nothing about how the icons are activated. The second quote, which references tap, is not from Hansen at all, but rather from the ‘993 patent. It is important to know that there is no mention of “tap” anywhere in the text from

Hansen that Dr. Bederson cites, nor is “tap” mentioned or described anywhere in Hansen.

104. A POSA would have perceived no deficiency in Hansen that would have been remedied by modifying touch-activation for GUI function buttons with tap-activation. Touch on the coordinates of a GUI function button is sufficient to select the desired function for activation. Hansen’s GUI function buttons cannot be dragged with the input device, so a POSA would have perceived no benefit in delaying activation after the initial touch to detect an “OFF” event (mouse up). And Ren teaches that touch-activation is measurably faster than tap-activation, as discussed in more detail above.

105. For at least the foregoing reasons, Hansen does not disclose a “tap-present state” with “tap-activatable icons,” each “activated in response to a tap on its respective icon.” Dr. Bederson does not cite Gillespie to provide the tap-activated icons missing from Hansen. Nor does he provide any motivation for a POSA at the time of the ‘993 patent’s invention to modify Hansen to substitute tap-activated icons for Hansen’s touch-activated icons.

**3. Hansen does not disclose a “user interface comprising at least two states, namely, (a) a tap-present state ... and (b) a tap-absent state.”**

106. Since Hansen does not disclose “tap-activatable icons,” it also does not disclose the element of a “user interface comprising at least two states” defined

respectively by the presence and absence of tap-activatable icons. According to Dr. Bederson, the display illustrated in Hansen Figure 3A is a tap-absent state. And as I have shown above, the display illustrated in Hansen Figure 3B is also tap-absent. Dr. Bederson has not shown a “tap-present state,” so he has not shown a “user interface comprising at least two states” in which one is “a tap-present state.” Dr. Bederson does not cite Gillespie for “a tap-present state.” Nor does he provide a motivation for a POSA at the time of the invention to modify Hansen’s tap-absent state by adding a second tap-present state in view of Gillespie.

**4. Hansen does not disclose “icons for a respective plurality of pre-designated system functions,” “each system function being activated in response to a tap on its respective icon.”**

107. Dr. Bederson asserts that the icons A-H illustrated in Figure 3B, above, are a “plurality of pre-designated system functions.” EX1002 ¶ 187. I do not agree.

108. Hansen discloses that “[t]he plurality of icons correspond to a plurality of computer programs.” EX1029, 2:45-47; 5:17-20. “After the user has selected one of the plurality of icons,” the processing displays a “working window,” and “continues with the step of executing the computer program corresponding to the icon selected by the second user input stroke ....” EX1029, 7:66-8:6; Fig 4A. In other words, touching the icon opens a corresponding application.

109. Dr. Bederson quotes Hansen’s definition of “icons” as “graphical representations of various computer programs [that] are displayed on a computer screen,” and then asserts “a POSA would have understood a computer program to be at least one type of ‘system function.’” EX1002 ¶ 187. But he does not explain why a POSA would have understood a program or application function to be a type of system function. I disagree.

110. A POSA would understand a disclosure of icons that are configured to launch an application is very different from a disclosure of icons that are configured to activate a plurality of pre-designated (operating) system functions. Hansen does not disclose a tap-present state and/or icons that activate a plurality of pre-designated system functions.

111. This POSA understanding is supported by the examples of application and system functions described in the ‘993 Patent’s specification. It describes a photograph editing application, where the icons represent functions “such as ‘save to disk’, ‘send as SMS’, or ‘delete’ and they can be settings such as ‘resolution’, ‘colour’, or ‘brightness’.” EX1001, 4:31-35. In contrast, the specification describes as examples of icons representing “services or settings of the operations system” the “background picture, clock, alarm 215, users 213, help 211, etc.” EX1001, 4:36-40.

112. Hansen discloses that “[t]he plurality of icons correspond to a plurality of computer programs.” EX2029, 2:45-47; 5:17-20. “After the user has selected one of the plurality of icons,” the processing displays a “working window,” and “continues with the step of executing the computer program corresponding to the icon selected by the second user input stroke ....” EX2029, 7:66-8:6. The processing associated with “executing the computer program corresponding to the icon” is illustrated in Figure 4A, reproduced below:



EX2029, FIG 4A

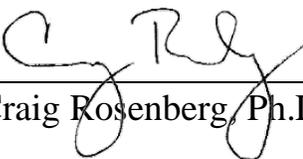
113. A POSA would understand that the “plurality of computer programs” selected by the user and executed in Hansen are applications and not system

functions. Hansen discloses, to the POSA, a method for opening applications on a touch-sensitive screen based on the coordinates of the touch in relation to icons representing the applications. A disclosure of icons that are configured to launch an application is distinct from a disclosure of icons that are configured to activate a plurality of pre-designated operating system functions. Hansen does not disclose icons that activate a plurality of pre-designated system functions.

114. For at least the reasons stated above, Hansen does not disclose “icons for a respective plurality of pre-designated system functions.”

115. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: March 17, 2021

  
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Craig Rosenberg, Ph.D.