

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

In re Patent of: Magnus Goertz

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**DECLARATION OF DR. BENJAMIN B. BEDERSON**

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1. I, Dr. Benjamin B. Bederson, declare as follows:

## **I. INTRODUCTION**

2. I have been retained by Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Apple, Inc. (collectively, “Petitioners”) 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 Petitioners’ counsel (“Counsel”) to consider whether certain references teach or suggest the features recited in Claims 1-8 of U.S. Patent No. 8,812,993 (“the ’993 Patent”) (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 \$600 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 other financial interest in this proceeding.

## **II. BACKGROUND AND 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 designing, developing, researching, and teaching the technology referenced in this declaration.

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. I understand that a copy of my current curriculum vitae, which details my education and professional and academic experience, is being submitted as EX1004. The following provides a brief overview of some of my experience that is relevant to the matters set forth in this declaration.

7. I am currently Professor Emeritus of Computer Science at the University of Maryland (“UMD”). From 2014 to 2018, I was the Associate Provost of Learning Initiatives and Executive Director of the Teaching and Learning Transformation Center at the UMD. I am a member and previous director of the Human-Computer Interaction Lab (“HCIL”), the oldest and one of the best known Human-Computer Interaction (“HCI”) research groups in the country. I was also co-founder and Chief Scientist of Zumobi, Inc. from 2006 to 2014, a Seattle-based startup that is a publisher of content applications and advertising platforms for smartphones. I am also co-founder and co-director of the International Children’s Digital Library (“ICDL”), a web site launched in 2002 that provides the world’s largest collection of freely available online children’s books from around the world with an interface aimed to make it easy for children and adults to search and read children’s books online. I am also cofounder and prior Chief Technology Officer of Hazel Analytics, a data analytics company to improve

food safety and better public health whose product sends alerts in warranted circumstances. In addition, I have for more than 25 years consulted for numerous companies in the area of user interfaces, including Hillcrest Labs, Lockheed Martin, Logitech, Microsoft, NASA Goddard Space Flight Center, the Palo Alto Research Center, and Sony.

8. The devices and methods claimed in the '993 Patent generally relate to user interface technology for electronic devices. For more than 30 years, I have studied, designed, and worked in the field of computer science and HCI. That includes teaching and research, with research interests in HCI and the software and technology underlying today's interactive computing systems. This includes the design and implementation of hardware and software systems including the use of capacitive and other sensors, and interactive applications on a range of devices, including embedded systems, controllers, smart phones and PDAs.

9. At UMD, I am focused primarily on the area of HCI, a field that relates to the development and understanding of computing systems to serve users' needs. Researchers and practitioners in this field are focused on making universally usable, useful, efficient, and appealing systems to support people in their wide range of activities. My approach is to balance the development of innovative technology that serves people's practical needs. Example systems following this approach that I have built include Cortex-I (1992 embedded

computer vision system that sensed licensed plates with custom motor, camera and controller), Audio Augmented Reality (1995 embedded system for sensing a user's location and playing audio suited to that location), Fisheye Menus (2000 software for sensing movement within and selection of linear list of items in a menu), PhotoMesa (2001 software for end users to browse personal photos), DateLens (2002 software for end users to use their mobile devices to efficiently access their calendar information), SlideBar (2005 linear sensor to control scrolling), LaunchTile (2005 "home screen" software for mobile devices to allow users to navigate apps in a zoomable environment), SpaceTree (2001 software for end users to efficiently browse very large hierarchies), ICDL (as described above), and StoryKit (a 2009 iPhone app for children to create stories).

10. Throughout the 1990s and 2000s, I worked on a range of "zoomable user interfaces," which are systems that support the multi-scale and spatial organization of and magnification-based navigation among multiple documents or visual objects. I built several different "ZUI" systems over the years, including Pad++, Jazz and Piccolo. In those systems, I used a range of solutions to allow users to control zooming through the information space. The most common approach for systems with three button mice was to use the middle button for zooming in and the right button for zooming out. The user would hold the button down, and the system would smoothly animate zooming in or out – so that the user

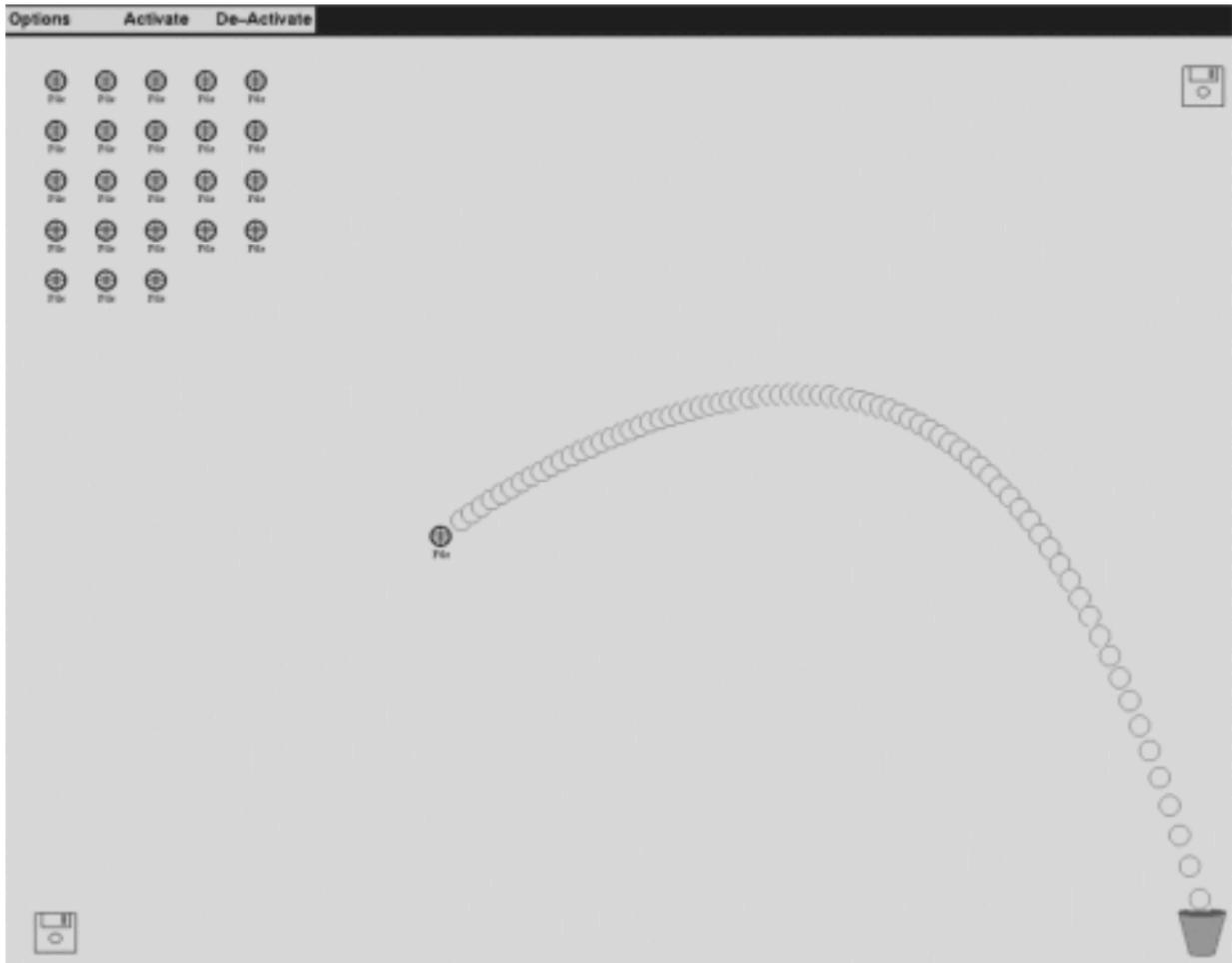
controlled how much the system zoomed based on the duration that the button was pressed.<sup>1</sup>

11. In 1995 and 1996, I supervised graduate student David Rogers and other students in the development of a user interface approach that allowed a user to “toss” an object across long distances on their screen with their mouse. Motivated by increasingly large computer screens, we recognized a need to help users move items long distances without necessarily having to drag the item that entire distance manually. Instead, we calculated the speed and direction that the user dragged an object with their mouse. When a user released the mouse button, if the speed was greater than a threshold, our code calculated the path of where to animate the object based on several factors including the speed and direction of the mouse at the time of mouse button release. The figure below from a paper we wrote in 1996 shows the path of a tossed object. This resulted in David Rogers’s master’s thesis in 1995 and a paper that we submitted to the 1996 Conference on

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<sup>1</sup> Benjamin B. Bederson & James D. Hollan, *Pad++: A Zooming Graphical Interface for Exploring Alternate Interface Physics*, UIST '94 Proceedings of the 7th Annual ACM Symposium on User Interface Software and Technology 17 (1994), DOI: <http://dx.doi.org/10.1145/192426.192435> (EX1018).

Human Factors in Computing Systems (CHI 1996)<sup>2</sup>.



Exemplar Figure of Tossing<sup>3</sup>.

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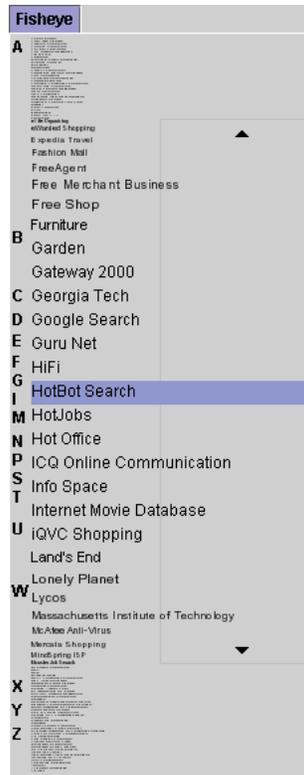
<sup>2</sup> David Rogers et al., *Tossing Objects in a Desktop Environment*, submitted to Conference on Human Factors in Computing Systems (1996) (EX1019).

<sup>3</sup> David Rogers et al., Exemplar Figure of Tossing from *Tossing Objects in a Desktop Environment*, submitted to Conference on Human Factors in Computing Systems (1996) (EX1020).

12. In 1999 and 2000, I worked on a mechanism to address the challenge that users faced when selecting one item from a long menu. As I described in a paper entitled “Fisheye Menus” that I published in the 2000 Proceedings of the ACM Symposium on User Interface Software and Technology,<sup>4</sup> existing techniques typically involved lengthy and slow scrolling techniques. I created an alternative solution that fit all of the elements onto a single screen thereby completely eliminating the need to scroll. This approach used the concept of “fisheye distortion” to shrink some of the elements, while keeping the elements that are under the cursor to be full size so the user could easily see and select them. This approach as depicted in the figure below and described further at EX1021, was later used in a number of commercial products such as the Apple MacOS Dock.

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<sup>4</sup> Benjamin B. Bederson, *Fisheye Menus*, UIST '00 Proceedings of ACM Conference on User Interface Software and Technology 217 (2000), DOI: 10.1145/354401.317382 (EX1021).



EX1023 at Figure 2.

13. Starting in 2000, I supervised graduate student Leslie Chipman who was working on a general solution to improve the user experience of people scrolling long documents on computers. Our solution relied on a passive haptic physical linear input device we called the “Slidebar.” The Slidebar was designed to sit on either side of the keyboard to be used with the non-dominant hand for scanning and rough positioning, and then if the user wanted to switch to reading, the dominant hand could be used for more accurate positioning. With a physical range of motion of approximately two inches, the full range could be accessed by moving just the fingers without moving the entire hand. This took advantage of

human proprioception—the fact that people have excellent ability to know where their body is—and allowed the user to scroll long documents completely eyes-free. They did not need to look at the device or the screen to, for example, move a mouse pointer to a graphical scroll bar. Instead they could focus on their primary task of reading. This work was published in 2004.<sup>5</sup>

14. In April 2000, I visited Professors Wayne Westerman and John Elias at the University of Delaware and gave a talk entitled “Zoomable User Interfaces and Single Display Groupware.” This resulted in a collaboration with Professor Westerman, graduate student Hilary Browne, and others where we used their FingerWorks capacitive Multi-Touch Surface as the input device for a multi-touch finger painting program for children. The project used this input device to support a computer painting program that allowed children to paint with their fingers by directly touching the sensing surface. In contrast to the mouse input more typically used in this time period, this approach enabled us to create a more natural interaction environment. This work, depicted in the figure below, was published in

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<sup>5</sup> Leslie E Chipman et al., *SlideBar: Analysis of a Linear Input Device*, 23 Behaviour & Info. Tech. 1 (2004), DOI: 10.1080/01449290310001638487 (EX1022).

a September 2000 technical report.<sup>6</sup>



EX1023, Figure 1.

15. Throughout the 2000's, I worked on a range of interfaces for mobile devices with a focus on interface design for touch interfaces, including those with capacitive sensors. During this period, it became apparent that some positions on a screen were easier to access than others, especially when used with a single hand. To understand this issue, I led a range of studies that resulted in two papers

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<sup>6</sup> Hilary Browne et al., *Designing a Collaborative Finger Painting Application for Children*, HCIL-2000-17, CS-TR-4184, UMIACS-TR-2000-66 (Sept. 2000), available at <https://hcil.umd.edu/pub-perm-link/?id=2000-17> (EX1023).

published in 2006<sup>7</sup> and 2007<sup>8</sup>. The following figure summarizes the results of one of the studies, and shows that generally speaking, when using a single hand, the center of the screens were easier for users to touch than the edges of the screen, and that the corners of the screen were the hardest positions to touch.

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<sup>7</sup> Pekka Parhi, Amy K. Karlson, and Benjamin B. Bederson. 2006. Target size study for one-handed thumb use on small touchscreen devices. In Proceedings of the 8th Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '06). Association for Computing Machinery, New York, NY, USA, 203–210. DOI:<https://doi.org/10.1145/1152215.1152260> (EX1024).

<sup>8</sup> Karlson, Amy & Bederson, Benjamin & Contreras-Vidal, José. (2008). Understanding One-Handed Use of Mobile Devices. Handbook of Research on User Interface Design and Evaluation for Mobile Technology. 86-101. DOI:10.4018/978-1-59904-871-0.ch006 (EX1025).

**Table 2.** Preference and movement time maps for each device. Depth of color in columns 1 and 2 indicate stronger user agreement.

	Subjective Difficult Regions	Subjective Easy Regions	Preference -Derived Regions Easy — Medium ▨ Hard —	Data- Derived Regions Fastest — Slowest —
SMALL				
FLIP				
LARGE				
PDA				

EX1025 at Table 2.

16. This work on touch screen mobile devices led to my creation of Zumobi in 2006, where I was responsible for investigating new software platforms and developing new user interface designs that provide efficient and engaging interfaces to permit end users to access a wide range of content on mobile platforms (including the iPhone and Android-based devices). For example, I

designed and implemented software called “Ziibii,” a “river” of news for iPhone that used a capacitive sensor for controlling linear movement through news; software called “ZoomCanvas,” a zoomable user interface for several iPhone apps; and iPhone apps including “Inside Xbox” for Microsoft and Snow Report for REI. At the ICDL, I have since 2002 been the technical director responsible for the design and implementation of the web site, [www.childrenslibrary.org](http://www.childrenslibrary.org) (originally at [www.icdlbooks.org](http://www.icdlbooks.org)). In particular, I have been closely involved in designing the user interface as well as the software architecture for the web site since its inception in 2002.

17. Beginning in the mid-1990s, I have been responsible for the design and implementation of numerous other web sites in addition to the ICDL. For example, I designed and built my own professional web site when I was an Assistant Professor of Computer Science at the University of New Mexico in 1995 and have continued to design, write the code for, and update both that site (which I moved to the UMD in 1998, currently at <http://www.cs.umd.edu/~bederson/>) as well as numerous project web sites, such as Pad++, <http://www.cs.umd.edu/hcil/pad++/>. I received the Janet Fabri Memorial Award for Outstanding Doctoral Dissertation for my Ph.D. work in robotics and computer vision. I have combined my hardware and software skills throughout my career in HCI research, building various interactive electrical and mechanical systems that

couple with software to provide an innovative user experience.

18. My work has been published extensively in more than 160 technical publications, and I have given about 100 invited talks, including 9 keynote lectures. I have won a number of awards including the Brian Shackel Award for “outstanding contribution with international impact in the field of HCI” in 2007, and the Social Impact Award in 2010 from the Association for Computing Machinery’s (“ACM”) Special Interest Group on Computer Human Interaction (“SIGCHI”). ACM is the primary international professional community of computer scientists, and SIGCHI is the primary international professional HCI community. I have been honored by both professional organizations. I am an “ACM Distinguished Scientist,” which “recognizes those ACM members with at least 15 years of professional experience and 5 years of continuous Professional Membership who have achieved significant accomplishments or have made a significant impact on the computing field.” I am a member of the “CHI Academy,” which is described as follows: “The CHI Academy is an honorary group of individuals who have made substantial contributions to the field of HCI. These are the principal leaders of the field, whose efforts have shaped the disciplines and/or industry, and led the research and/or innovation in human-computer interaction.” The criteria for election to the CHI Academy are: (1) cumulative contributions to the field; (2) impact on the field through development

of new research directions and/or innovations; and (3) influence on the work of others.

19. I have appeared on radio shows numerous times to discuss issues relating to user interface design and people's use and frustration with common technologies, web sites, and mobile devices. My work has been discussed and I have been quoted by mainstream media around the world over 120 times, including by the New York Times, the Wall Street Journal, the Washington Post, Newsweek, the Seattle Post Intelligencer, the Independent, Le Monde, NPR's All Things Considered, New Scientist Magazine, and MIT's Technology Review.

20. I have designed, programmed, and publicly deployed dozens of user-facing software products that have cumulatively had millions of users. My work is cited by several major companies, including Amazon, Apple, Facebook, Google, and Microsoft. I am a named inventor on 12 U.S. patents and 18 U.S. patent applications. The patents are generally directed to user interfaces/experience.

21. I received a B.S. degree in Computer Science with a minor in Electrical Engineering in 1986 from the Rensselaer Polytechnic Institute. I received M.S. and Ph.D. degrees in Computer Science in 1989 and 1992, both from New York University.

### **III. INFORMATION CONSIDERED**

22. In preparing this declaration, I have considered the materials

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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 the application from which it derives (including the references cited therein), various background articles and materials referenced in this declaration, and the prior art references identified in this declaration. In addition, my opinions are further based on my education, training, experience, and knowledge in the relevant field.

<u>Exhibit No.</u>	<u>Description</u>
<b>Exhibit 1001</b>	U.S. Patent No. 8,812,993 (“the '993 patent”)
<b>Exhibit 1002</b>	Declaration of Ben Bederson
<b>Exhibit 1003</b>	File History for U.S. Patent No. 8,812,993
<b>Exhibit 1004</b>	Ben Bederson CV
<b>Exhibit 1005</b>	Certified translation of JP Published Patent Application No. 2002-55750 (“Hisatomi”), published February 20, 2002
<b>Exhibit 1006</b>	Xiangshi Ren & Shinji Moriyama, “Improving Selection on Pen-Based Systems: A Study of Pen-Based Interaction for Selection Tasks,” ACM Transactions on Computer-Human Interaction, Vol. 7, No. 3, September 2000, pp. 384-416 (“Ren”)
<b>Exhibit 1007</b>	U.S. Patent No. 5,422,656 to Allard et al. (“Allard-656”)
<b>Exhibit 1008</b>	U.S. Patent No. 5,249,296 to Tanaka (“Tanaka”)
<b>Exhibit 1009</b>	U.S. Patent No. 5,615,384 to Allard et al. (“Allard 384”)
<b>Exhibit 1010</b>	U.S. Patent No. 5,537,608 to Beatty et al. (“Beatty”)
<b>Exhibit 1011</b>	U.S. Patent No. 5,903,268 to Hirayama (“Hirayama”)
<b>Exhibit 1012</b>	U.S. Patent No. 5,305,435 to Bronson (“Bronson”)
<b>Exhibit 1013</b>	U.S. Patent No. 6,133,898 to Ludolph et al. (“Ludolph”)
<b>Exhibit 1014</b>	Tammara T. A. Combs and Benjamin B. Bederson “Does zooming improve image browsing?” Proceedings of the Fourth ACM Conference on Digital Libraries (DL '99), ACM, New York, NY, USA, (August 1999) 130-137
<b>Exhibit 1015</b>	Dean Harris Rubine, “The Automatic Recognition of Gestures,” CMU-CS-91-202, December, 1991.

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<b>Exhibit 1016</b>	U.S. Patent No. 6,710,791 to Kodama et al. (“Kodama”)
<b>Exhibit 1017</b>	IBM Simon Users Manual, 1994
<b>Exhibit 1018</b>	Benjamin B. Bederson & James D. Hollan, <i>Pad++: A Zooming Graphical Interface for Exploring Alternate Interface Physics</i> , UIST '94 Proceedings of the 7th Annual ACM Symposium on User Interface Software and Technology 17 (1994), DOI: <a href="http://dx.doi.org/10.1145/192426.192435">http://dx.doi.org/10.1145/192426.192435</a>
<b>Exhibit 1019</b>	David Rogers et al., <i>Tossing Objects in a Desktop Environment</i> , submitted to Conference on Human Factors in Computing Systems (1996)
<b>Exhibit 1020</b>	David Rogers et al., Exemplar Figure of Tossing from <i>Tossing Objects in a Desktop Environment</i> , submitted to Conference on Human Factors in Computing Systems (1996)
<b>Exhibit 1021</b>	Benjamin B. Bederson, <i>Fisheye Menus</i> , UIST '00 Proceedings of ACM Conference on User Interface Software and Technology 217 (2000), DOI: <a href="https://doi.org/10.1145/354401.317382">10.1145/354401.317382</a>
<b>Exhibit 1022</b>	Leslie E Chipman et al., <i>SlideBar: Analysis of a Linear Input Device</i> , 23 Behaviour & Info. Tech. 1 (2004), DOI: <a href="https://doi.org/10.1080/01449290310001638487">10.1080/01449290310001638487</a>
<b>Exhibit 1023</b>	Hilary Browne et al., <i>Designing a Collaborative Finger Painting Application for Children</i> , HCIL-2000-17, CS-TR-4184, UMIACS-TR-2000-66 (Sept. 2000), available at <a href="https://hcil.umd.edu/pub-perm-link/?id=2000-17">https://hcil.umd.edu/pub-perm-link/?id=2000-17</a>
<b>Exhibit 1024</b>	Pekka Parhi, Amy K. Karlson, and Benjamin B. Bederson. 2006. Target size study for one-handed thumb use on small touchscreen devices. In Proceedings of the 8th Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '06). Association for Computing Machinery, New York, NY, USA, 203–210. DOI: <a href="https://doi.org/10.1145/1152215.1152260">https://doi.org/10.1145/1152215.1152260</a>
<b>Exhibit 1025</b>	Karlson, Amy & Bederson, Benjamin & Contreras-Vidal, José. (2008). Understanding One-Handed Use of Mobile Devices. Handbook of Research on User Interface Design and Evaluation for Mobile Technology. 86-101. DOI:10.4018/978-1-59904-871-0.ch006
<b>Exhibit 1026</b>	Apple Newton Message Pad Handbook (1993)
<b>Exhibit 1027</b>	Handbook for Palm m500 Series Handhelds (1998)
<b>Exhibit 1028</b>	HP Jornada 520 Series Pocket PC User Guide (2001)
<b>Exhibit 1029</b>	U.S. Patent No. 5,821,930 to Hansen (“Hansen”)

<b>Exhibit 1030</b>	U.S. Patent Application to Publication No. 2005/0024341 (“Gillespie”)
<b>Exhibit 1031</b>	Declaration of Mr. Jacob Munford
<b>Exhibit 1032</b>	Norman, D. A. (1988). <i>The psychology of everyday things</i> . BasicBooks. ISBN: 0-465-06709-3.
<b>Exhibit 1033</b>	U.S. Publication No. 2001/0043189 to Brisebois (“Brisebois”)

#### IV. RELEVANT LEGAL STANDARDS

23. 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

24. I have been informed and understand that in an IPR proceeding, claims are to be interpreted according to the *Phillips* claim construction standard. 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

25. 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, what a prior art reference discloses, and whether an invention is obvious or not, one must use the perspective of such a POSA.

**C. Anticipation**

26. I have been informed and understand that a patent claim is anticipated under 35 U.S.C. § 102, and is therefore invalid, if all of the elements of the claim are disclosed by a single prior art reference.

27. I understand that a claim is anticipated if each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. For example, I understand that a claim limitation is inherently disclosed if it is not explicitly present in the written description of the prior art, but would necessarily be embodied or met by an apparatus or method as taught by the prior art. Moreover, I understand that anticipation does not require that the prior art use the same terminology recited within the patent claims.

**D. Obviousness**

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

29. 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).

30. 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.

31. 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 the combination is of familiar elements according to known

methods that yields predictable results;

- e. whether a combination involves the substitution of one known element for another that yields predictable results;
- f. whether the combination involves the use of a known technique to improve similar items or methods in the same way that yields predictable results;
- g. whether the combination involves the application of a known technique to a prior art reference that is ready for improvement, to yield predictable results;
- h. whether the combination is “obvious to try”;
- i. 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;
- j. 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;
- k. whether the combination requires modifications that render the prior art unsatisfactory for its intended use;

- l. whether the combination requires modifications that change the principle of operation of the reference;
- m. whether the combination is reasonably expected to be a success; and
- n. whether the combination possesses the requisite degree of predictability at the time the invention was made.

32. 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.

## **V. SUMMARY OF MY OPINIONS**

33. I have been asked to consider whether the claims of the '993 Patent are anticipated or obvious over certain prior art references. As explained below in detail in this declaration, it is my opinion that:

- Claims 1-3 and 7-8 are rendered obvious by Hisatomi (EX1005) in view of Ren (EX1006) and/or POSA knowledge;
- Claim 4 is rendered obvious by Hisatomi in view of POSA knowledge and Allard-656 (EX1007) and/or Ren and Allard-656;
- Claim 5 is rendered obvious by Hisatomi in view of POSA knowledge and Tanaka (EX1008) and/or Ren and Tanaka;
- Claim 6 is rendered obvious by Hisatomi in view of POSA knowledge and Kodama (EX1016) and/or Ren and Kodama;

- Claims 1-3, 7, and 8 are rendered obvious by Hansen and Gillespie (EX1030);
- Claim 4 is rendered obvious by Hansen in view of Gillespie and Allard-656;
- Claim 5 is rendered obvious by Hansen in view of Gillespie and Tanaka;
- Claim 6 is rendered obvious by Hansen in view of Gillespie and Kodama

## **VI. THE '993 PATENT**

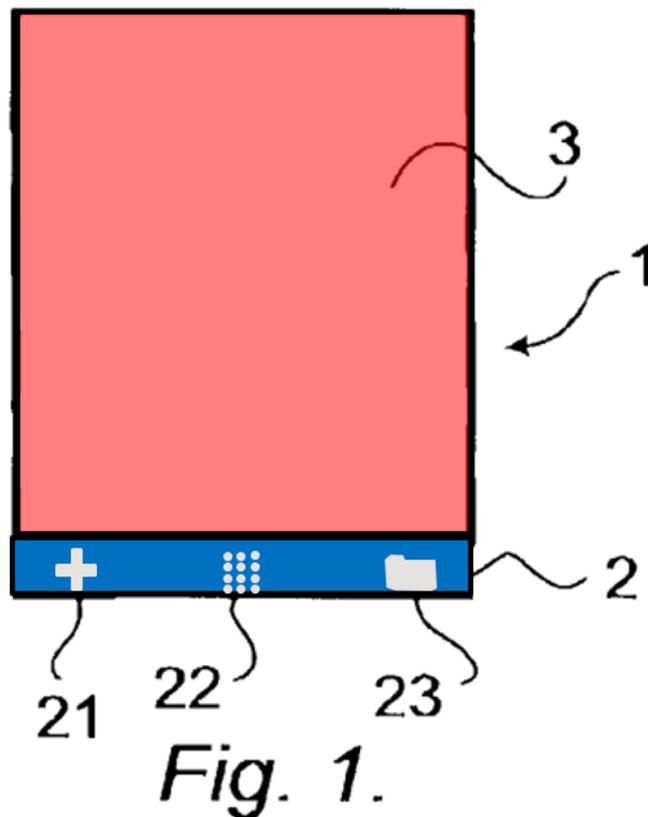
### **A. The '993 Patent Alleged Invention**

34. The '993 Patent “relates to a user interface for a mobile handheld computer unit, which ... comprises a touch sensitive area, and [the] touch sensitive area is divided into a menu area and a display area.” EX1001, 1:14-17, 3:57-65. The '993 patent acknowledges that a variety of “mobile handheld computers” were known at the time, including “personal digital assistant[s] (PDA),” “the mobile phone,” and “the laptop computer.” EX1001, 1:33-42. The '993 patent notes “[t]he need to manage more information [on these devices] has led the development towards new solutions regarding user interfaces and navigations,” specifically for “providing a user interface that is suitable for small handheld computer units.” EX1001, 1:44-53.

35. The '993 patent admits that the starting point on which the alleged invention builds is a “user interface for a mobile handheld computer unit, which computer unit comprises a touch sensitive area, which touch sensitive area is

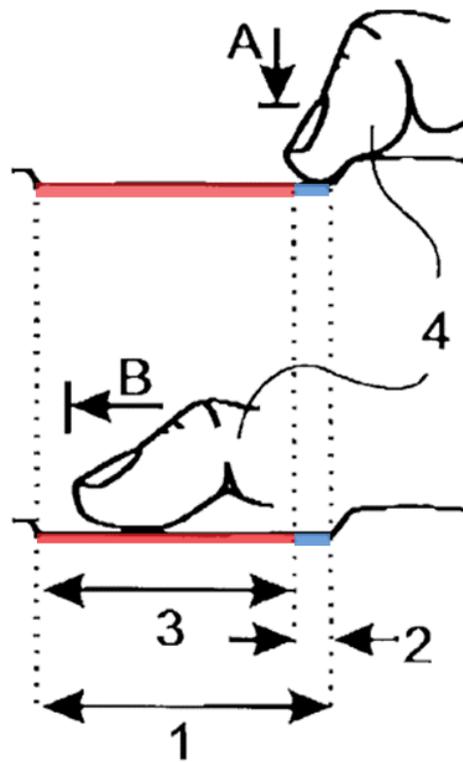
divided into a menu area and a display area, which computer unit is adapted to run several applications simultaneously and to present an active application on top of any other application on the display area ... ." EX1001, 2:8-12. The '993 patent remarks "the present invention does not depend on what kind of touch sensitive display that is used in relation to the inventive user interface," recognizing that "there are several different kinds of known touch sensitive displays" known in the art. EX1001, 3:61-65.

36. FIG. 1 illustrates "a user interface according to the present invention [] specifically adapted to computer units comprising a touch sensitive area 1, which is divided into a menu area 2 and a display area 3." EX1001, 3:58-61. The '993 describes that "[a]ccording to the present invention the menu area 2 is adapted to present a representation of a first 21, a second 22 and a third 23 predefined function." EX1001, 4:8-10. I have reproduced and annotated FIG. 1 below to illustrate the display area 3 in red and the menu area in blue.



EX1001, FIG. 1 (emphasis added). The computer unit “is adapted to run several applications simultaneously and to present an active application on top of any other application on the display area 3.” EX1001, 3:66-4:1.

37. According to the '993 patent “FIG. 2 shows that any one of these three functions 21, 22, 23 can be activated when the touch sensitive area 1 detects a movement of an object 4 with its starting point A within the representation of a function on the menu area 2 and with a direction B from the menu area 2 to the display area 3.” EX1001, 4:14-19. In other words, the touch begins within the menu area 2 (blue) and continues into the display area 3 (red) , as shown below:



*Fig. 2.*

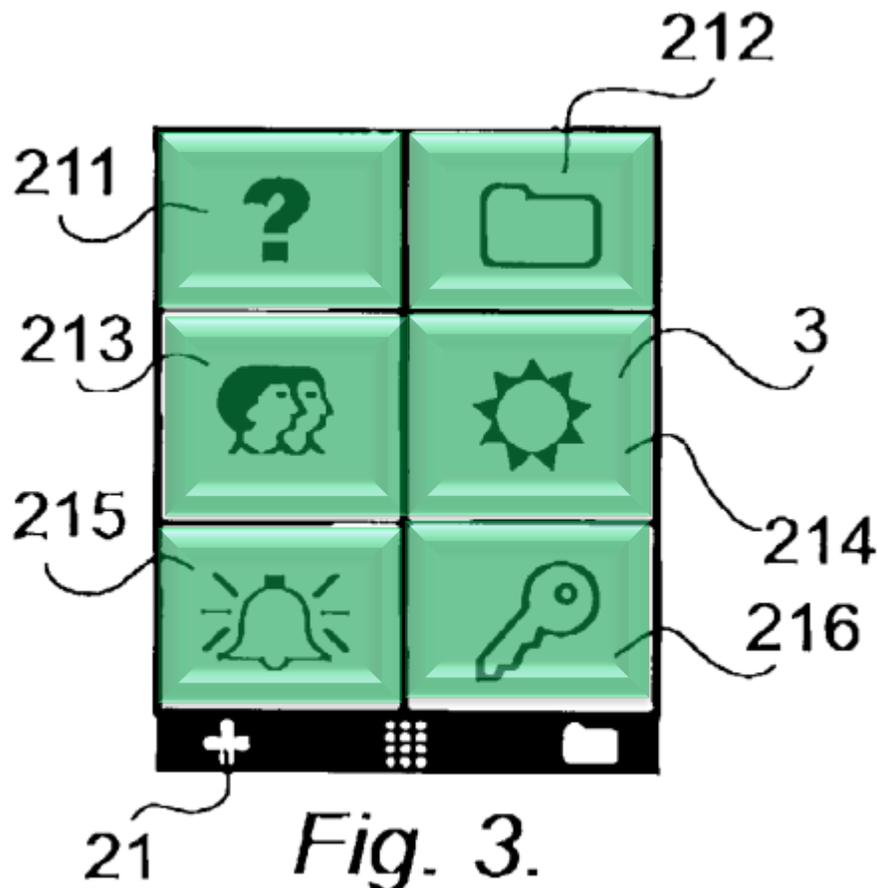
EX1001, FIG. 2 (emphasis added).

38. The '993 patent discloses “[t]he first function 21 is a general application dependent function, the second function 22 is a keyboard function, and the third function 23 is a task and file manager.” EX1001, 4:11-13. “FIG. 3 shows that if the first function 21 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.

39. Each icon may correspond to any number of pre-defined services and/or settings. The '993 discloses, for example, “[i]f 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.”

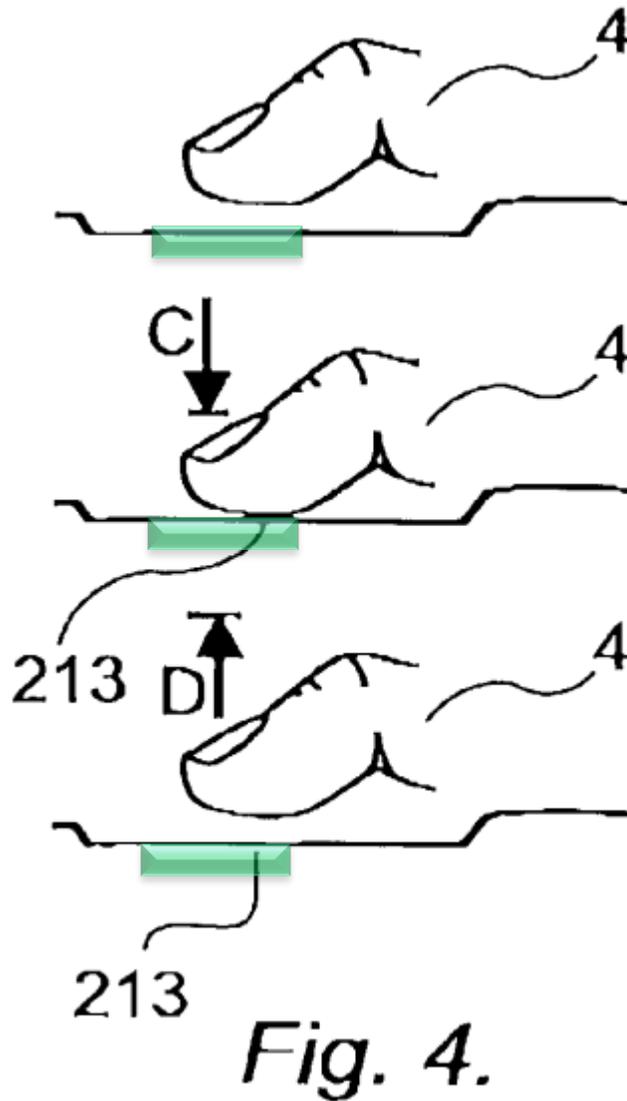
EX1001, 4:36-40.



EX1001, FIG. 3 (emphasis added, showing icons in green). If “the active application handles a picture, then 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.

40. “FIG. 4 shows that selection of a preferred service or setting is done by tapping C, D on corresponding icon 213.” EX1001 at 4:41-42, FIG. 4.



EX1001 at FIG. 4 (annotated to show the location of an icon in green).

41. The '993 patent includes one independent claim, Claim 1, and seven dependent claims which depend from the single independent claim. Claim 1

recites a user interface that transitions between a “tap-absent state”—a state in which tap-activatable icons are absent but an otherwise-activatable graphic is present in a strip along at least one edge of the display screen—to a “tap-present state”—a state in which a plurality of tap-activatable icons for a respective plurality of pre-designated system functions are present—by an object touching the display screen within the strip, and (ii) the object gliding on the display screen away from and out of the strip.

**B. The '993 Patent Prosecution History**

42. Patent Application No. 13/310,755, which eventually issued as the '993 patent, was filed on December 4, 2011.

43. Early in prosecution, Applicant argued the claims were novel because, “at the time of the invention, tap gestures were the most intuitive gestures for selecting and activating graphic user interface elements on a touch screen.” EX1003, 321. Nonetheless the Examiner maintained numerous rejections of the claims, as summarized below.

44. On December 20, 2012, Applicant amended Claim 21 to recite a home state with a plurality of tap-activatable icons and a tap-disabled state, wherein tap-activatable icons are absent. EX1003 at 312-313. Applicant attempted to distinguish the prior art by arguing that “Carlson, Pogue, Swipe, and Gough all include tap-activatable icons when a user gesture is performed”—that is, the

gestures do not transition from a tap-disabled state to a state with tap-activatable icons. EX1003 at 320. Applicant argued that “at the time of the invention, tap gestures were the most intuitive gestures for selecting and activating graphic user interface elements on a touch screen.” EX1003 at 321 (suggesting that U.S. Patent No. 6,757,001 to Allport (“Allport”) supports the conventional nature of tap activation and “in this case, there is no distinction possible between “pointing” and “clicking”). Applicant argued that “FIG. 1 shows the tap-disabled state, and FIG. 3 shows the home state.” EX1003 at 324.

45. On March 4, 2013, the Patent Office rejected claim 21 under § 112 due to the lack of written description in the specification of a home state and a tap-disabled state. EX1003, 250. The Examiner stated the “home state shall be given no such meaning as an initial or default state since it was not described in the specification.” EX1003 at 251. Likewise, tap-disabled is not described because the specification does not describe “a state in which tap is disabled on the screen.” EX1003 at 251. On May 3, 2013, Applicant responded to the March 4 Non-Final Rejection by amending claim 21 to recite a tap-present and tap-absent state in response to the § 112 rejection. EX1003 at 227-228. Applicant argued that Kho, which teaches a sleep state, does not have an “otherwise-activatable icon” when it is in sleep state. EX1003 at 230. Applicant also argued that the prior art cited by the Examiner did not disclose a tap-present or tap-absent state. EX1003, 232.

46. On October 25, Applicant responded to a July 29 Final Rejection by amending claim 21 to add that the activatable graphic is present “in a strip along at least one edge of the display screen,” and that step (i) of multi-step gesture comprises “an object touching the ~~touch sensitive surface at a location where the otherwise activatable graphic is provided~~ display screen within the strip.” EX1003, 148-152 (markings in original). Applicant attempted to distinguish U.S. Patent No. 5,821,930 to Hansen (“Hansen”) by arguing that the minimize, maximize, and close buttons shown on the window in Hansen are tap-activatable buttons such that Hansen does not disclose a tap-absent state. EX1003, 156-157.

47. On December 4, 2013, the Examiner rejected claims 21, 37, 39, and 43-47 under 103(a) in view of Hansen, Hirayama, and U.S. Patent Publication 2001/0043189 to Brisebois (“Brisebois”). EX1003, 90-95. On March 19, Applicant responded by amending claim 21 to recite that step (ii) of the multi-step gesture comprises “the object gliding ~~along~~ on the display screen away from ~~the touched location~~ and out of the strip.” EX1003, 72-73 (markings in original). Applicant attempted to distinguish the prior art by arguing that Brisebois discloses a user movement or gestures along and within a strip or area, while the amended claims “recite that the object glides away from and out of the strip.” EX1003, 78-79 (emphasis in original). On June 2, 2014, the Notice of Allowance issued.

**C. Priority Date**

48. For purposes of my analysis, I apply the date of filing of the application to which the '993 patent claims priority, which is December 10, 2002. All of the prior art relied on in this declaration were published and/or filed before the priority date I apply in my analysis.

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

49. As explained herein, my analysis of the validity of the '993 patent will be undertaken from the perspective of what would have been known or understood by a person of ordinary skill in the art relevant to the subject matter of the patent in question when the named inventors of the patent conceived of and reduced the claimed inventions to practice.

50. In determining the level of ordinary skill in the art, I considered, for example, the type of problems encountered in the art, prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field.

51. 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.

52. Based on my experience, education, and training, I met the definition of a POSA in 2002. 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. If the Patent Owner alleges an earlier invention date, such as 2001, my opinions from the perspective of a POSA at that time would not change.

**E. Claim Construction**

53. I interpret the claims of the '993 Patent according to the *Phillips* claim construction standard. 83 Fed. Reg. 51340, 51340-44 (Oct. 11, 2018); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). I do not believe that any explicit claim construction is required to resolve the validity issues in this Petition.

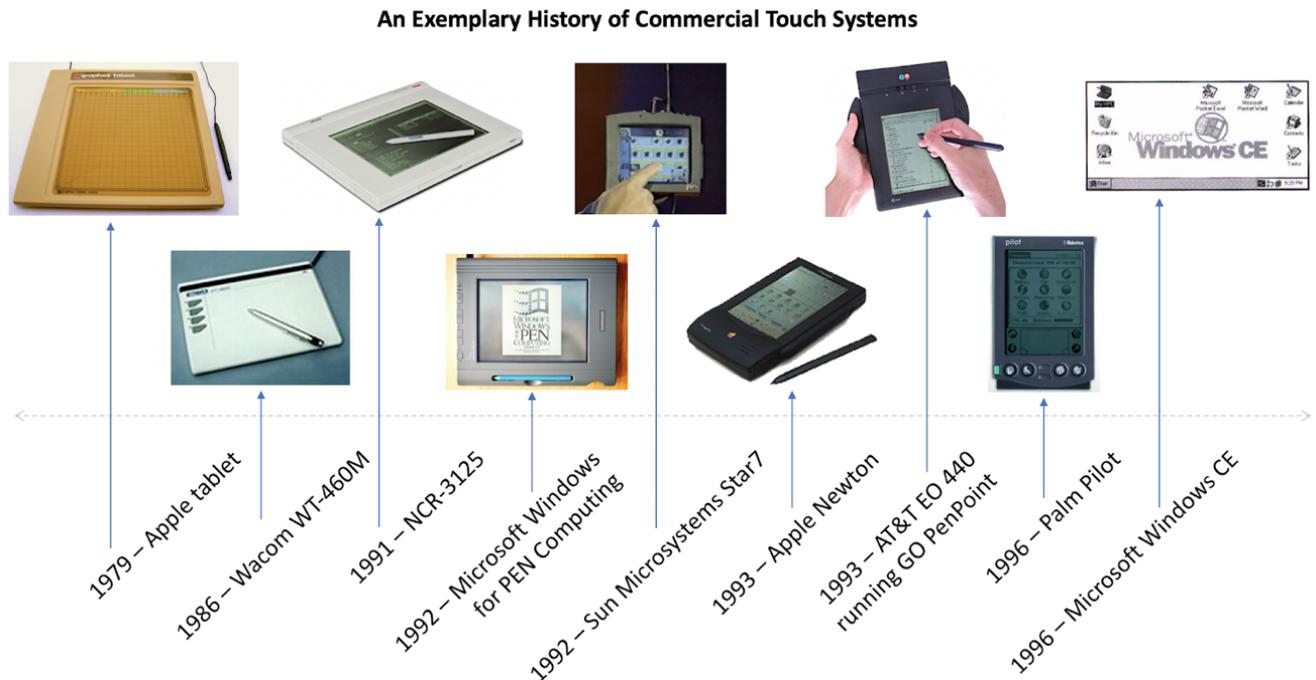
**VII. THE PRIOR ART**

**A. Well-known Concepts as of the Critical Date**

**1. Electronic Devices Comprising Touch-sensitive Display Screens and Computer Readable Medium for Storing Instructions to Enable a User Interface for said Device**

54. The electronic devices discussed in the '993 patent—those that included a touch-sensitive display screen, a processor, and non-transitory computer readable medium for storing user interface instructions—were well-known in the art.

55. Touch sensing technologies were deployed in a wide variety of research-oriented and commercial products by the time of the priority date of the '993 Patent. A sample of exemplary systems are depicted in the figure below that show pen and finger-based touch screen and tablet computing devices. Even the ones shown being used with a finger could also be used with a stylus. And the two (Palm Pilot and Microsoft Windows CE) that are shown without a stylus were, based on my experience, distributed and used with styli. There were of course, many more devices and software, but this shows a few devices demonstrating important milestones and announcements.



See, e.g., EX1017 (IBM Simon User Manual); EX1026 (Apple Newton Message Pad Handbook); EX1027 (Handbook for Palm m500); EX1028 (User Guide for HP

Jornada 520 Pocket PC). The IBM Simon was also a well-known touch screen mobile phone, available by 1995, that provided a graphical user interface that received touch input either through a stylus or a user's finger. EX1017.



EX1017, pp. 10, 11.

56. U.S. Patent No. 5,249,296 to Tanaka (“Tanaka”) discloses a computer apparatus or tablet including a CPU, ROM, RAM, backup memory, and a tablet 8 comprised of touch electrodes allowing for input via a pen. EX1008 at 3:46-4:12, FIG. 2.

57. U.S. Patent No. 5,615,384 to Allard et al. (“Allard 384”), which identifies IBM as the assignee on its cover page, discloses a “mobile, hand-held personal communicator [that] includes a . . . data processing system [and] . . . a touchscreen display.” EX1009 at Abstract. More specifically, the device of Allard

appears to be an embodiment of the IBM Simon device, and includes a touch overlay, LCD, backlight, touch controls, Disk ROM, Main Memory, System Controller, Microprocessor, and other related components. *See, e.g.*, EX1009 at 3:21-5:22, FIG. 3; *see also* EX1007 at 3:28-5:38, FIG. 3.

58. As another example, U.S. Patent No. 5,537,608 to Beatty et al. (“Beatty”) discloses a “personal communication apparatus [that] includes a digital processor, a memory coupled to the processor, an operating system stored in the memory and executable by the processor, [and] a touch-screen user interface coupled to the processor and memory.” EX1010 at Abstract; *see also id.* at 1:39-55.

59. U.S. Patent No. 5,903,268 to Hirayama (“Hirayama”) discloses an apparatus with a display allowing for input via a pen, as well as a CPU and Memory. EX1011 at 5:4-6:46, FIG. 5, 8, 9, 11-13, 17, 21-23.

60. Hisatomi discloses “conventional notebook-sized portable information terminal[s]” that included “touch-sensitive keys on [a] liquid crystal display” that can be selected to execute functions on the terminal. EX1004 at 0002.

## **2. User Interfaces Comprising a State Where Tap-Activatable Icons Are Absent to Avoid a Cluttered Screen**

61. It was well known at the time of the ’993 patent for a user interface to include a state in which tap-activatable icons are absent, or mostly absent, in order to avoid a cluttered workspace.

62. For example, U.S. Patent No. 5,305,435 to Bronson (“Bronson”) described the desirability of a cleared off desktop and disclosed a display interface system that included a state in which the “central area 20 . . . is free of any actively displayed windows. All of the windows have been pushed off the screen and window tabs have been automatically created for them along the screen edges.” EX1012 at 6:58-7:11 (“The result is that all of the windows 22’-36’ are . . . offscreen and out of view. This situation represents a cleared off desktop.”)

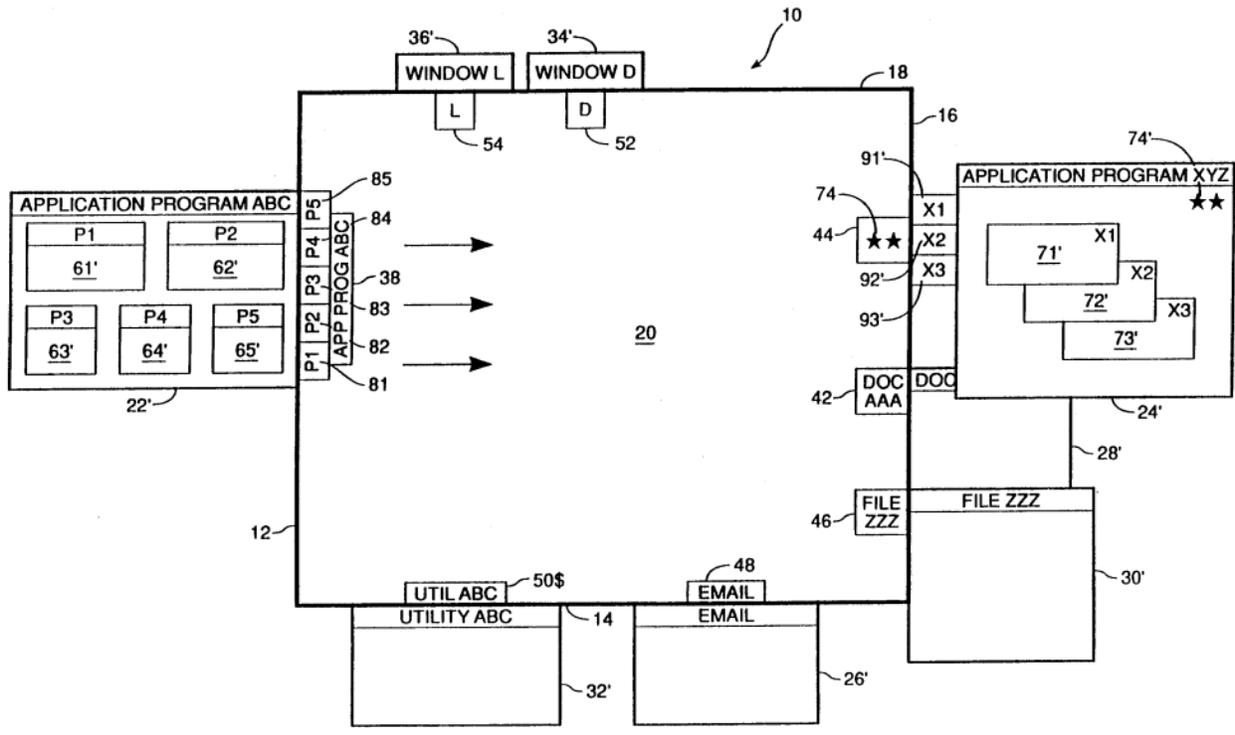


FIG. 4

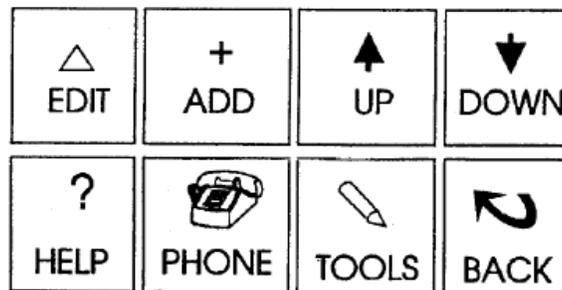
EX1012 at FIG. 4.

**3. User Interfaces Comprising a State Where A Plurality of Tap-Activatable Icons Are Present**

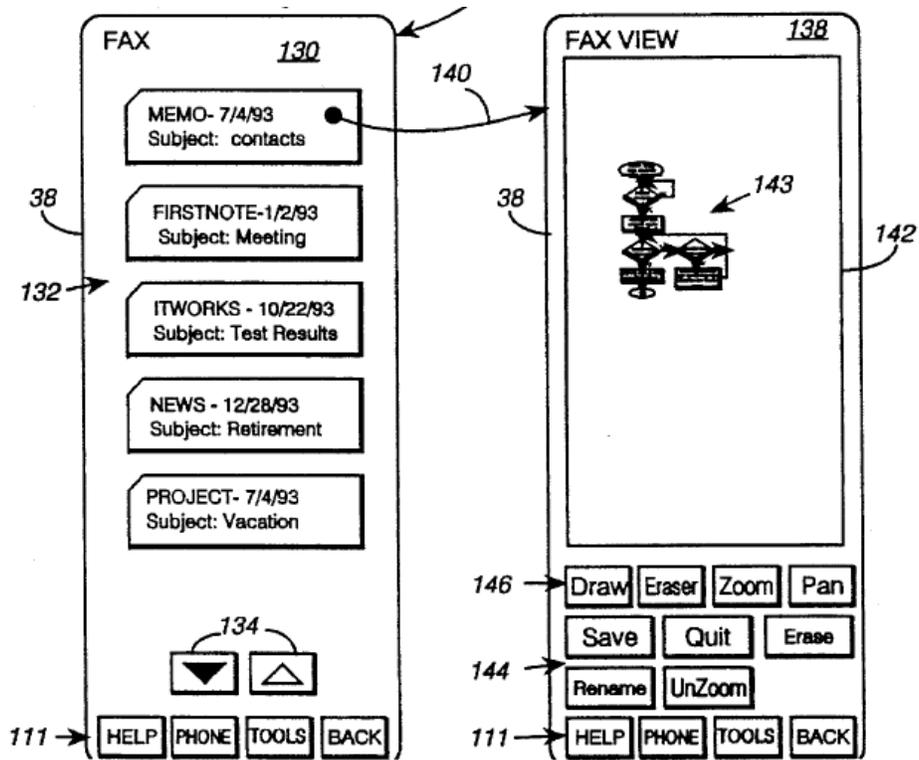
63. It was well known at the time of the '993 patent for a user interface to

include a state in which tap-activatable icons were present and displayed such that they could be selected.

64. For example, Beatty discloses a list of icons representing functions such as “Help,” “Phone,” “Tools,” and “Back.” EX1010 at FIG. 3D (reproduced below).



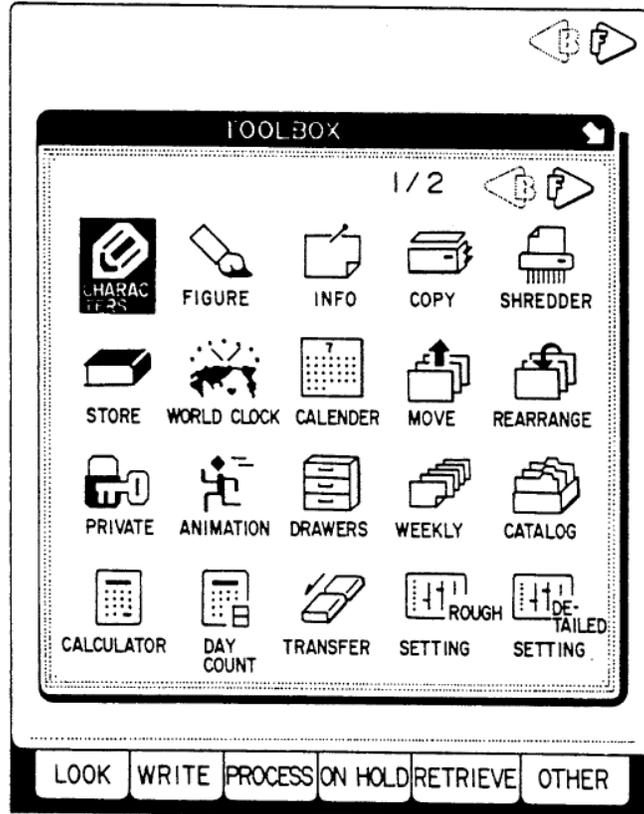
65. Allard 384 discloses states with touch-activatable icons representing functions such as Help, Phone, Tools, Draw, Eraser, Zoom, Pan, Save, Quit, Erase, Rename, Unzoom. EX1009 at 5:26-6:17, FIG. 4; *see also* EX1007 at FIG. 5:41-6:11, 4A, 4B.



66. Tanaka discloses multiple user interfaces with touch activatable icons.

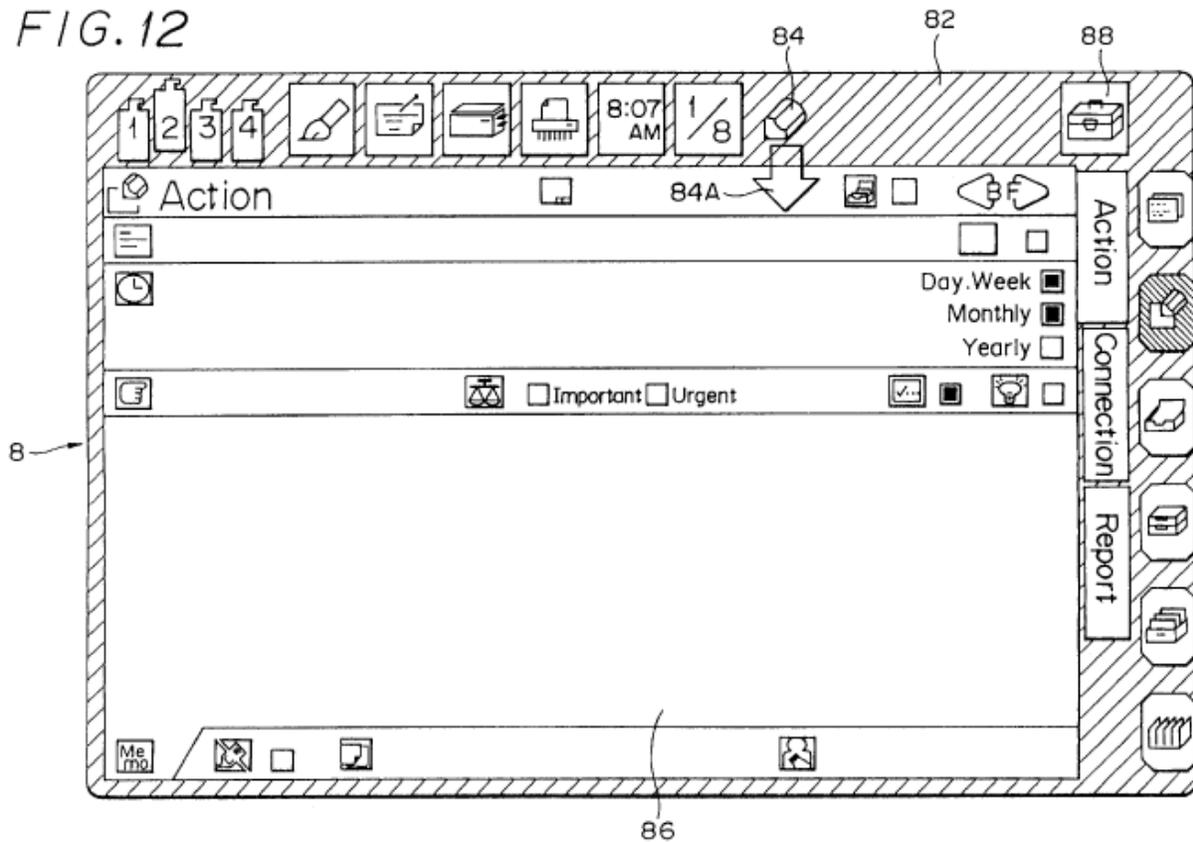
EX1008 at FIGS. 5, 8, 9.

FIG. 5



67. Hirayama discloses multiple user interfaces with touch activatable icons. EX1011 at 1:15-26, 6:47-7:6, FIGS. 11-13, 17, 21-23.

FIG. 12



68. Bronson likewise discloses a user interface in which at least one state includes multiple selectable icons. EX1012 at 7:66-8:22 (“A file drawer icon may be included on tabs 110 a-d.”).

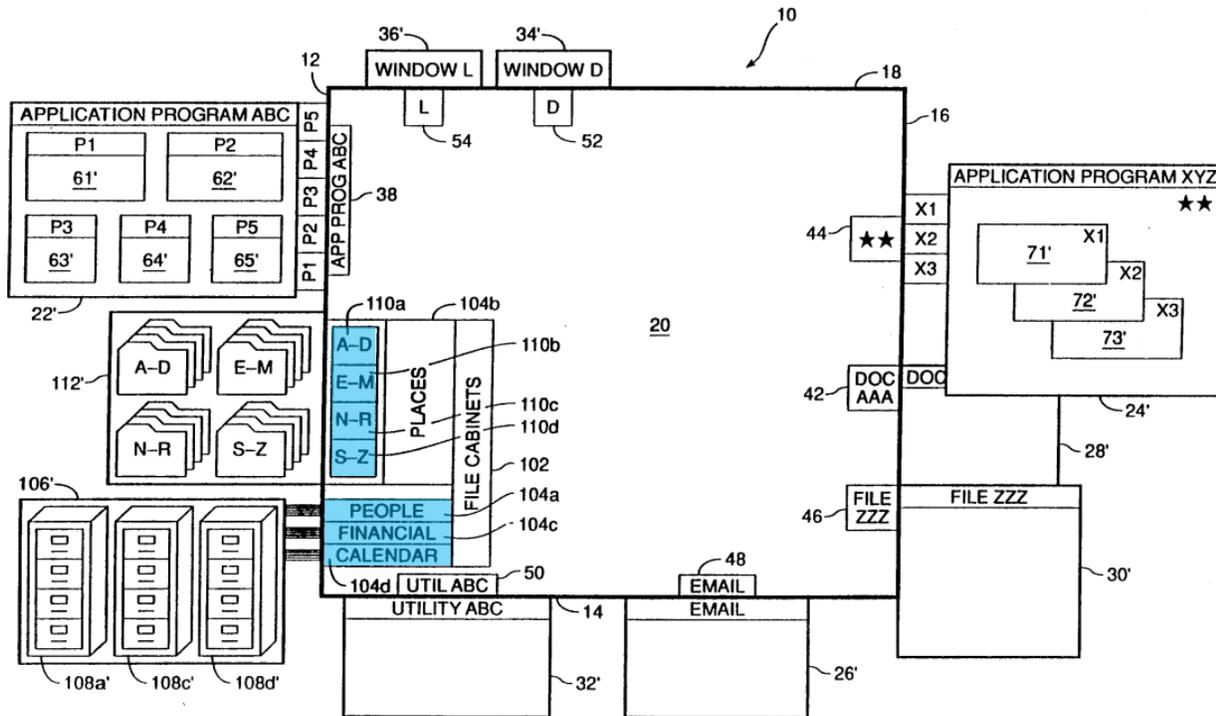
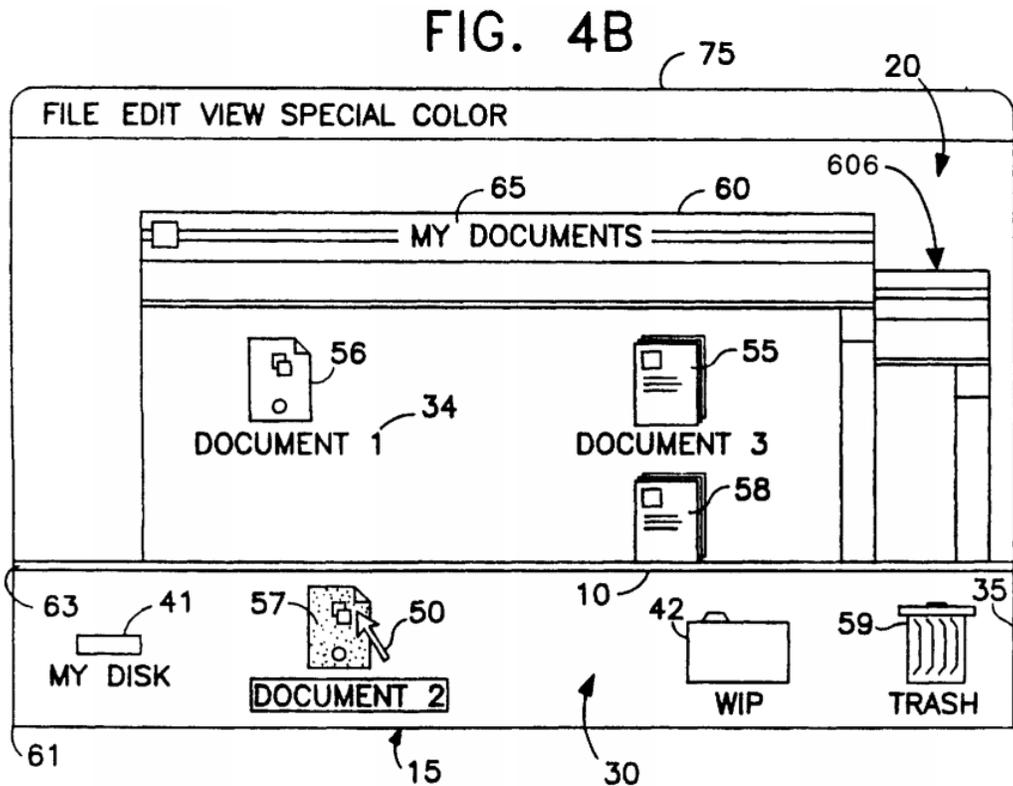


FIG. 8

EX1012, FIG. 8.

69. As yet another example, Ludolph discloses a user interface includes a state in which the desk drawer element is visible on the display screen and contains clickable or otherwise selectable icons. EX1013 at 2:28-31 (“The mouse also contains one or more push buttons which can be used to effectuate control over the cursor pointer by selecting or deselecting specific icons or other display tools.”), 12:55-58 (“For example, while within the drawer space 30, the cursor pointer 50 may among other things, Select or highlight an icon.”), 14:29-31 (“The cursor pointer 50 is placed over the desired icon 57 and the cursor device is activated thus highlighting and Selecting the icon 57.”), 15:6-41, 19:62-65 (“Another means of

opening requires both cursor pointer 50 position on the handle bar 10 region and simultaneously a depression (click) of the cursor button 83. This is called the “mouse down” operation.”).



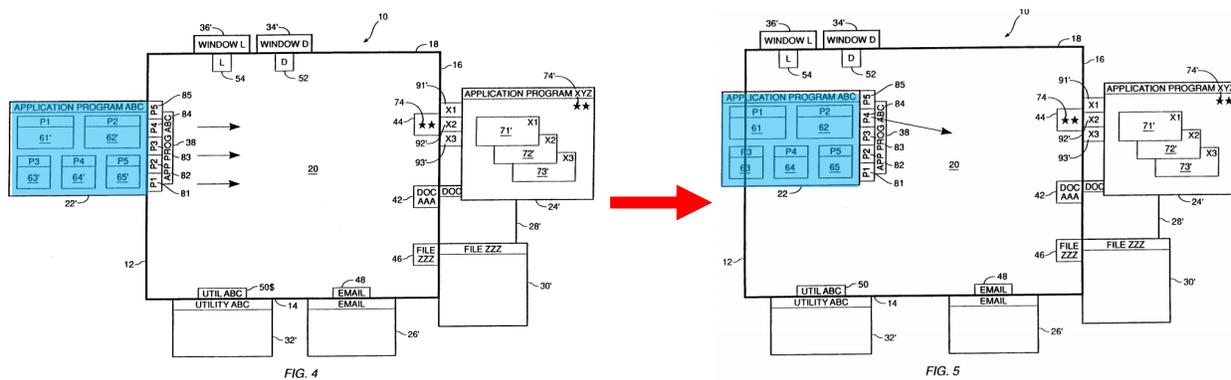
EX1013, FIG. 4B.

#### 4. Transitioning Between States Within a User Interface Using a Touch-and-Glide Gesture

70. At the time of the '993 patent, it was common for user interfaces to transition between states in response to a mouse or touch input to touch and drag a graphic representation on the screen.

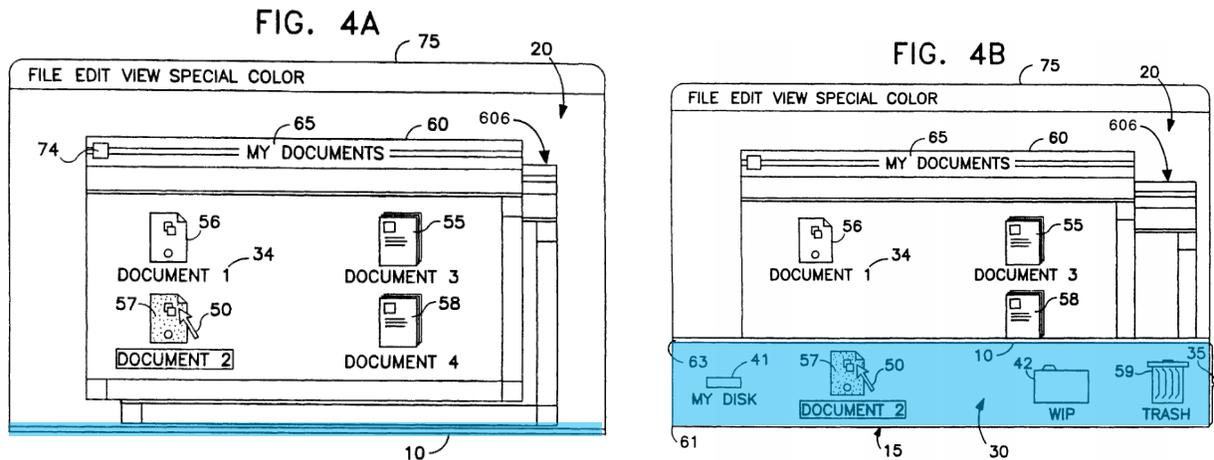
71. For example, Bronson discloses an empty desktop showing only

window tabs. EX1012 at FIG. 4. By selecting a window tab and pulling it towards the center of the screen, the associated window and any icons, files, or programs it contains will become visible in the display area. EX1012, 5:54-6:3, 7:23-35, 8:1-22, FIGS. 1, 4-5, 7-9. Figures 4 and 5 of Bronson illustrate the effects of selecting a window tab and pulling it towards the center of the screen.



EX1012, Figs 4, 5 (annotated).

72. Likewise, Ludolph discloses transitioning from one user interface to another based on a user selecting the handlebar 10 and dragging it towards the center of the screen to reveal the desk drawer area. EX1013 at 18:14-33 (“[U]sing the enlargement technique described above, the user may easily ‘switch on’ the Desk Drawer by dragging the handle bar 10 upward once again to create a useful sized drawer space 30”), 19:62-65 (“Another means of opening requires both cursor pointer 50 position on the handle bar 10 region and simultaneously a depression (click) of the cursor button 83. This is called the ‘mouse down’ operation.”) FIG. 4A, 4B, 5A, 5B, 9A, 9B, 9C, 10A, 10B, 10C.



EX1013, FIGS. 4A, 4B (emphasis added).

## B. Prior Art Combinations

### 1. Hisatomi, Ren, Allard-656, Tanaka, and Kodoma

#### a) Hisatomi (EX1004)

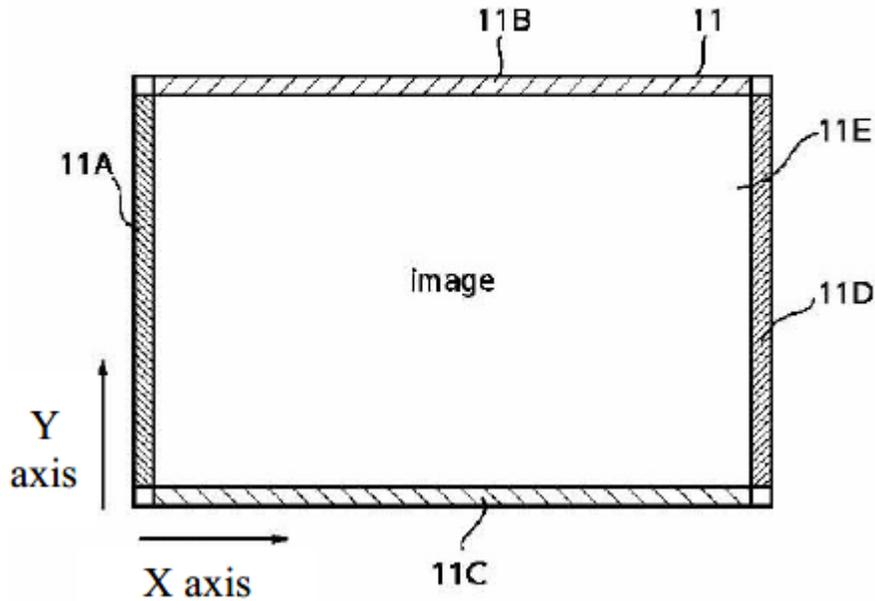
73. Hisatomi was published on February 20, 2002, which is before the December 10, 2002 filing date of the earliest application to which the '993 Patent claims priority. EX1004 at cover.

74. Hisatomi discloses a “portable information processing device 01 [that] is a notebook-sized portable information terminal (PDA) that is mounted with an image display screen 09 with the capability to display full-color image information in high definition, and receives the coordinate instructions mainly from a pen-type input device 05.” EX1004 at 0012.

75. Hisatomi also teaches a “touch panel sensor 11, [with] an image display area 11E and [pull-out] menu display trigger areas 11A to 11D.” EX1004

at 0018. Initially, only the whole main image and the menu trigger areas are visible in the display area. See FIGS. 5, 6, 10, 11.

[FIG. 5]



EX1004 at FIG. 5.

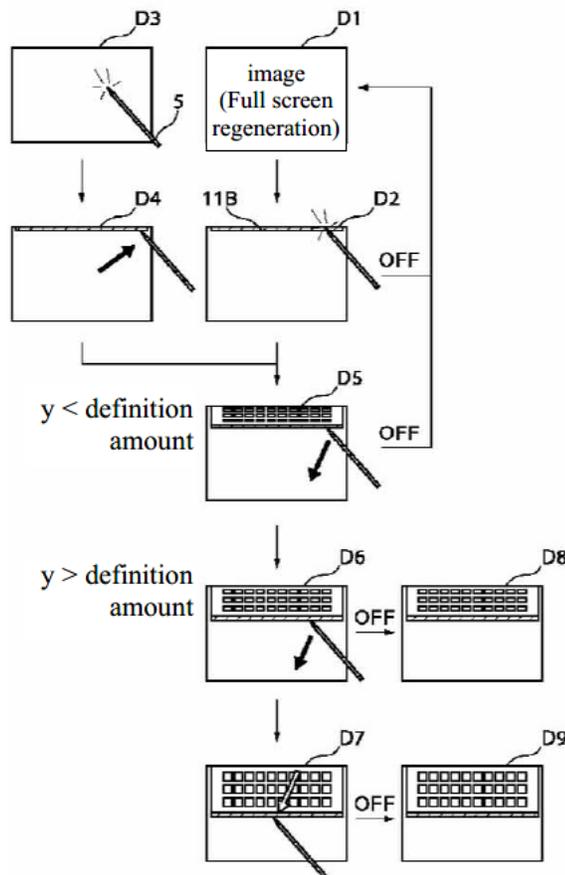
76. The different trigger areas may be distinguished from one another using different “patterns or colors.” EX1004 at 0027. Each trigger area also includes predefined coordinate information that is registered in the device’s memory. EX1004 at 0018. Each trigger area may be associated with a specific category or classification of related functions such that “when any of the pull-out menu display trigger areas 11A to 11D [is] selected by the input device 05, the corresponding one of the A to D classification menus will be displayed as a ‘pull-

out menu' on the image display screen 09." EX1004 at 0020. Additionally, "the contents to be laid out in the pull-out menu may be a list of buttons based on icons or text." EX1004 at 0021. For example, the trigger areas may be associated with menus such as search functions, character input, photo editing functions, file saving and organizing functions, user settings, detailed system settings, etc. EX1004 at 0022, 0023, 0114, FIGS. 30, 31.

77. When a touch of the input device 05 is detected by the touch panel, the generated coordinate information is compared with the trigger area coordinate information registered in memory to determine if the touch of the input device is on a pull-out menu display trigger area. EX1004 at 0018, FIGS. 10, 11, 12. The graphic depicting the trigger area may be highlighted or change color or texture once selected.

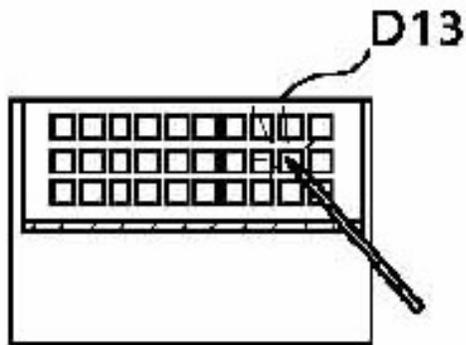
78. When the input device 05 is scrolled from the trigger area toward the center of the touch panel sensor 11, the pull-out menu and the icons it contains will be displayed. EX1004 at 0018, 0025, FIGS. 6, 10, 11, 12.

[FIG. 12]



EX1004 at FIG. 12.

79. After the pull-out menu has been displayed, a user may execute a function by selecting an icon from the menu. EX1004 at 0030 (“touching the soft button on the screen in the image display screen 09 with the input device 05, the coordinate on the touch panel sensor 11 can be detected, and according to the detected coordinate information, the CPU21 will execute various functions based on the operating system stored in the ROM25.”), FIG. 15.



EX1004 at FIG. 15.

80. Hisatomi teaches a number of embodiments, however each embodiment includes basically the same components. *See, e.g.*, EX1004 at 0082 (“Because the constitution of the 2nd embodiment is basically the same as the constitution of the 1st embodiment, in the explanation of the 2nd embodiment, the constitution of the 1st embodiment will be diverted for use.”). Hisatomi also teaches that each embodiment includes the same initial control process steps as the first embodiment, although later embodiments add additional complexities. *See, e.g.*, EX1004 at 0116 (“[B]ecause steps S601, S602, S603, S604 and S605 have the same contents as steps S101, S102, 103, S104 and S105 as shown in FIG. 10, respectively, their explanations will be omitted.”). Moreover, the reference explains that “[i]t is also fine to combine each embodiment . . . as appropriate.” EX1004 at 0241.

*b) Ren (EX1006)*

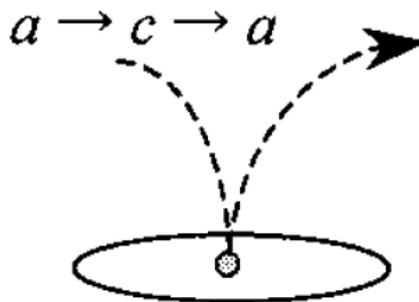
81. Ren was published in September 2000, in the ACM Transactions on

Computer-Human Interaction, Volume 7, No. 3 at pages 384-416. EX1006 at 384.

I understand from counsel for Petitioner that Ren therefore qualifies as prior art under at least pre-AIA 35 U.S.C. § 102(b).

82. Ren discloses pen-based selection strategies for input on pen-based systems incorporating small touch-sensitive screens. EX1006, 384-385. The studies of Ren “determined that the best strategy of the six to be the ‘*Slide Touch*’ strategy, where the target is selected at the moment the pen-tip touches the target for the first time after landing on the screen surface. EX1006, 384. Ren also “determined the best strategy group to be the ‘*In-Out*’ strategy group, where the target is selected by contact either inside or outside the target. EX1006, 384.

83. One of the strategies disclosed and studied by Ren is the *Direct Off* selection strategy. EX1006, 390. In the *Direct Off* strategy “the target is highlighted only while the pen is touching it. The selection is made at the moment the pen is taken off the target.” EX1006, 390.



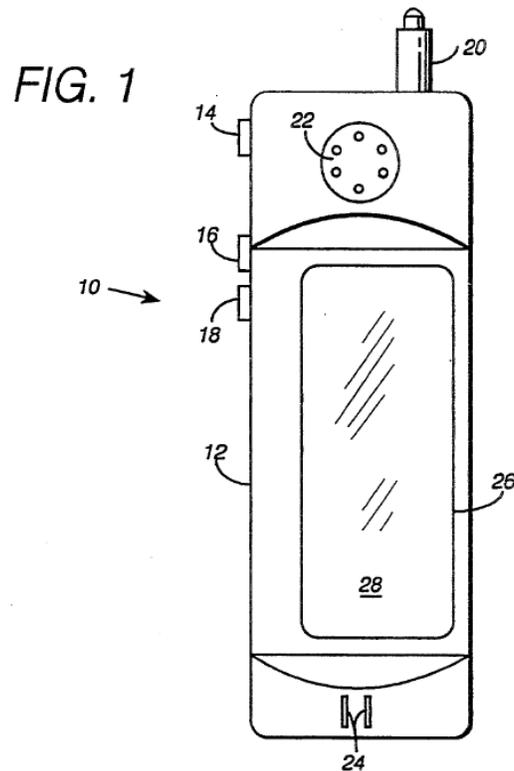
EX1006, 390. The *Direct Off* strategy “was already in common use.” EX1006, 391.

84. Ren explained that “[i]n dense displays the ... *Direct Off* strategies ... can be used. For instance the *Direct Off* strategy ... is the same as the familiar mouse technique.” EX1006, 403. “No significant difference was found in selection time between the *Slide Off* and *Direct Off* strategies.” EX1006, 405.

c) *Allard-656 (EX1009)*

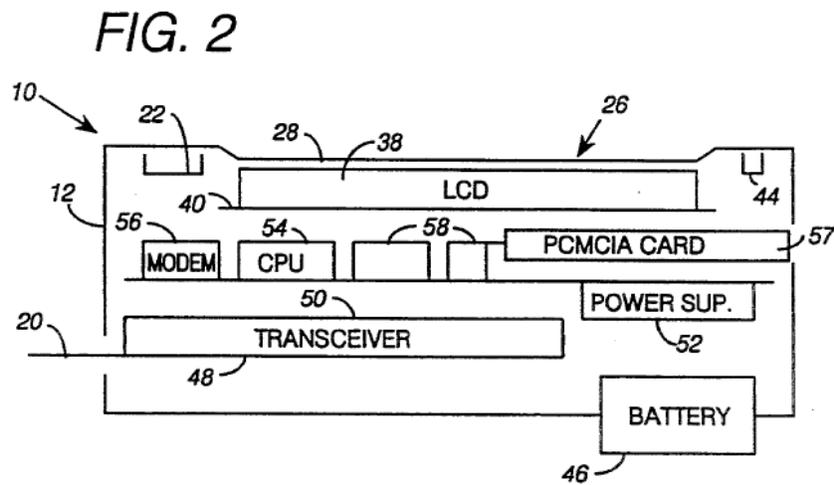
85. Allard-656 was issued on June 6, 1995. EX1009 at cover. I understand from counsel for Petitioner that Allard-656 therefore qualifies as prior art under at least pre-AIA 35 U.S.C. § 102(b).

86. Allard-656 discloses a personal communicator such as a “cellular phone and a complete data processing system.” EX1009, 3:28-31. The device includes a “touchscreen display 26 . . . and [a] user interface for entering information into and receiving information from.” EX1009, 3:45-50, 3:54-57.



EX1009, FIG. 1.

87. The device of Allard-656 includes a Display 26 with a touch sensitive overlay 28, an LCD 38, a CPU 54, main memory 68, read only memory 70, and disk ROM 72. EX1009, 3:58-4:50. The operating system and application programs of the device are loaded into main memory 68 and executed by the CPU 54 as needed. EX1009, 4:28-50, 5:40-43.



EX1009, FIG. 2; *see also* FIG. 3.

88. The device loads a phone application that interacts with the “Navigator program to create a Phone screen 108.” EX1009 at 5:40-55. Within the phone screen, Allard-656 teaches including a HELP button. *Id.*, *see also* 6:12-30. Selecting the HELP button via the touch interface will display the Help screen. EX1009, 5:51-55. “Help screen 110 contains a description 124 of the functions of key presented on screen 108.” EX1009, 6:31-38

FIG. 4A

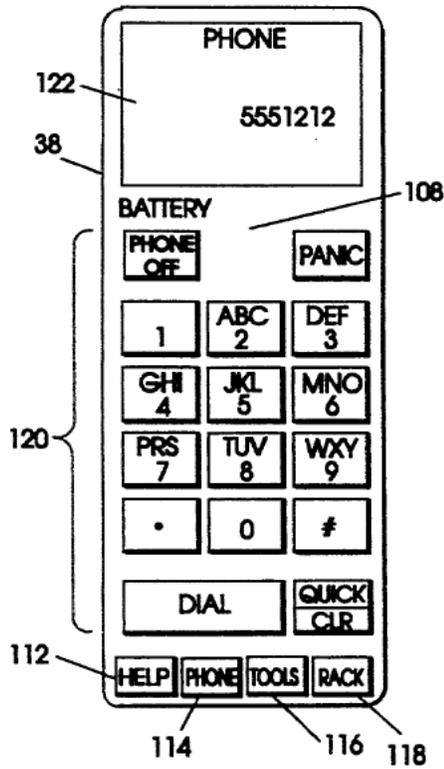
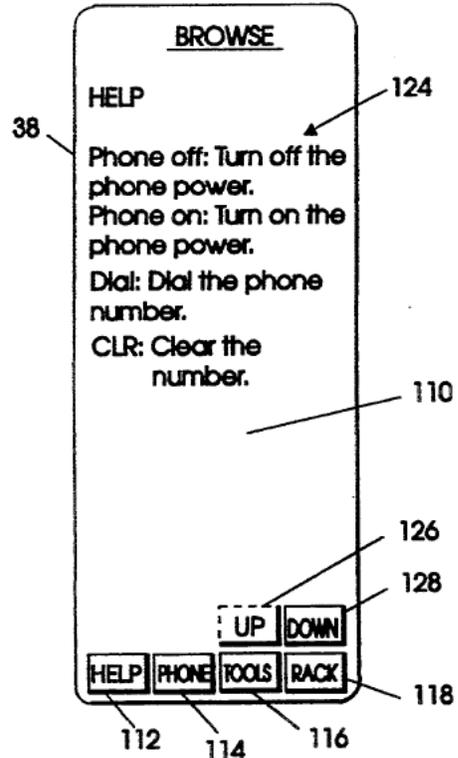
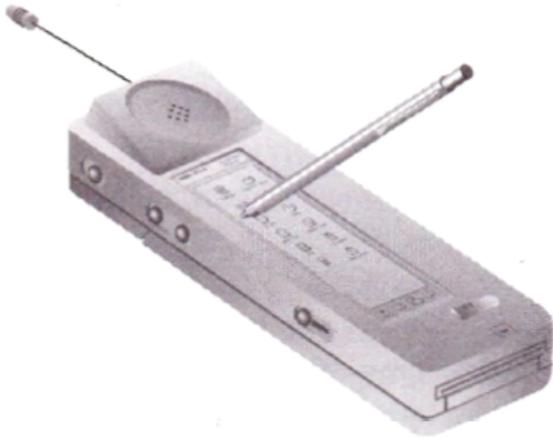


FIG. 4B



EX1009, FIGS 4A-4B. Allard-656's interface is very similar to that of the IBM Simon device, available by 1995.



The Phone screen



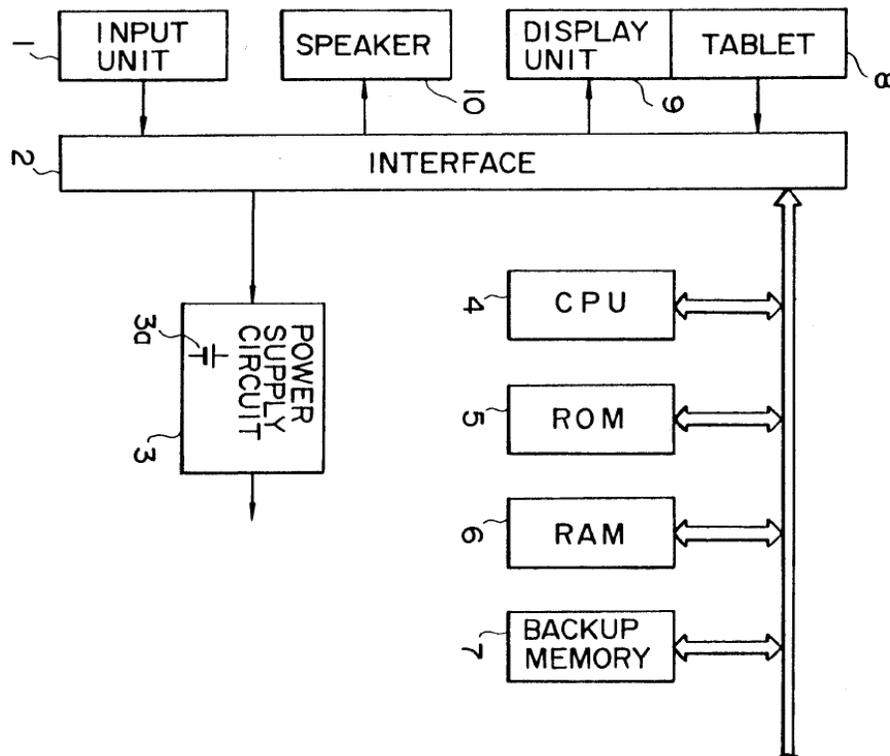
The Mobile Office screen

EX1017, pp. 10, 11.

*d) Tanaka (EX1010)*

89. Tanaka was issued September 28, 1993. EX1010 at cover. I understand from counsel for Petitioner that Tanaka therefore qualifies as prior art under at least pre-AIA 35 U.S.C. § 102(b).

90. Tanaka discloses an “electronic ‘organizer’ notebook device” that includes a CPU 4, ROM 5, RAM 6, backup memory 7, and an interface 2 comprising a tablet 8 and a display unit 9. EX1010, 3:46-63. “The tablet 8 is made of a transparent touch electrode attached to the display surface of the display unit 9.” EX1010, 3:64-65.



EX1010, FIG. 2.

91. When the device is first powered on, “the display screen of FIG. 4 appears on the display unit 9. EX1010, 4:13-16.

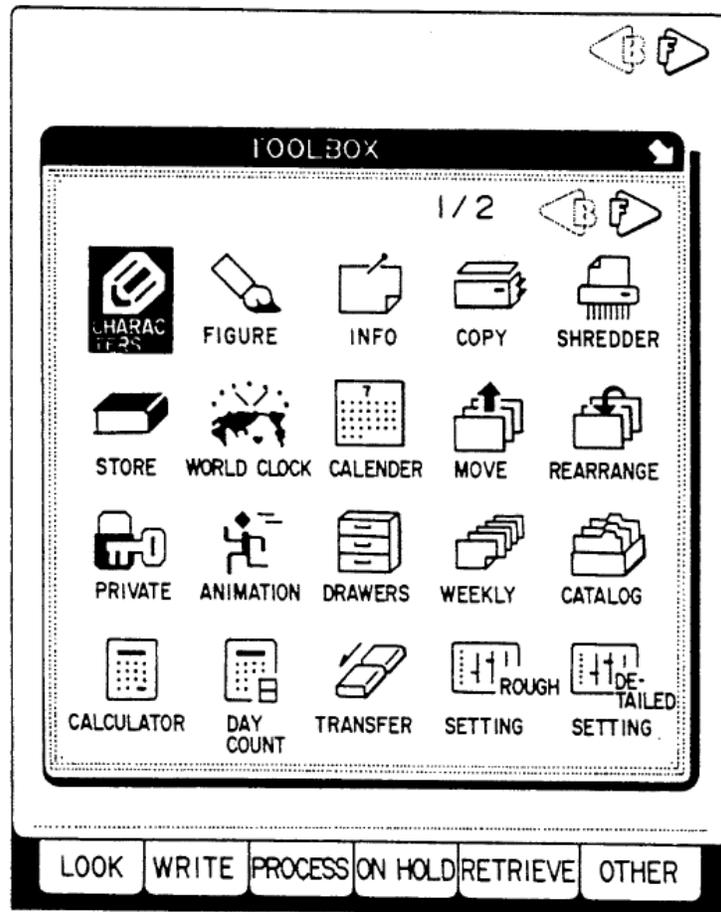


EX1010, FIG. 4.

92. When the TOOLBOX icon is selected, the TOOLBOX window is displayed. EX1010, 4:17-19. “[T]here are two ways to open a window: either to ‘check’ the necessary icon with the pointing pen by putting the pen down to the icon and then lifting up the pen therefrom; or to ‘drag’ the pen together with the selected icon as the pen is held down onto the tablet, the icon being released by lifting up the pen when a desired position is reached.” EX1010, 4:42-54; *see also* Abstract (checking), 1:37-46 (checking and dragging), 2:39-3:2 (checking and dragging), 4:55-66 (checking), 5:9-24 (dragging), 5:37-42 (checking), 5:44-67

(dragging), FIG. 7 claim 1 (checking and dragging). The toolbox “window contains various icons,” including World Clock, Calendar, and Settings icons.

EX1010, 4:19.



EX1010, FIG. 5.

e) *Kodama (EX1016)*

93. Kodama discloses “a portable information gather apparatus which can function to manage captured information on a page basis.” EX1016, 1:9-14.

Kodama’s pen computer displays icons—referred to as “stamps”—that are

associated with various functions a user can select, including, *e.g.*, an alarm stamp 101. See EX1016, 5:35-43, 8:21-9:4.

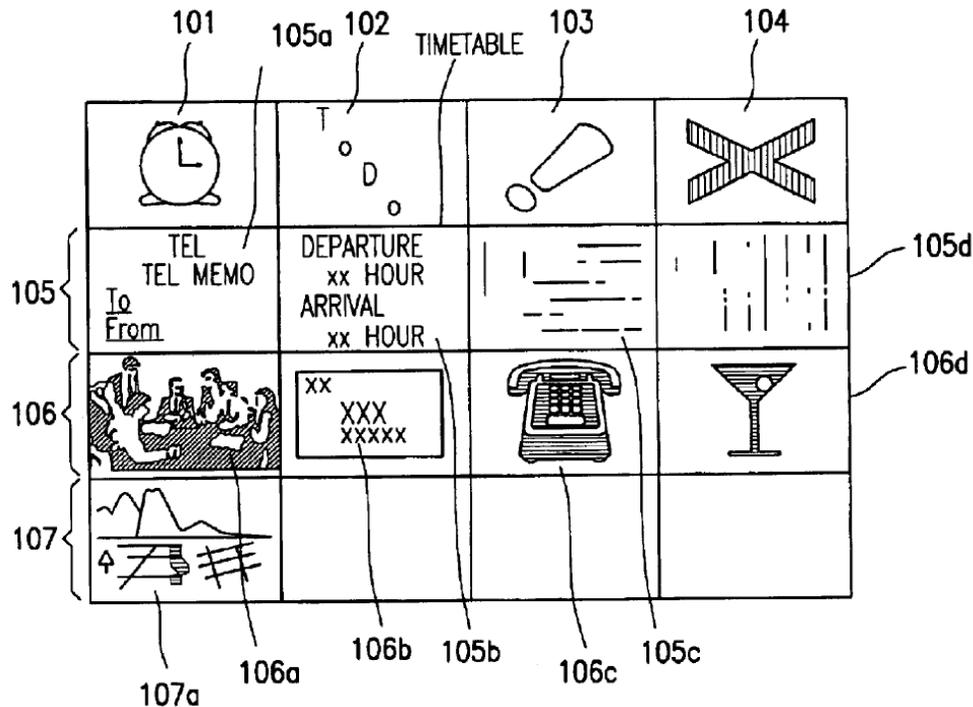


FIG. 4

EX1016, FIG. 4.

*f) Motivation to Combine Hisatomi with Ren, Allard-656, and Tanaka*

94. As discussed below, Hisatomi in combination with Ren, Allard-656, and Tanaka render obvious every limitation of the challenged claims. A POSA would have been motivated to combine the teachings of these references. All three references relate to GUIs on a touch screen display of a handheld device, and the ability of a user to navigate and select targets within the user interface in ways that make optimal use of the space on a small screen. Thus, the fact that all four

references are from the same technology area and address the same set of challenges provides motivation for a POSA to combine the teachings of Hisatomi with Ren, and further with Allard-656 and Tanaka. Additional motivations to combine are set forth for specific claim limitations below.

**2. Hansen, Gillespie, Allard-656, Tanaka, and Kodama**

*a) Hansen (EX1029)*

95. Hansen discloses a touch-sensitive user interface focused on providing improved user interactivity relative to traditional interfaces that rely on a mouse and keyboard. EX1029, 2:18-3:28. EX1029, 4:26-33. Hansen’s interface enables detection and processing of an “input stroke”—a type of touch input that involves “continuous movement” of a user’s finger from a predetermined area (e.g., the edge) of a touch-sensitive display towards the center of the display. EX1029, 4:34-47. Using an input stroke, a user can access a computer program in an “intuitive” manner that “does not require the use of a mouse or keyboard.” *Id.*, 4:26-33. Hansen’s Figure 2 (reproduced below) provides a conceptual representation of an input stroke.

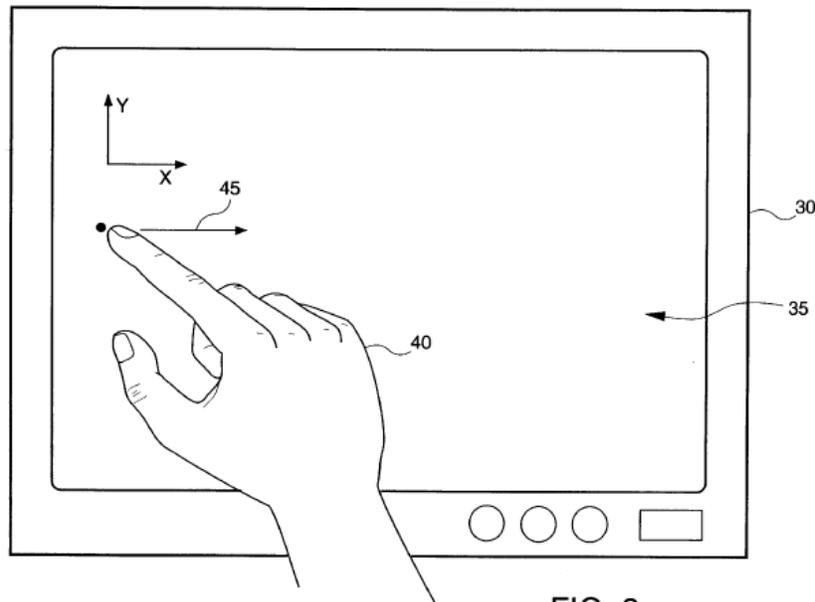


FIG. 2

EX1029, Figure 2. As shown, a user performs an input stroke in relation to monitor 30 including touch-sensitive screen 35. EX1029, 4:8-20. The input stroke includes two steps. A user initially touches screen 35 with a finger (using hand 40) within a predetermined area of screen 35 such as the left-hand edge. EX1029, 4:34-47. After touching screen 35 within the predetermined area, the user then moves the finger towards the middle of screen 35 along the direction of arrow 45.

96. Figure 3A (reproduced below) shows a display of Hansen's interface presented through screen 35 before the user completes an input stroke. EX1029, 5:9-11.

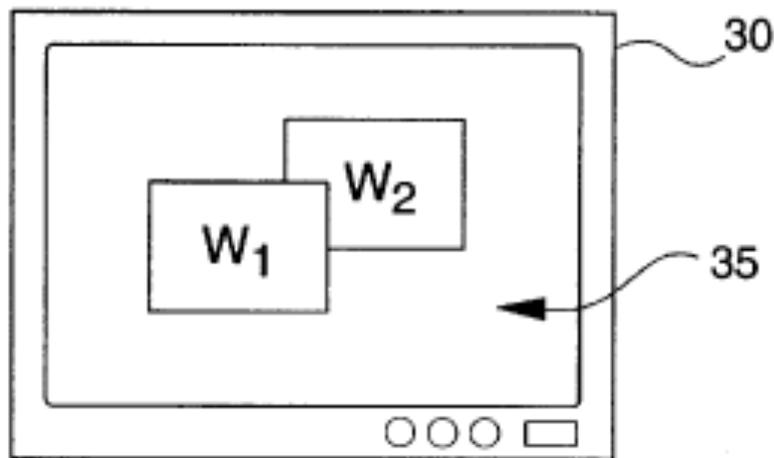


FIG. 3A

EX1029, Figure 3A. As shown above, the Figure 3A interface displays “any of a number of windows w1, w2 as are commonly displayed by a computer system.”

EX1029, 5:11-13. Thus, while two working windows are shown, Hansen teaches that more or less may be open before a user performs the above-described input stroke. *Id.* Indeed, a POSA would have understood that no windows might be open (and thus the display may be empty) in those instances where the user has not yet launched any other applications, as shown in FIG. 2.

97. Figure 3B (reproduced below) shows another display of Hansen’s interface after the user has completed the input stroke (i.e., sliding a finger from the predetermined area toward the middle of the display) so that the display represents an outcome of the completed input stroke. EX1029, 5:6-13.

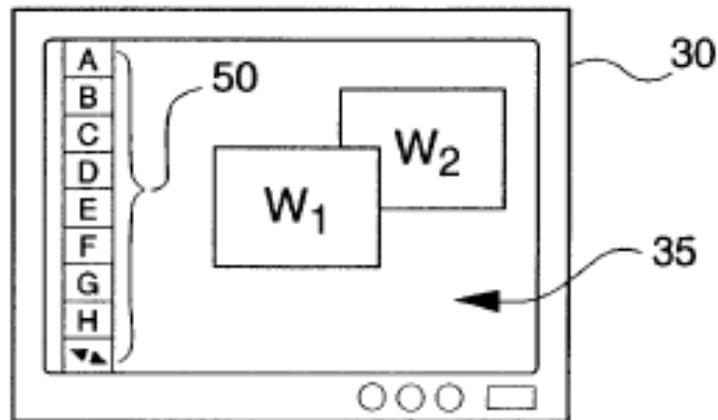


FIG. 3B

EX1029, Figure 3B. As shown above, the Figure 3B display includes icons 50 in a line along the left-hand edge of screen 35. EX1029, 5:13-17. Each icon corresponds to a computer program and can be accessed through selection of a corresponding icon. *Id.*, 5:14-25. The user performs selection by “momentarily touching one of the plurality of icons 50,” *i.e.*, by tapping one of the icons. *Id.*, 5:26-35. Once a user selects an icon, a corresponding computer program is launched in a “working window,” as depicted in the display shown in Figure 3C (reproduced below). EX1029, 5:34-44.

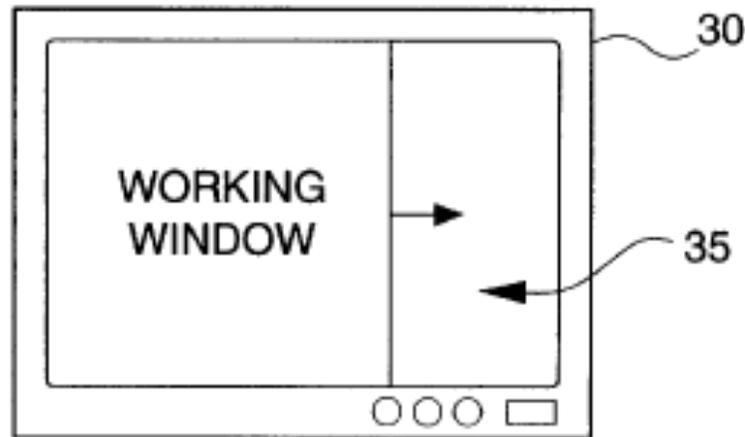


FIG. 3C

EX1029, Figure 3C. As shown above, the Figure 3C display includes a working window through which a user accesses a computer program corresponding to one of the icons 50 that was selected (i.e., tapped) by the user in the Figure 3B interface. EX1029, 5:6-13, 5:37-47. The working window is scrolled onto video monitor 30 from the left-hand side of the video monitor and its size can be variable depending on the icon selected. *Id.*

*b) Gillespie (EX1030)*

98. Gillespie describes user interfaces presented on a touch screen that can also function as a touch pad. EX1030, Abstract, ¶[0033]. Specifically, Gillespie proposed incorporating a touch screen into a computer in a “similar way as a touch pad” and “could be introduced in addition to the other interface devices of the computer.” *Id.*, ¶[0036].

99. Gillespie describes numerous “touch screen modes” for its touch screen—*e.g.*, “iconic,” “auxiliary,” and “pop-up.” *Id.*, ¶[0045] (describing that these modes provide a “fully interactive input/output device to enhance the user interface of [a] computer system.”). In the “iconic” mode, the touch screen is configured to operate as a “touch pad pointing device” in which finger motions and taps are “generally interpreted the same as when the touch screen operates as a conventional touch pad.” *Id.*, ¶[0046].

100. Figure 4 (reproduced below) shows an example of an interface image 400 displayed by the touch screen when operating in the “iconic” mode.

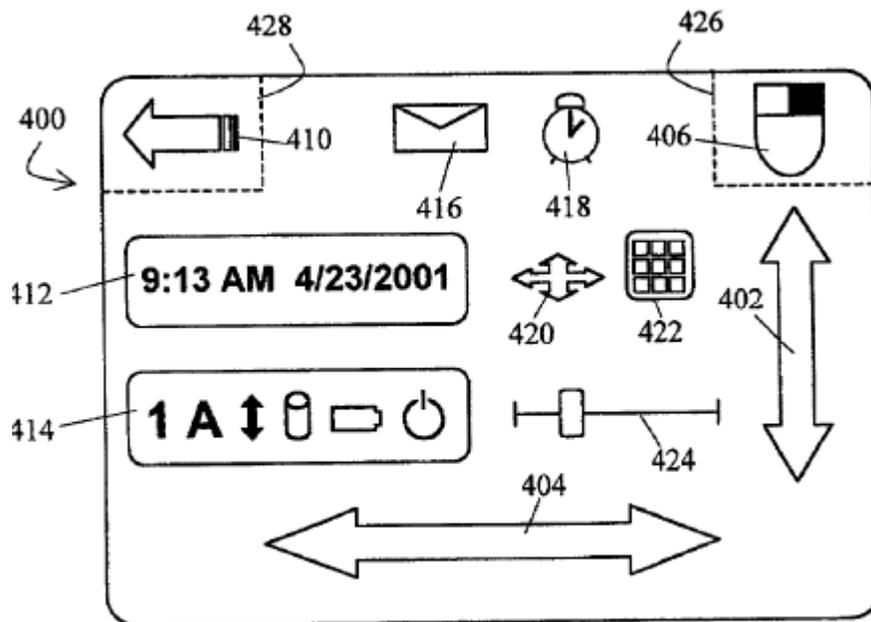


Figure 4

EX1030, Figure 4. As shown above, image 400 shows various visual conventions to indicate information, such as system indicators and functions. EX1029,

¶¶[0046]-[0056]. These visual conventions “indicate special tapping or scrolling regions on the touch sensor surface.” *Id.*, ¶[0044]. For example, dashed lines 426 and 428 in Figure 4 are used to indicate regions that can accept touch input. *Id.*, ¶[0049]. As another example, dashed lines 516, 518, 520, and 522 in Figure 5 are used to indicate an “activated state of the touch screen” using dashed lines so that a user understands that touch input in the corresponding regions “will be interpreted as special commands...” *Id.*, ¶[0057]. Gillespie examples of other visual conventions, such as “solid or colored lines,” “colored or inverted backgrounds,” or changes to the display or behavior of icons. *Id.*

101. More broadly, Gillespie focuses on improving usability of touch-sensitive interfaces by displaying visual conventions and adjusting their appearance to reduce user confusion. EX1030, ¶[0059]. As discussed above, one example is Gillespie’s use of dashed lines to identify regions where a user can provide touch input to signal to users how a touch interface may be used. *Id.*, ¶[0049]. Gillespie also discloses techniques visually guide users on how to interact with a touch interface. For example, in Figure 5, Gillespie describes that visual conventions shown on a touch screen can be emphasized with visual feedback (e.g., dashed lines around icons) to indicate the availability of special commands. *Id.*, ¶[0057]; FIG. 5 (showing dashed lines 526, 528 to indicate that the corner tap region provides “special tap interpretations when the touch screen is in the

activated state.”). Visual feedback provided through Gillespie’s visual conventions thereby assists users in understanding how to use the touch interfaces described within its disclosure.

*c) Motivation to Combine Hansen, Gillespie, Allard-656,  
Tanaka, and Kodama*

102. As explained above, Hansen discloses a touch-sensitive user input focused on improving interactivity. EX1029, 2:18-3:28, 4:26-33. Hansen describes that it is “desirable to remove barriers that exist between the user and the computer system” by not requiring “input commands using a keyboard or computer mouse.” *Id.*, 2:3-14. Hansen instead proposes allowing users to provide touch input—specifically input strokes—to allow the user to “become more interactive with the computer system” so that performing tasks are “intuitive.” *Id.*

103. Yet, while Hansen is focused on the techniques for detecting, monitoring, and processing input strokes, its disclosure does not address the manner of assisting users to become comfortable using this type of touch input. For example, while Hansen focuses on how touch-sensitive interfaces reduce the number of steps required to perform a task compared to traditional graphics-based interfaces that involve mouse and keyboard use, Hansen does not address the known need to assist a user transitioning between devices that employ these different interfaces. *See, e.g.*, EX1029, 1:21-2:15; *id.* Hansen instead assumes that a user is proficient in using touch-sensitive interfaces to achieve the improvements

in interactivity discussed within its disclosure. Hansen therefore does not address certain scenarios when a user is less experienced with using touch-sensitive interfaces, or perhaps, accesses the disclosed interface for the first time. *Id.*

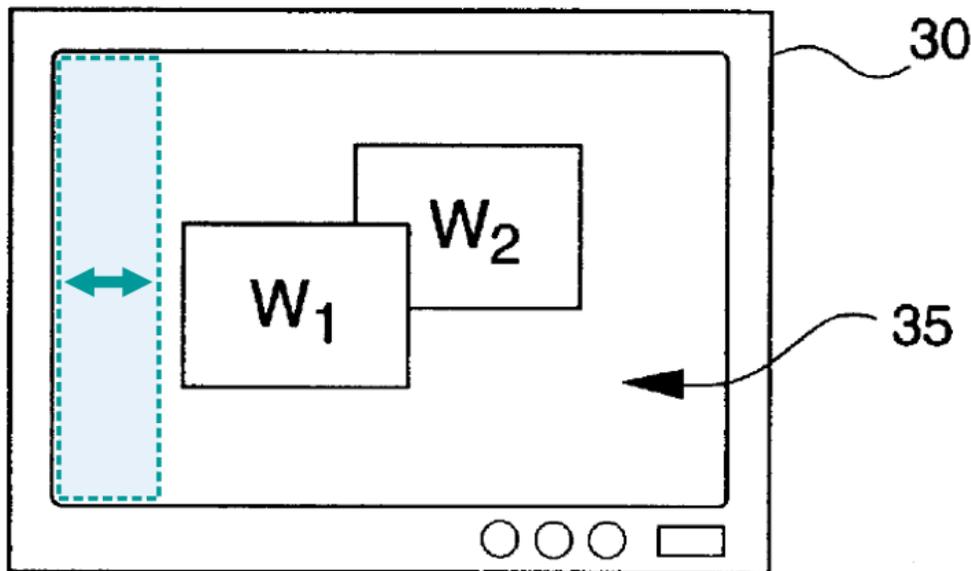
104. Given this gap in Hansen’s disclosure, a POSA looking to implement Hansen’s touch-sensitive user interface would have found it obvious to rely upon techniques well-known in the prior art to supplement Hansen’s teachings to focus on scenarios not specifically addressed in Hansen. For instance, a POSA would have understood that since engagement with a computer system using a touch-sensitive interface differs drastically from engagement using a mouse and keyboard, less-experienced users may not know how to initiate the input stroke disclosed in Hansen without any visible indicator. Indeed, in its Background section, Gillespie recognizes user confusion caused by many touch-sensitive user interfaces that “have proven useful to expert users but confusing to novice users...” EX1030, ¶[0004].

105. Given these challenges known in the art of touch-sensitive interfaces, a POSA would have recognized that the lack of any visual indication of the “predetermined area” and the type of “user input strokes” accepted through Hansen’s interface may confound novice users. For example, since the specific display edge along which an input stroke is processed is not visually identified by Hansen’s interface, a user lacking familiarity with the interface would have been

forced to use trial and error to determine how to perform an input stroke, or could miss the availability of such functionality entirely. *Id.* Moreover, since Hansen describes that input strokes are only detected if certain conditions are met (e.g., initial starting position of a touch input is within a predetermined area, movement extends in a certain direction or to a certain distance), less-experienced users would also be left to guess how far to move their fingers to successfully perform an input stroke. EX1029, [[XX]]. Finally, as recognized in Gillespie, since touch-sensitive regions are sometimes “software configurable,” then users may not recognize whether the same edge is always used to initiate an input stroke. EX1030, ¶[[0004]].

106. Given these usability challenges to Hansen’s interface, a POSA would have been motivated to modify the interface to include one or more indicators that visually represent Hansen’s “predetermined area” within which a touch input can be provided to initiate an input stroke. To perform this modification, a POSA would have turned to well-known techniques for providing such indicators, such as Gillespie’s technique of using visual conventions to “**indicate control regions that respond specifically to finger motions** and/or finger taps, either at all times or only when the touch screen has been activated in a special way.” EX1030, ¶[[0056]] (emphasis added). Given the various types of visual conventions disclosed in Gillespie, a POSA would have understood that such a modification could be performed in various ways. EX1030, ¶[[0059]].

107. One way in which a POSA would have modified Hansen to incorporate Gillespie's visual conventions would be to incorporate a variation of Gillespie's "solid or colored lines" and "colored or inverted backgrounds," into Hansen's Figure 3A display. *See* EX1030, ¶[0059]. The modified Hansen's Figure 3A display would have visually identified the boundaries of the region of Hansen's interface representing the predetermined area as a control region for initiating an input stroke involving a swiping motion (i.e., continuous movement of a finger along the touch screen surface). *Id.* This modified Hansen's Figure 3A display is shown below:



**FIG. 3A**

EX1029, Figure 3A (modified to incorporate a Gillespie-type visual convention, e.g., dashed lines 426, 428). As shown above, the modified Figure 3A display

would have included dashed lines (e.g., similar to Gillespie's dashed lines 426, 428) and a colored background to visually indicate the left-hand edge of screen 35 as representing a control region for performing an input stroke. EX1030, ¶[0056]. The modified figure is intended solely to be illustrative and not intended to be drawn to scale to represent the actual graphics a POSA would have implemented when combining Hansen and Gillespie as discussed in this section.

108. A POSA designing user interfaces would have understood that visually identifying Hansen's predefined area as shown above in the modified Figure 3A display would have provided an "affordance," which is a well-known design concept defined as "the perceived and actual properties an object, such as the fundamental properties that determine just how an object could possibly be used." EX1032, 9. A POSA would have found it obvious that incorporation of Gillespie's visual indicators into the Figure 3A display have "afforded" a user the understanding that the "predetermined area" could be used to transition to Hansen's Figure 3B, display a menu of icons 50. *Id.*

109. A POSA would have recognized that the modified Figure 3A display shown above would have been beneficial to a user accessing Hansen's interface, because Gillespie's visual convention would have identified the region of screen 35 associated with Hansen's "predetermined area" from which an input stroke can be performed. In this regard, the visual convention added to Hansen's interface

would have performed a similar role as Gillespie's dashed lines 426, 428, which indicate areas in which a user can provide touch input. As discussed above, a POSA would have understood that this modification represents one way to incorporate Gillespie's visual conventions into Hansen's interface though other configurations would have also been obvious based on Gillespie's disclosure of the different types of visual conventions. EX1030, ¶[0059].

110. The combination of Hansen and Gillespie would have provided a touch-sensitive interface (i.e., the Hansen-Gillespie interface) with a visual convention to visually indicate a predetermined area of the screen (e.g., left-hand edge) as representing a control region for performing an input stroke. EX1029, 2:18-3:28, EX1030, ¶[0056]. As discussed in reference to limitations [1c] and [1d] the input stroke includes two steps—(i) a user touching screen 35 at an initial starting position within the predetermined area, and (ii) the user moving his/her finger towards the middle of screen 35 along the direction of arrow 45. Once the input stroke is complete, the Hansen-Gillespie interface displays icons 50 that “correspond[] to a computer program that can be run in [a] working window.” EX1029, 5:17-36. Hansen also describes that these “icons” are “graphical representations of various computer programs [that] are displayed on a computer screen.” *Id.*, 1:34-43. An icon can be selected by touch input and in response to such an input, the Hansen-Gillespie interface displays a working window to

provide access to a computer program corresponding to the selected icon. *Id.*,  
5:33-46.

111. While Hansen focuses on techniques to display icons 50 and their use in providing access to computer programs, Hansen does not specifically describe examples of computer programs represented by icons 50. However, a POSA would have understood that computer programs contemplated by Hansen's disclosure were well-known and conventional as of the Critical Date. However, a POSA would have understood that computer programs contemplated by Hansen's disclosure were well-known and conventional as of the Critical Date. Allard-656 (EX1009), Tanaka (EX1010), or Kodama (EX1016), for example, each describe provision of icons associated with various functions (e.g., Calendar, Address Book, To Do, Time functions) that are activated by a user's tap on the touch sensitive display of a computing device. See EX1009, FIGS. 4A, 4B; EX1010, FIG. 5; EX 1016, FIG. 4. As a result these icons and their associated functions would have been understood by a POSA to be analogous to the icons 50 and associated computer programs described in Hansen. This understanding finds support in the respective disclosures of Hansen, Allard-656, Tanaka, and Kodama, which each describe nearly identical methods of providing access to functionalities and capabilities of their respective computing devices.

112. Given these similarities in Hansen, Allard-656, Tanaka, and Kodama,

a POSA would have found it obvious to combine each of Allard-656, Tanaka, and Kodama with the Hansen-Gillespie combination so that, in the resulting combinations, the list of icons 50 in the Hansen-Gillespie interface would have been configured to include one or more of the icon buttons taught in each of Allard-656, Tanaka, and Kodama. This configuration would have enabled the Hansen-Gillespie interface to provide access to one or more of the various useful features described in each of Allard-656, Tanaka, and Kodama through the working windows described in Hansen. EX1029, 5:14-25; EX1031, 10, 24, 25, 36.

113. These combinations with each of Allard-656, Tanaka, and Kodama find similar support and motivation as the combinations described above with respect to the Hisatomi-Ren combination. *See* Sections VIII.B-D below.

Following is a table briefly highlighting the relevant disclosure from each of Allard-656, Tanaka, and Kodama that a POSA would have found obvious to combine with Hansen and Gillespie for the reasons noted above.

Reference	Relevant Disclosure
Allard-656	Allard-656, which discloses user interface features of the well-known IBM Simon, discloses a “Help” function button on a touch screen “located in a predetermined position” on the screen. EX1009, 6:48-49. When the

	<p>HELP button is selected it performs the function of displaying a Help screen to aid the user in navigating the user interface. EX1009, 5:51-55; <i>see also id.</i>, FIGS. 4A, 4B, 6:12-38. In combination, a POSA would have found it obvious that one of Hansen’s icons 50 would be a HELP button that, when selected by the user, would displaying a Help screen to aid the user in navigating the user interface.</p>
Tanaka	<p>Tanaka discloses selecting and opening a “Toolbox” window that “contains various icons” including a “World Clock” icon. EX1010, 4:13-21, FIG. 5. A POSA would have been motivated to include a clock function, such as that disclosed in Tanaka, in Hansen’s icons 50 at least because the ability to identify the current time as well as the passage of time without viewing a separate device was desirable in computing devices like that taught in Hansen.</p>
Kodama	<p>Kodama discloses a portable device, such as a tablet operated with a pen, that displays a plurality of icons,</p>

	<p>called “stamps.” EX1016, 1:8-23. Kodama teaches display of a “list of stamps,” including “an alarm stamp 101” (EX1016, 8:21-28), and discloses when “the alarm stamp 101 is selected” from the list of stamps, “[t]his causes an alarm setting box 90 shown in FIG. 6B to be displayed on the screen.” EX1016, 8:54-56; EX1016, 9:1-4. A POSA would have been motivated to include an alarm function, such as that disclosed in Kodama, in Hansen’s icons 50 at least because the ability to notify a user of a specific event by date and time is beneficial in computing devices like that taught in Hansen.</p>
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## VIII. DETAILED EXPLANATION OF UNPATENTABILITY

### A. Claims 1-3, 7, and 8 are Rendered Obvious by Hisatomi in view of the POSA Knowledge and/or Ren

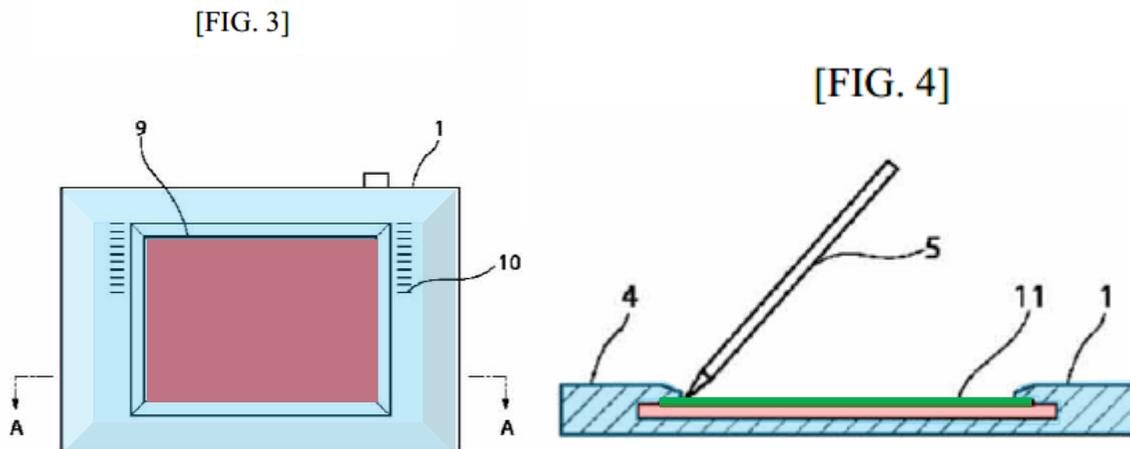
#### 1. Claim 1

**[1.pre]: “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,”**

114. Hisatomi discloses this limitation.

115. Hisatomi discloses an electronic device having a touch sensitive display screen. Hisatomi explains that “notebook-sized portable information

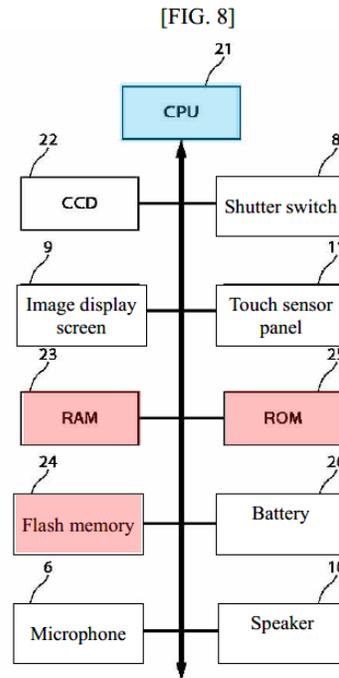
terminal[s]” that included “touch-sensitive keys on [a] liquid crystal display” were known in the art. EX1004, 0002. More specifically, Hisatomi describes “a portable information processing device 01” such as a PDA or notebook-sized portable information device. EX1004, 0012. Hisatomi’s device includes a display screen 9 and touch panel sensor 11. EX1004, 0012, 0015-18; *see also id.* at 1031 and pages 21-22 (describing part 01, 05, 09, and 11). Figures 3 and 4 of Hisatomi, reproduced below, illustrate the device (blue), the display (red), and the touch panel sensor (green).



EX1004, FIGS. 3 and 4 (annotated); *see also id.* at FIGS. 5 and 8. A user provides input to the device 01 by touching the touch panel sensor 11, thereby providing “coordinate instructions mainly from a pen-type input device 05.” EX1004, 0015.

116. Hisatomi discloses one or more non-transitory computer readable medium storing instructions and a processor for executing the instructions stored on the computer readable medium. Figure 8, annotated below, shows a

processor/CPU (blue) and several forms of computer readable mediums (red), including RAM, ROM, and Flash memory.



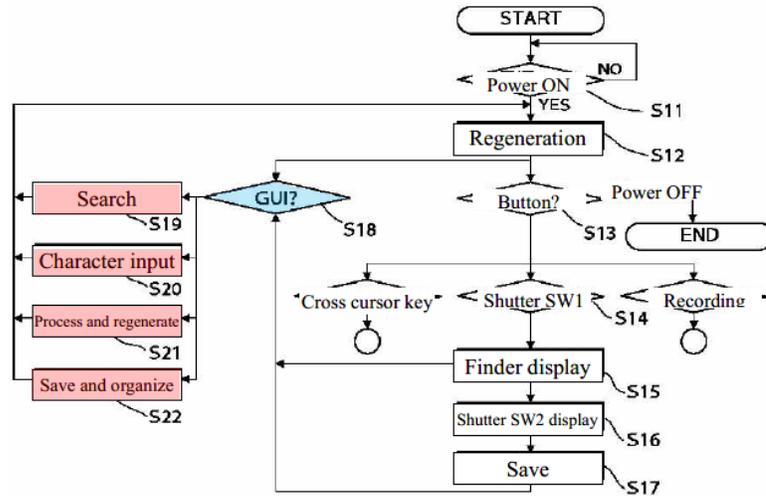
EX1004, FIG. 8 (annotated); *see also id.* at 0029-0031. The CPU 21 executes “various processing procedures” and functions based on the operating system stored in ROM 24. EX1004, 0030, 0031.

117. Hisatomi explains that the invention relates to an information processing devices that includes “a storage medium storing a program for executing this function list display means.” EX1004, 0001; *see also id.* at 0009 (describing “a computer-readable storage medium which storage, as a program, a function list display means to be applied to the information processing device”), 0030, 0031, 0249.

118. The storage medium stores the program code and software for realizing the functions described in the embodiments of Hisatomi and the CPU reads and executes the program code stored in the storage medium. EX1004, 0247; *see also* 0001 (“a storage medium storing a program for executing this function list display means”), 0248 (explaining that the functionality of Hisatomi can be embodied in software), 0249 (listing storage medium such as “a floppy disk, hard disk, an optical disk, a magneto-optical disk, a CD-ROM- a CD-R, a magnetic tape, a non-volatile memory card, a ROM, etc.”), 0250 (the relevant software may be within the OS), 0251 (the relevant software may be in an expansion card inserted into the device).

119. Hisatomi discloses that the execution of the instructions on the computer-readable medium by the processor enable a user interface of the electronic device. The invention of Hisatomi “is related to the display of a menu containing various [Graphical User Interface] function buttons.” EX1004, 0037; *see also id.* at 0018 (referring to trigger areas registered in ROM, and checking coordinates of input device 05 with information registered in ROM), 0036, 0039 (flowchart referring to operations in connection with ROM 25), 0055. As depicted in Figure 9 below, Hisatomi teaches a graphical user interface (“GUI”), in blue, to allow a user to access certain processing functions, in red.

[FIG. 9]



EX1004, FIG. 9 (annotated). Hisatomi explains in great detail the ways in which a user may interact with the device via the pen and touch screen and how the device’s display interface will react. *See, e.g.*, EX1004, FIGS. 7, 10-12, 27-31. For example, Figure 5 illustrates how the image display may be organized into different trigger areas, 11A-11D, surrounding an image. EX1004, FIG. 5. As discussed below, touching on a trigger area and dragging toward the center of the screen triggers a reaction by the user interface of Hisatomi.

120. For at least the reasons discussed above, Hisatomi discloses “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.”

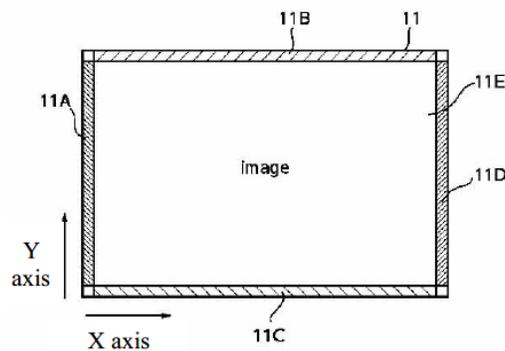
**[1.a] “the user interface comprising at least two states, namely,”**

121. Hisatomi discloses this limitation.

122. As discussed in further detail below regarding limitations [1.b] and [1.c], Hisatomi discloses a tap-present state and a tap-absent state.

123. For example, Hisatomi at Figure 5 discloses a tap-absent state without tap-activatable icons in which only an image and one or more graphics activatable only without tapping are present in a strip along at least one edge of the display screen.

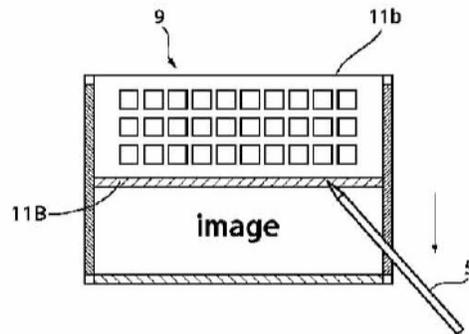
[FIG. 5]



EX1004, FIG. 5; *see also* 0017, 0018, FIG. 30 at screen D80.

124. Hisatomi also discloses a tap-present state including a plurality of tap-activatable icons in Figure 7.

[FIG. 7]



EX1004, FIG. 7; *see also* FIG 28-29, FIG 30 at screen D84, 0024.

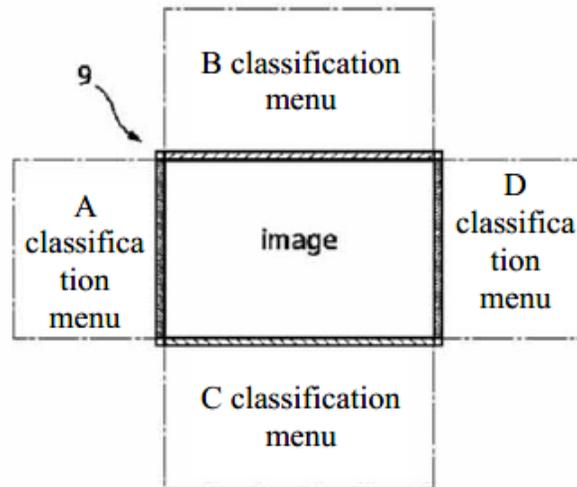
125. In addition, I note that the '993 patent does not explicitly describe any “state,” or that the user interface comprises any “states.” Instead, the '993 Patent simply illustrates a FIG. 1 showing a “touch sensitive area 1, which is divided into a menu area 2 and a display area 3.” EX1001, 3:60-61. The '993 Patent makes no mention as to whether the FIG. 1 illustration represents a “tap-absent state” where “tap-activatable icons are absent.” The '993 Patent proceeds to describes a FIG. 3 in which “the display area 3 is adapted to display icons 211, 212, 213, 214, 215, 216 representing services or functions depending on the current active applications.” EX1001, 4:20-23. The '993 Patent does not describe the view of FIG. 3 as a “tap-present state.” If Patent Owner argues that Hisatomi fails to describe the displays discussed herein as “states,” Hisatomi discloses the claimed states at least commensurate in scope with the disclosure of the '993 patent.

**[1.b]: “(a) 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”**

126. Hisatomi renders this limitation obvious either in view of the knowledge of a POSA, or alternatively in combination with Ren.

127. Hisatomi discloses a user interface having a state in which one or more function lists may be displayed on the screen. *See, e.g.*, EX1004, 0020-21, 0025, 0037, 126, FIGS. 7, 30. The “various processing functions” taught by Hisatomi, may be “classified into [different] categories” and assigned to different function or classification lists. EX1004, 0020; *see also id.* at Claims 1, 4, 9. For example, Figure 6 of Hisatomi depicts four different off screen function lists, A, B, C, and D, and suggest certain categories of functions from each list may be assigned, such as a search function, character input, image processing and editing functions, and save functions, respectively. EX1004, 0022; *see also id.* at FIG. 9 (describing the same categories).

[FIG. 6]

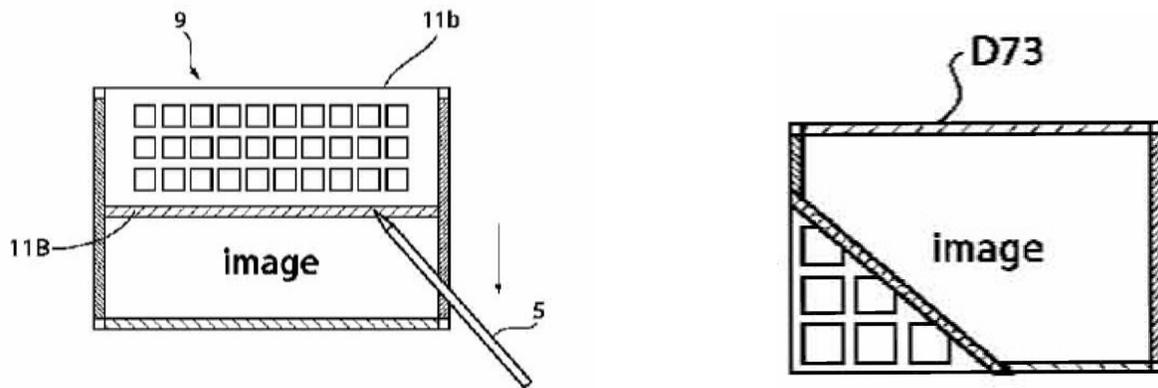


EX1004, FIG. 6.

128. Hisatomi does not limit how the menus are categorized or organized; nor does Hisatomi limit the types of functions that may be accessed via these menus. Hisatomi teaches a wide variety of functions ranging from character input, color palette selection, image editing or processing, word processing, search, saving, user settings, and more detailed settings, just to name a few. *See, e.g.*, EX1004, 0022, 0023, 0027. The '993 Patent similarly discloses if “the active application handles a picture, then 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.

129. When a function “list” is displayed on screen through the user

interactions discussed in more detail below, it will include function buttons, such as “icons or characters corresponding to each function.” EX1004, 0025, 003 (“icons that ... symbolically represent the function of the button”). The contents within each pull-out menu may include “a list of buttons based on icons or text,” for example, a combination of “icons and characters are written together. EX1004, 0021. For example, in Figure 7, pull-out menu 11b is displayed along with several rows and columns of icons. *See also* EX1004, 0087 (describing using the B classification menu to display a color palette).

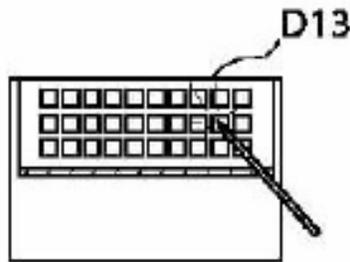


EX1004, FIGs 7, 27; *see also id.* at 0025 (“In the pull-out menu 11b, the function buttons by the icons or characters corresponding to each function will be laid out”).

130. Each function list includes multiple icons that are capable of selection or activation by a user touching or tapping the icon with the pen device. “[W]hen a desired function is selected from the list, the selected function will be executed.”

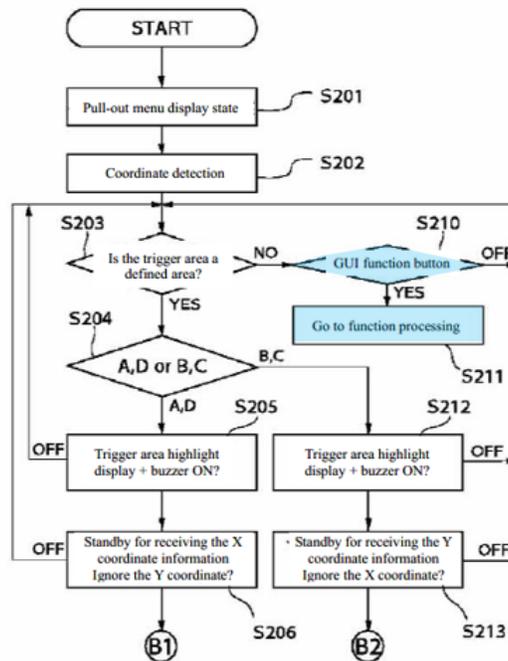
EX1004, 0003. For example, touching an icon on the screen with the pen (i.e.,

performing a tap) will select an icon and its related function. EX1004, 0015 (“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.”). Image D13 in Figure 15 depicts a user touch on an icon within a pull-out menu.



EX1004, FIG. 15 (image D13 illustrating a touch on a GUI function button within a pull-out menu). Figure 13 shows that when the pull-out menu is displayed and a touch is detected, the device determines at step S210 “whether or not [a] specific function button (GUI function button) in the pull-out menu was selected” by the pen. EX1004, 0055. “[I]f it is selected, the selected function will be processed (S211).” EX1004, 0055,

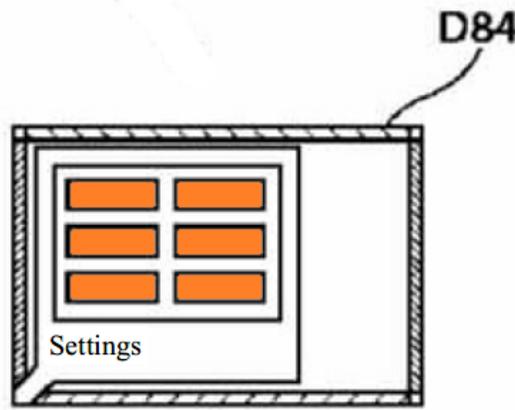
[FIG. 13]



EX1004, FIG. 13; *see also id.* at FIGS. 49 and 50, 131 (“selecting a soft button on the screen with the input device as in the conventional device”), 0189 (“[I]n FIG. 50, when one of the function buttons in the pull-out menus is selected by the input device 05 (S1109), the function corresponding to that button will be executed (S1110)’”).

131. Similarly, Figure 30 of Hisatomi at screen D84 depicts a tap-present state in which multiple tap-activatable icons (related to settings in this example) are present. EX1004, 0126, FIG. 30. Tapping on one of these settings icons would activate the related settings function. EX1004, 0030 (“[B]y touching the soft button on the screen of the image display screen 09 with the input device 05, the

coordinate on the touch panel sensor 11 can be detected, and according to the detected coordinate information, the CPU21 will execute various functions based on the operating system stored in the ROM25.”), 0064 (“[I]t is also fine to provide a button with a closing function possible to stop the display of the pull-out menu by clicking on this button only.”), 0131.



EX1004, FIG. 30 (excerpt showing screen D84 and emphasis to icons in orange); *see also id.* at FIGS. 27, 28, 29, 31.

132. For at least the reasons described above, Hisatomi discloses “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.”

133. If Patent Owner argues Hisatomi does not explicitly disclose the functions corresponding to the icons are activated “in response to a tap on its respective icon,” this claim limitation would have been obvious to a POSA based

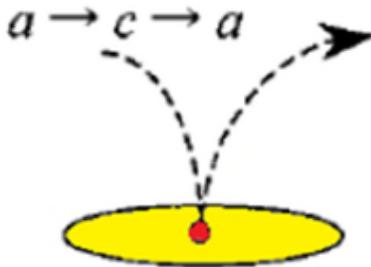
at least on Hisatomi in combination with a POSA's general knowledge of well-known selection techniques in the prior art, and alternatively in view of Ren. The '993 patent's only reference to activation in response to a tap on an icon are as follows: "Selections of preferred service or setting is done by tapping on corresponding icon" (EX1001, 2:35-36), and "FIG. 4 shows that selection of a preferred service or setting is done by tapping C, D on corresponding icon 213." EX1001, 4:41-42. The "tapping" illustrated in FIG. 4 was a well-known technique for selecting a target in a GUI, like that disclosed by Hisatomi, and was one of the most common in 2002 as well as today. In the most common usage, touch screen interaction mirrored standard mouse usage. Interfaces for mice typically used click and drag (where click meant a button press and release in the same or almost the same position and a drag involved moving the mouse while the button was held in a depressed state.) Similarly, interfaces for touch screens typically used "tap" and drag. The "tap" operated in the same way as a "click", where the tap meant pressing the screen (with an object such as a finger or stylus) and releasing it in the same or almost the same position. In fact, the words "tap" and "click" are often used interchangeably for touch screens.

134. Through the 1990's I built a system called Pad++ that supported a range of graphical user interfaces that allowed users to zoom in and out of large numbers of images, text, and other documents. I recall in at least 1999 beginning to

use a touch screen with Pad++, including the zoomable image browser described in Does Zooming Improve Image Browsing? EX1014. And the first time I did that in about 1999, I used the touch screen with my software that I had not adapted for touch screen use. That is, my code that was written to respond to mouse clicks worked without change to respond to touch screen taps. This is consistent with many publications that describe tapping a touch screen to select functions in the way I described. For example, a 1991 PhD dissertation by Dean Rubine described not only his own touch screen system as using taps to select functions (e.g., “Let us suppose that the knob responds to two gestures: it may be turned or it may be tapped.” p. 67.), but also described other publications that described such taps (e.g., “In Minsky’s system, buttons for each Logo operation were displayed on the screen. Tapping a button caused it to execute; touching a button and dragging it caused it to be moved.” EX1015, p. 29. Figure 2.11 shows basic PenPoint gestures including “Tap” from Go Corporation. p. 34.).

135. As one specific example of disclosure of the claimed “function being activated in response to a tap on its respective icon,” Ren describes this well-known selection technique as a “*Direct Off*” technique for selecting a target and thereby activating its corresponding function, such as a menu. In the *Direct Off* strategy “the target is highlighted only while the pen is touching it,” and “selection is made at the moment the pen is taken off the target.” EX1006, 390. As shown in

the below excerpt of FIG. 3, the *Direct Off* route  $a \rightarrow c \rightarrow a$  reflects a typical “tap” selection technique for activating a function corresponding to the target, consistent with the “tapping C, D on corresponding icon 213” described in the ’993 Patent.



Ren, excerpt of FIG. 3 (emphasis added). Ren describes the *Direct Off* strategy as “the same as the familiar mouse technique.” EX1006, 403.

136. If Patent Owner argues Hisatomi does not disclose the “tap-activatable” aspect of the icons, it would have been obvious to a POSA to implement the Hisatomi device such that the icons are selected using the tap technique disclosed in the ’993 patent and well known to a POSA, and explicitly disclosed by Ren. The tap selection technique was one of a handful of well-known selection techniques for selecting a target (such as an icon or menu) in a GUI at the priority date of the ’993 patent. This is also explicitly taught by Ren. EX1006, 390, 403. Ren also teaches the desirability of using the tap or *Direct Off* technique, for example, in dense displays where targets are close together. EX1006, 403. The ubiquity of the tap selection technique also would have motivated a POSA to

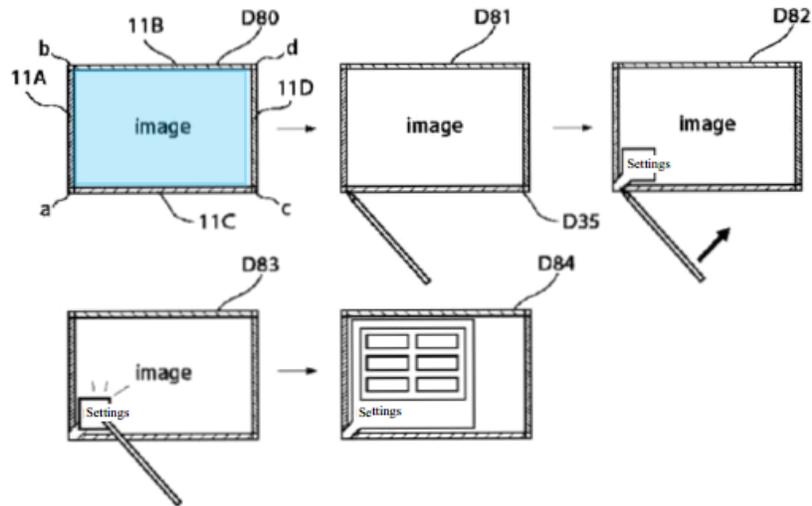
use it for selection of the icons, as disclosed by Hisatomi and discussed above. It would have been within the level of ordinary skill to implement such a technique with predictable results, also because of the widespread use and knowledge of the tap selection technique.

**[1.c]: “(b) a tap-absent state, wherein tap-activatable icons are absent but an otherwise-activatable graphic is present in a strip along at least one edge of the display screen for transitioning the user interface from the tap-absent state to the tap-present state in response to a multi-step user gesture comprising”**

137. Hisatomi discloses this limitation.

138. First, Hisatomi discloses a state in which tap-activatable icons are absent. Hisatomi explains that the device begins with “a photo image or the like ... displayed using the full screen of the image display screen 09;” no icons or function lists are displayed. EX1004, 0040, 0124. This is shown by Hisatomi’s figures, including image D80 (in blue showing absence of tap-activatable icons) in Figure 30.

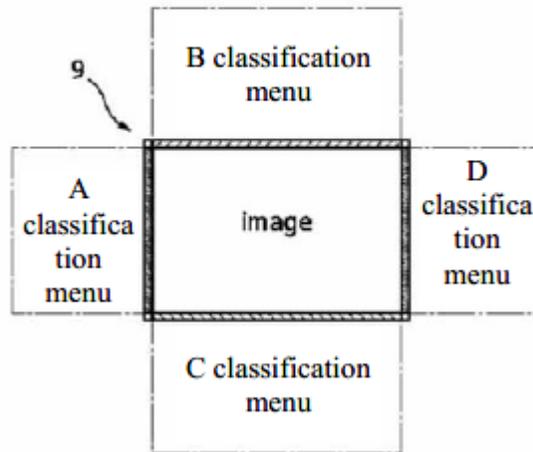
[FIG. 30]



EX1004, FIG. 30 (annotated); *see also id.* at FIGS. 5, 6, 10, 12, 17, 19, 26, 28-29.

Likewise, Figure 6 depicts the display screen 9 in a state where the tap-activatable icons are absent, and function lists that could potentially be displayed reside off screen.

[FIG. 6]



EX1004, FIG. 6; *see* 0019-21.

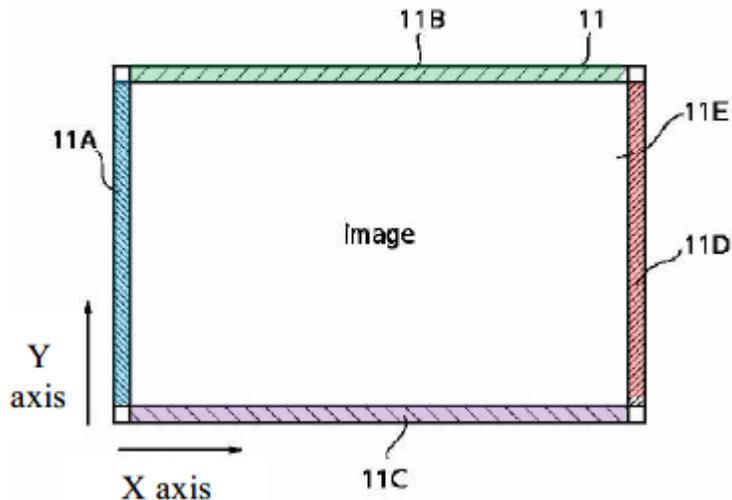
139. As noted above, the '993 Patent does not provide an explicit description of a "tap-absent state." However, Hisatomi explicitly teaches this state and its desirability. Hisatomi teaches the absence of icons on the screen is desirable in order to avoid the scenario that the menu of icons "hides a part of the main image, and "if there is important information in the hidden part, it will hinder editing work," and "[t]herefore in such a case, it is not preferable that the main image is partially covered." EX1004, 0005.

140. In the state disclosed by Hisatomi shown in Figures 5, 6, and 30, for example, at least one "otherwise-activatable graphics" is present in a "strip along the edge of the display screen." As one example, Hisatomi discloses that trigger areas, such as Trigger Areas 11A-11D in Figure 5, are located along the edge of

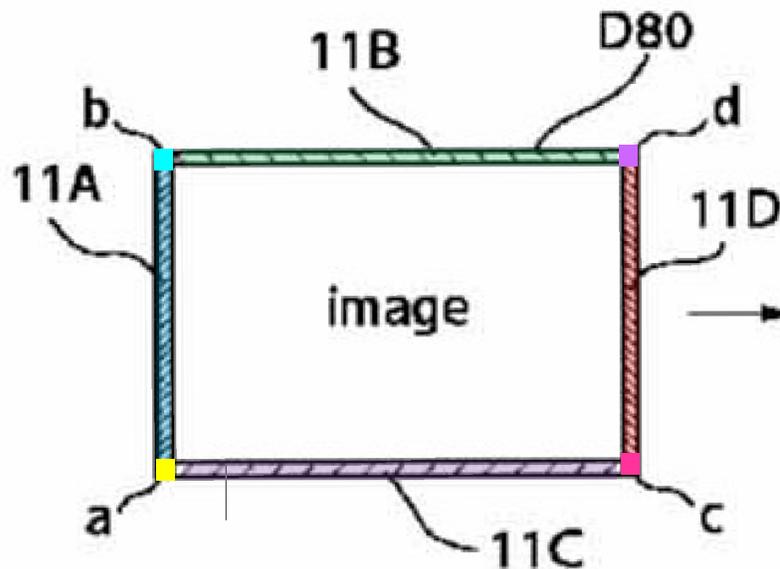
the screen, and graphics corresponding to the trigger areas can be displayed.

EX1004, 0018, 0027 (“use the setting to always have these areas displayed”).

[FIG. 5]



EX1004, FIG. 5 (annotated with highlighting to display Trigger Areas 11A-D); *see also id.* at FIGS. 12 and 17. Likewise, image D80 in Figure 30 depicts eight different potential trigger areas, 11A-11D and a-d. EX1004, 0113-15. Hisatomi discloses that the trigger areas 11A to 11D can be “replaced by trigger areas a, b, c, and d, respectively,” or supplemented with trigger areas a, b, c, and d such that “the number of pull-out menus will increase from four to eight.” EX1004, 0124, 0112.



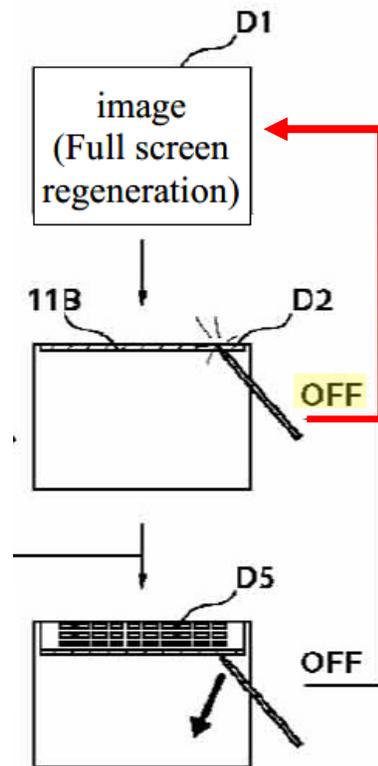
EX1004, FIG. 30 (excerpted) (annotated); *see also id.* at FIG. 28. The coordinates of Hisatomi’s trigger areas are strips along at least one edge of the display screen adjacent to the exterior cover member 04. EX1004, FIGS 4, 5, 30.

141. Additionally, Hisatomi discloses the trigger areas 11A-D are indicated by graphics that cover the extent of each trigger area. Hisatomi explains that the trigger area graphics are displayed on the image display screen using different colors or patterns to distinguish one from another. EX1004, 0027; *see also id.* at 00244 (“When the cursor reache[s] the edge on the screen, the bar for the purpose of pulling out the pull-out menu at the display position will be displayed.”); *but see id.* at 0066 (explaining that the figures depict visible graphics, but the invention “is not limited to the case that the four areas are *necessarily* displayed.”).

142. As explained in more detail below regarding the transition between

states, these graphics are activatable using a touch-and-glide user input. Hisatomi also discusses how the coordinates of the pull-out trigger areas may be registered in memory. EX1004, 0039. The device compares the coordinates detected from the touch of the pen with the coordinate information registered in the ROM to determine whether a trigger area has been touched. EX1004, 0018, 41, 42, 45.

143. The trigger area graphics are not activatable by tap and thus are not tap-activatable icons. Touching a graphic and lifting the pen will cause the device to return to the display state illustrated in FIG. 5 and described at state S101 of the flow chart of FIG. 10. EX1004, 0039. This is illustrated, for example, in Figure 12 where, after the pen touches the graphic in image D2, the OFF arrow representing the lifting of the pen from the screen routes the logic back to the image screen of image D1. EX1004, 0039 (explaining that “‘OFF’ means 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”), 40-41; *see also* 0048, 0052 (showing return to the full screen image state S101 when x or y displacement amount is less than a defined amount).



EX1004, FIG. 12 (annotated); *see also id.* at FIGS. 10, 27-29.

144. As another example, Hisatomi discloses a state in connection with step S705 of FIG. 29 in which a “start button for the settings menu” is displayed as shown in FIG. 30 “when the coordinates of trigger area a are detected by the touch of the input device 05.” EX1004, 125-126. For the same reasons the state displayed in screens D80 and D81 is tap-absent, discussed above, the state displayed in screen D82 is also tap-absent, wherein tap-activatable icons are absent. Hisatomi describes that the “start button” is activated not by tapping, but instead, as shown in screen D83, by dragging the input device from the “a” to a point within the start button area and then lifting the input device off the screen.

That is, Hisatomi describes the activation of the start button as a drag, not a tap:

“when the input device 05 is slid to the upper right and reaches the inside of the start button area (S706) and then goes OFF” the screen. EX1004, 126, FIGs 29, 30 (screen D83).

145. The graphics taught by Hisatomi are used for the purpose of transitioning the user interface from a tap-absent state to a tap-present state in response to the user gesture described below in reference to limitation [1.d]. The bars and other graphics taught by Hisatomi are used to transition the user interface from a screen with no function list displayed to a screen in which a function list containing tappable icons is displayed. *See, e.g.*, EX1004, 0018-27, 126, FIGS. 10-12, 27-30

146. For at least these reasons, Hisatomi discloses “a tap-absent state, wherein tap-activatable icons are absent but an otherwise-activatable graphic is present in a strip along at least one edge of the display screen for transitioning the user interface from the tap-absent state to the tap-present state in response to a multi-step user gesture.”

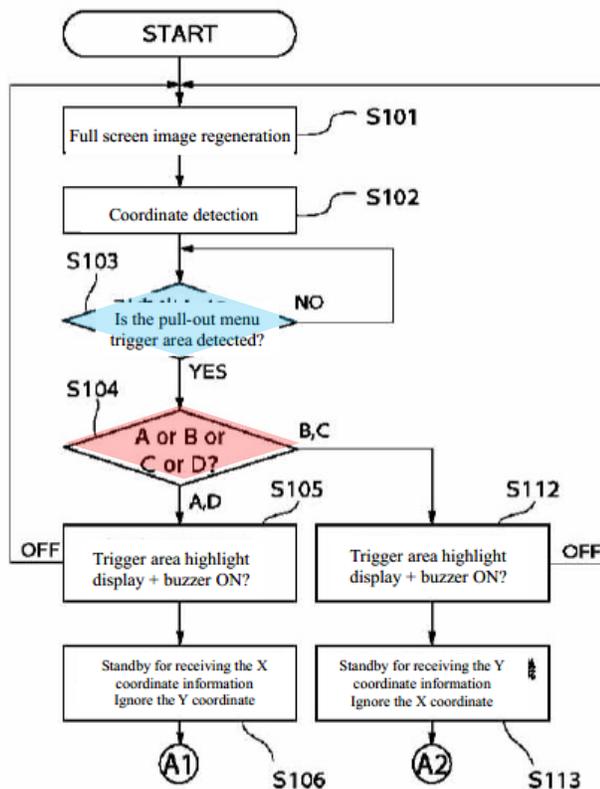
**[1.d]: “[in response to a multi-step user gesture comprising (i) an object touching the display screen within the strip, and (ii) the object gliding on the display screen away from and out of the strip.”**

147. Hisatomi discloses this limitation.

148. Hisatomi discloses detecting, in the state shown in FIGs. 5, 30 (screen

D80), whether the pen touches the display screen within the trigger area indicated by the trigger area graphic, such as areas 11A-D. EX1004, 0018, 0039. In reference to the flow chart of FIG. 10 Hisatomi discloses the device first determines whether the detected touch is within a trigger area (S103), and then determines which trigger area, 11A-11D, the touch occurred within (S104). EX1004, 0041-42.

[FIG. 10]



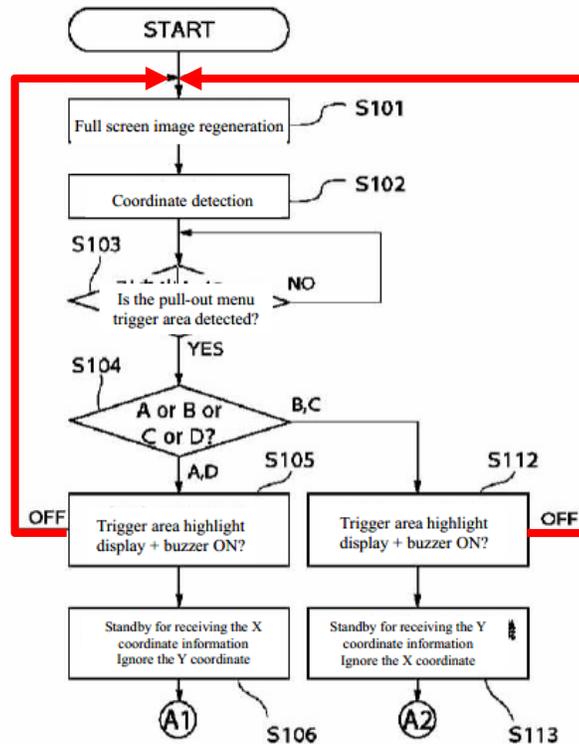
EX1004, FIG. 10; *see also id.* at FIGs 16, 27-30. Hisatomi discloses the coordinates of the pull-out trigger areas or “strips” are registered in memory.

EX1004, 0018, 0039. When the device detects a touch by the input device 05, it

compares the coordinates of the touch with the coordinate information registered in memory for the trigger areas 11A-D to determine whether the touch has occurred within a specific trigger area. EX1004, 0018, 0041.

149. Hisatomi discloses that the pull-out menus or function lists will not be displayed by a tap. If the initial touch occurs within a trigger area but the input device is lifted without moving (sufficiently changing coordinates), the process returns to the beginning state in which no tappable icons are displayed. EX1004, 0041, FIGS. 10-12, 27-30. This is true even if the trigger area graphic has been highlighted and/or the user has received auditory indication of the selection. EX1004, 0043.

[FIG. 10]

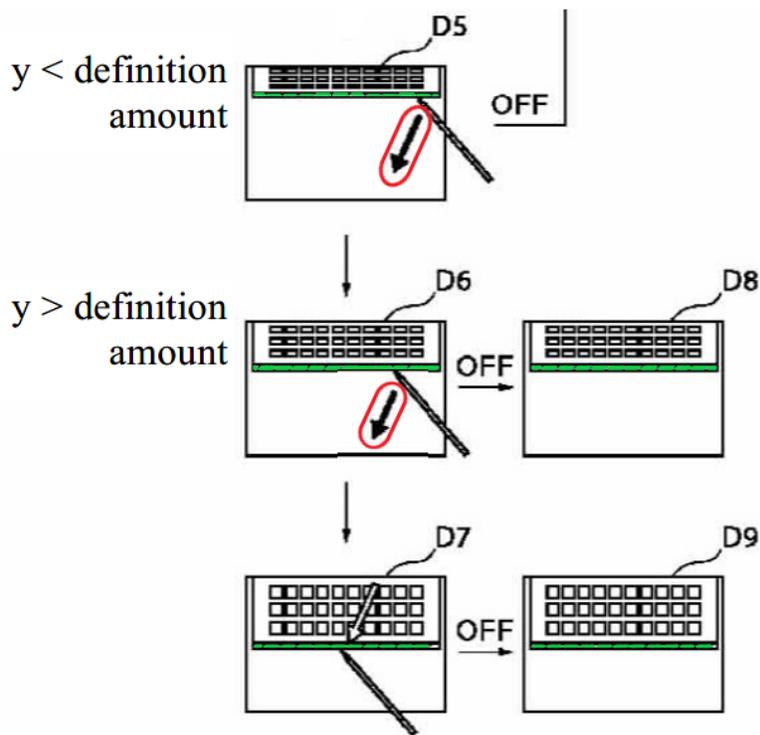


EX1004, FIG. 10 (annotated). Hisatomi also describes that, in reference to FIG. 12, the program is in “standby until” the coordinate information is within a trigger area, and if the input device contacts the screen at coordinates other than the menu display trigger areas 11A to 11D and is moved to a trigger area, the coordinate information “before reaching any of the ... trigger areas 11A to 11D will be treated as invalid.” EX1004, 0041.

150. Hisatomi further discloses that “when it is determined that the coordinate information generated by the input device 05 exists in the pull-out menu display trigger areas 11A to 11D, it will become in the standby state for starting the

display of the pull-out menu ... when it is detected that the input device 05 was scrolled toward the center of the touch panel sensor 11 ... .” EX1004, 0018-23, FIG. 10 (steps S106, S113). Hisatomi discloses touching the touch panel sensor within a trigger area and then “dragging the input device 05 toward the center of the image display screen 09” causes the related function list in the pull-out menu to be displayed. *See, e.g.*, EX1004, 0018, 0021, 0039, 126.

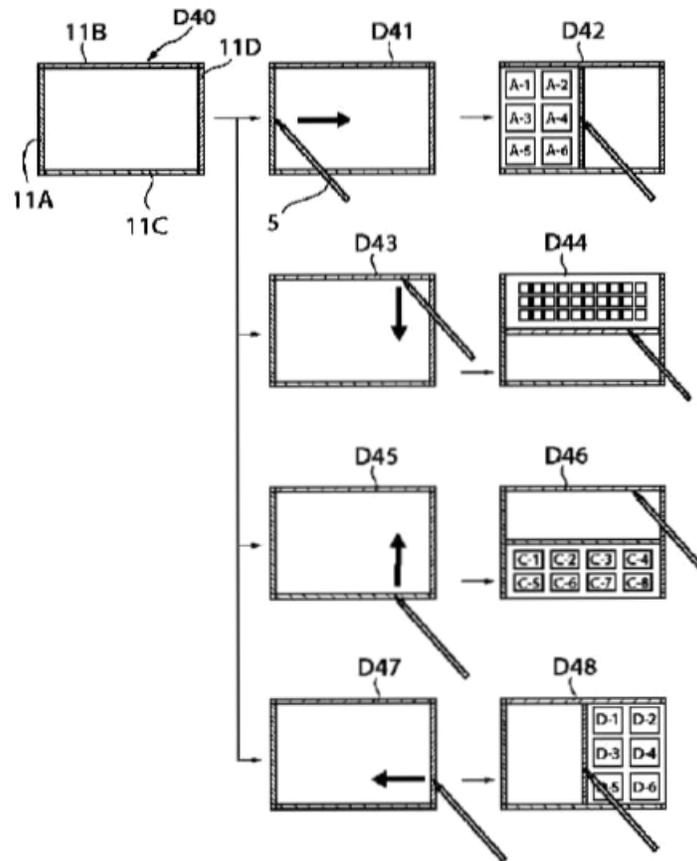
151. In reference to FIGs 10-12 Hisatomi describes that, “while the input device 05 was in contact with the pull-out menu display trigger area 11B and the input device 05 was in contact with the touch panel sensor 11 without being released, if this input device is slid toward the center of the image display screen 09, as shown on screens D5 to D8 in FIG. 12, the B classification menu will be pulled out accompanying with the motion of the input device 05” in the direction of the arrow indicated in red. EX1004, 0045.



EX1004, FIG. 12 (annotations added); *see also id.* at FIG. 28, 30.

152. Pull-out menus with triggers areas along the vertical edges of the screen respond to movement along the X-axis and pull-out menus with trigger areas along the horizontal edges of the screen will respond to movement along the Y-axis. EX1004, 0046, 0050, FIG. 19.

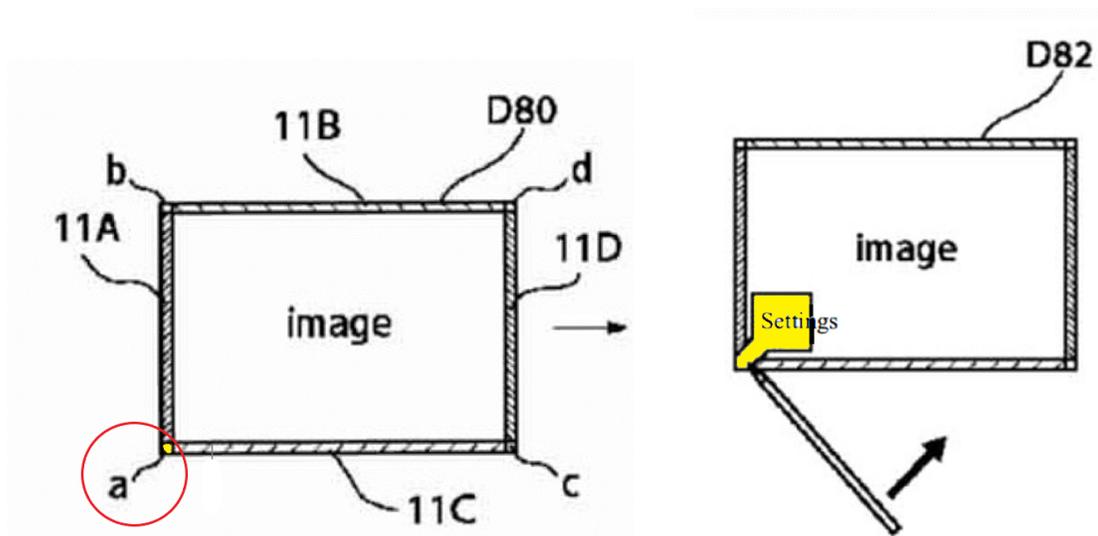
[FIG. 19]



EX1004, FIG. 19. Pull-out menus along more than one edge may respond to movement along one or more axes. See EX1004, 0111-117, FIGS. 27-30 (describing “shifting diagonally”).

153. As another example, Hisatomi discloses in connection with the 5th embodiment illustrated in FIGs 29-30 that “when the coordinates of trigger area a are detected by the touch of the input device 05, as shown on screen D82 in FIG. 30, the start button for the settings menu will be pop-up displayed.” EX1004,

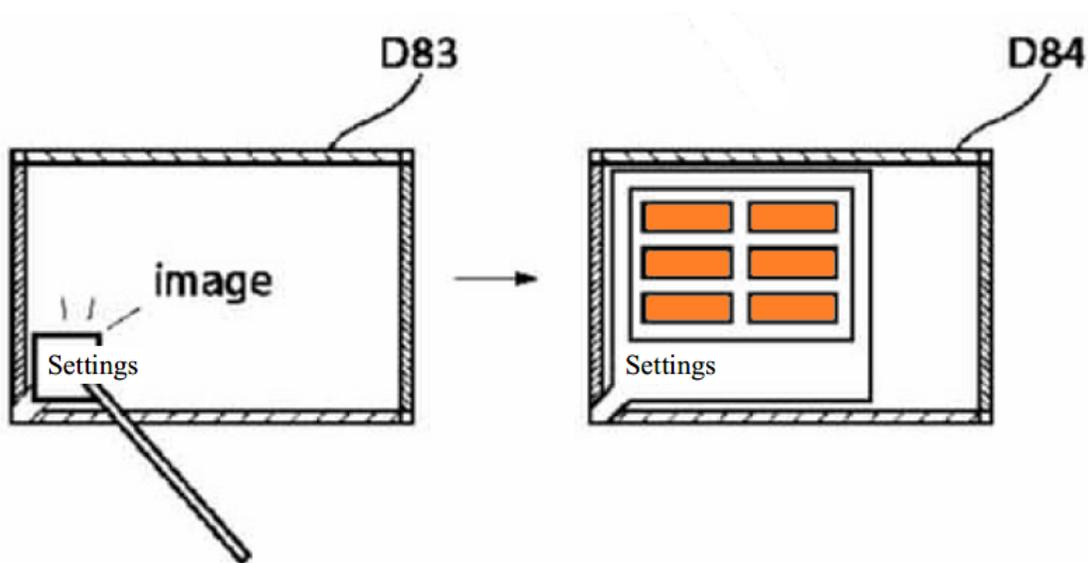
0125.



EX1004, FIG. 30 (excerpt)(screen D80 annotated to show trigger area a in yellow and circled in red, and screen D82 displaying the start button in yellow). Hisatomi explains that, if the input device is removed OFF the screen at this stage shown in screen D82, “the process will return to step S701”, which is the full screen image state shown in screen D80. EX1004, 0125; *see also* FIG. 29 (step S705 and the “OFF” logic).

154. Hisatomi further discloses that, with the start button displayed for the settings menu, “as shown on screen D83 in FIG. 30, when the input device 05 is slid to the upper right [in the direction shown by the arrow in screen D82] and reaches the inside of the start button area (S706) and then goes OFF [the screen], the menu display process related to the start button will be executed, and the detailed settings menu as shown on screen D84 in FIG. 30 will be displayed

(S707).” EX1004, 0126.



EX1004, FIG. 30 (annotated) (excerpt showing screen D83 and movement of input device 05 “to the upper right”, and screen D84 showing detailed settings menu with icons in orange). Accordingly, Hisatomi describes that, in the 5th embodiment, the user interface is transitioned from the tap-absent state to the tap-present state in response to a multi-step user gesture comprising (i) an object touching the display screen within the strip (at trigger area a), and (ii) the object gliding on the display screen away from and out of the strip.

155. For at least the reasons explained above, Hisatomi discloses “transitioning the user interface from the tap-absent state to the tap-present state in response to a multi-step user gesture comprising (i) an object touching the display screen within the strip, and (ii) the object gliding on the display screen away from

and out of the strip.”

- 2. Claim 2: “The computer readable medium of claim 1, wherein any state transition elicited by a user gesture that begins at a location at which the otherwise-activatable graphic is provided, transitions to the tap-present state.”**

156. Claim 2 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of one of skill in the art, or alternatively Ren. Hisatomi discloses the limitations of claim 2.

157. Hisatomi discloses that the state transition elicited by a user gesture that begins at a location at which the graphic corresponding to the trigger areas (otherwise-activatable graphic is provided) is provided transitions to the display of the corresponding pull-out menu (tap-present state). Hisatomi discloses that “when it is determined that the coordinate information generated by the input device 05 exists in the pull-out menu display trigger areas 11A to 11D, it will become in the standby state for starting the display of the pull-out menu ... when it is detected that the input device 05 was scrolled toward the center of the touch panel sensor 11 ... .” EX1004, 0018-23, FIG. 10 (steps S106, S113). Hisatomi discloses touching the touch panel sensor within a trigger area and then “dragging the input device 05 toward the center of the image display screen 09” causes the related function list in the pull-out menu to be displayed. *See, e.g.*, EX1004, 0018, 0021, 0039, 126. In reference to FIGs 10-12 Hisatomi describes that, “while the input device 05 was in contact with the pull-out menu display trigger area 11B and the input device 05

was in contact with the touch panel sensor 11 without being released, if this input device is slid toward the center of the image display screen 09, as shown on screens D5 to D8 in FIG. 12, the B classification menu will be pulled out accompanying with the motion of the input device 05” in the direction of the arrow indicated in red. EX1004, 0045.

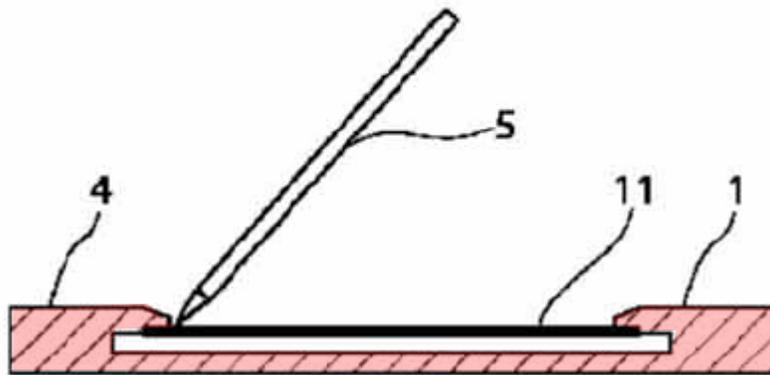
158. Hisatomi thus describes the trigger areas and corresponding graphics are used for one purpose: to display the function list associated with the trigger area. *See, e.g.*, EX1004, 0018, 0020, FIGS. 10, 11, 12, 17, 28, 30. Accordingly, any state transition elicited by a user gesture that begins at a location at which a trigger area graphic is provided transitions to the tap present state in which the function list (icons) are displayed.

**3. Claim 3: “The computer readable medium of claim 1, wherein the tap-present state does not display the tap-activatable icons within a window frame.”**

159. Claim 3 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of one of skill in the art, or alternatively with Ren. Hisatomi discloses the limitations in claim 3. Hisatomi discloses dynamically displaying the tap-activatable icons of a function list without the use of a window frame. For example, Hisatomi does not use the term “window” anywhere in the reference. Hisatomi uses the word frame but in a context inapposite to the claimed “window frame.” The “frame” described by

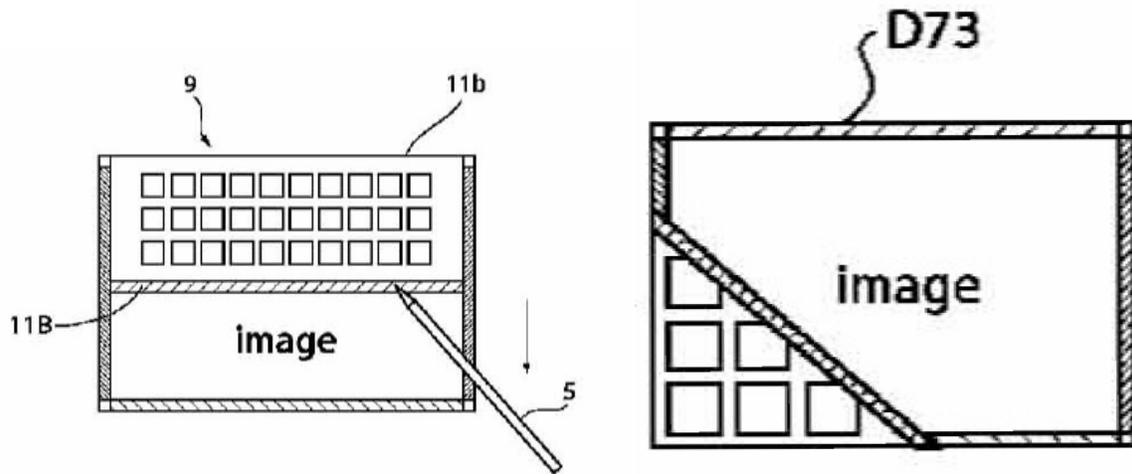
Hisatomi refers to the physical object surrounding the display screen. EX1004, 0001 (describing “an information processing device equipped with an image display part surrounded by a frame forming a level difference”). This “exterior cover member” described by Hisatomi is not a “window frame” for displaying the tap-activatable icons. EX1004, page 21 (“04 exterior cover member (frame)”).

[FIG. 4]



EX1004, FIG. 4 (depicting exterior cover member 04).

160. Further, Hisatomi discloses multiple examples of the tap-activatable icons of a function list being displayed by means other than a window frame. For example, Figure 28 depicts icons displayed along the lower corners of the screen similar to “peeling back” the corner of the image display.

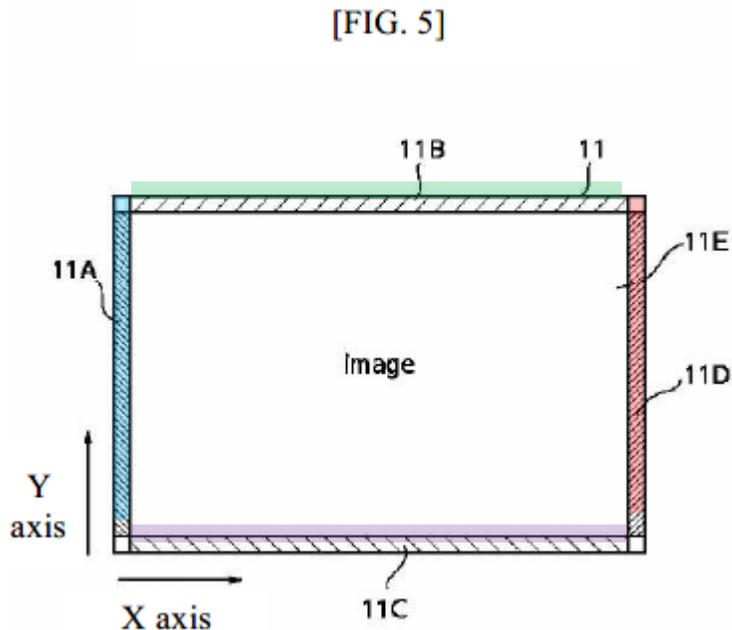


EX1004, FIGS. 7, 27. These icons are not contained within a window frame; the icons cannot be moved and remain anchored to an area. Additionally, Hisatomi teaches that the function list may be expanded such that it covers the entire screen. EX1004, 0246 (“in each of the above-mentioned embodiments, the pull-out menu can be stopped without stages at any pull-out position during pull-out”; *see also id.* at 0099, 101-3, 108 (“the entire display area of the image display screen 09 can be used for displaying the pull-out menu.”)) For at least these reasons, Hisatomi discloses the limitation of claim 3.

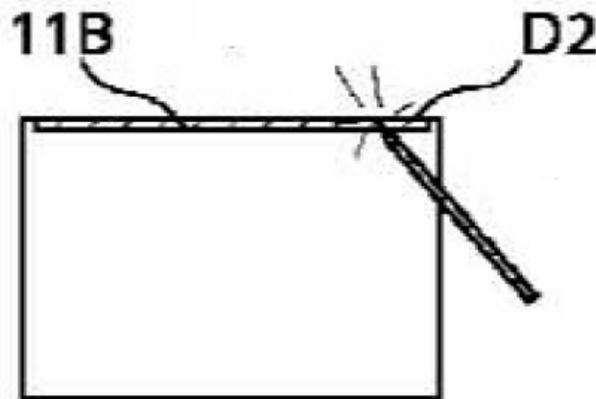
**4. Claim 7: “The computer readable medium of claim 1, wherein the strip is less than a thumb's width wide within the display screen”**

161. Claim 7 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of one of skill in the art, or alternatively Ren. Hisatomi discloses the limitation of claim 7.

162. Hisatomi discloses coordinates for trigger areas 11A-11D in Figure 5 are located along the edge of the screen. EX1004, 0018.



EX1004, FIG. 5 (annotated with highlighting to display Trigger Areas 11A-D). Hisatomi discloses the “coordinate definition of the pull-out menu display trigger areas 11A to 11D is determined by the shape of the pen tip of the input device 05, etc., and when the input device 05 is abutted on the exterior cover member 04, the coordinate range detected by the touch panel sensor 11 is defined with some margin.” EX1004, 0018. This spatial relationship is illustrated, for example, in FIG. 12.



EX1004, FIG. 12. A POSA would recognize the “shape of the pen tip” along with the disclosed margin is less than a thumb’s width wide. If Patent Owner argues this limitation is not disclosed by Hisatomi, given Hisatomi’s teaching to avoid obscuring the image, a POSA would have at least been motivated to make the trigger areas less than a thumb’s width wide to avoid obscuring the image during editing functions.

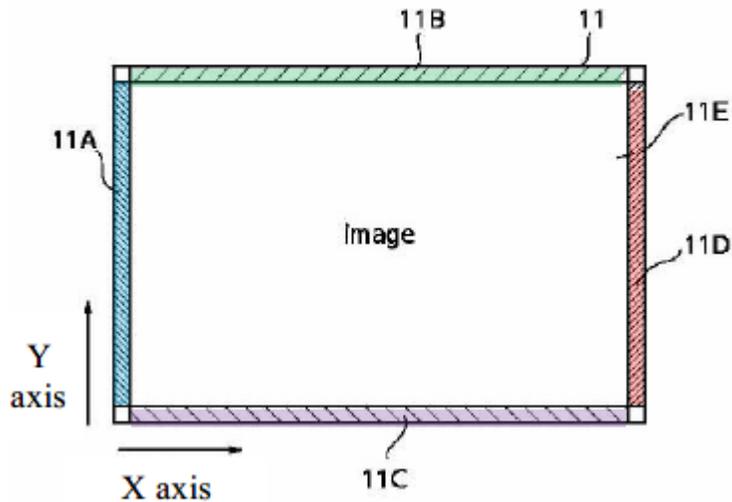
5. **Claim 8: “The computer readable medium of claim 1, wherein the multi-step user gesture comprises (i) the object touching the otherwise-activatable graphic, and (ii) the object gliding on the display screen away from and out of the strip.”**

163. Claim 2 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of one of skill in the art, or alternatively Ren. Hisatomi discloses the limitation of claim 8.

164. As explained above regarding limitation [1.c], Hisatomi discloses the coordinates of the trigger area are identified to a user using graphics displayed on

the image display screen using different colors or patterns to distinguish one from another. EX1004, 0027.

[FIG. 5]



EX1004, FIG. 5. Because of this, a touch within the coordinates of a trigger area strip will also be a touch on its related “otherwise-activatable graphic.” Thus, to display the associated pull-out menu, the multi-step user gesture includes the input device (*object*) touching the graphic overlaying the trigger area coordinates and the input device (*object*) gliding on the display screen away from and out of the trigger area coordinates (*strip*).

**B. Claim 4 is Rendered Obvious by Hisatomi in view of POSA Knowledge and Allard-656 and/or Ren and Allard-656**

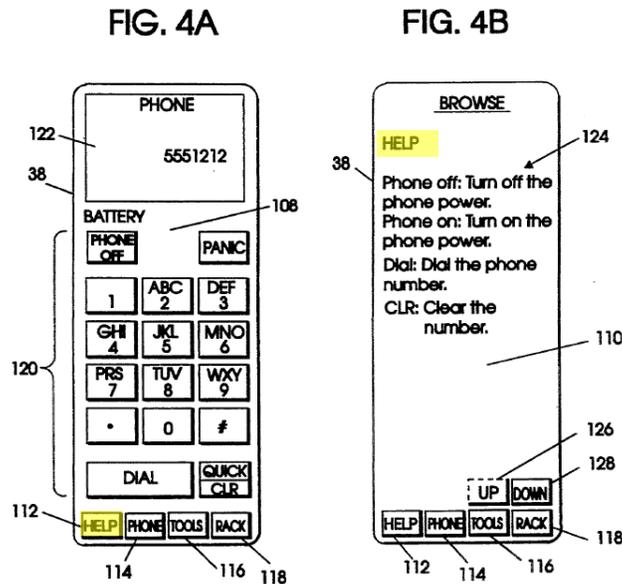
**1. Claim 4: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises a help function.”**

165. Claim 4 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of a POSA, or alternatively, Ren. Hisatomi in combination with the knowledge of a POSA and Allard-656, or alternatively, Ren and Allard-656, makes claim 4 obvious.

166. Hisatomi discloses a user interface having a state in which one or more function lists may be displayed on the screen. *See, e.g.*, EX1004, 0020-21, 0025, 0037, 126, FIGS. 7, 30. The “various processing functions” represented in the lists may be “classified into [different] categories” and assigned to different function or classification lists. EX1004, 0020; *see also id.* at Claims 1, 4, 9. For example, Figure 6 of Hisatomi depicts four different off screen function lists, A, B, C, and D, and suggests categories of functions for each list may be assigned, such as a search function, character input, image processing and editing functions, and save functions, respectively. EX1004, 0022; *see also id.* at FIG. 9 (describing the same categories).

167. It would have been obvious to a POSA to include in one or more of these categories a help function as one of the plurality of functions within the relative function list. A help function is one of a handful of common and typical

functions a POSA would have known to include, or at least would have been obvious to try, in a user interface such that the user could obtain more information about how to interact with the interface, and the information and functionality available. As one specific example in the prior art, Allard-656, which discloses user interface features of the well-known IBM Simon touch-screen mobile phone from *circa* 1995, discloses a “Help” function button on a touch screen. “The HELP button is located in a predetermined position” on the screen. EX1009, 6:48-49. When the HELP button 112 of screen 108 is selected it performs the function of displaying Help screen 110. EX1009, 5:51-55; *see also id.* at 6:12-38. “Help screen 110 contains a description 124 of the functions of keys presented on screen 108, which is deemed the current screen at the time the HELP button thereof is selected.” EX1009 at 6:31-38.



EX1009, FIGS. 4A, 4B (emphasis added).

168. It would have been obvious to a POSA to implement the Hisatomi device such that one of the icons in the function lists corresponded to a help function, as disclosed in Allard-656. A POSA would have been motivated to include a help function, such as that disclosed by Allard-656, for multiple reasons. Utilizing a help icon or other method to provide information to a user to assist with navigating a user interface was a well-known practice with benefits that would have been immediately apparent to a POSA. For example, every user of a user interface must learn to navigation and selection techniques associated with that interface. Hisatomi acknowledged this issue and suggested several potential solutions to provide user guidance, including displaying “a balloon that briefly explains what kind of function the icon corresponds to” when a user places “a pointing device such as a mouse on an icon.” EX1005 at 0223. A POSA would have understood that such popups may not be desirable, particularly in mobile electronic devices with smaller screens where the information within the popup could easily be obscured by the finger or object touching the screen.

169. A POSA would have recognized that Allard-656 and the Hisatomi are both directed to pen (or in the case of Allard-656, also a finger) input on a touch user interface of a handheld device. A POSA would have understood that the teachings of Allard-656 address the same issues discussed in Hisatomi and solve

the same problem in a manner that would provide benefits when working with smaller screen sizes. Allard-656 discloses the HELP button presents information related to the “current screen at the time the HELP button is [] selected.” EX1009 at 6:31-38. A POSA would have understood that a help button could be placed in one or more of the context menus of Hisatomi. When a particular pull-out menu of Hisatomi is displayed, the menu would include a Help icon that provides information specific to that pull-out menu (*i.e.*, “the current screen at the time”). The obvious need for user assistance and its well-known prevalence in user interfaces would have motivated a POSA to include icons indicating a pre-designated help function, as taught by Allard-656, in the menus of Hisatomi. It would have been within the level of ordinary skill to implement such a technique with predictable results as it was merely an implementation detail.

170. Hisatomi also acknowledges that a help function that “briefly explains what kind of function the icon corresponds to” would be beneficial. *See* EX1004, 0223. For example, when using a character input or color selection function list, it would be beneficial to the user to include a help function to further explain how the function list and the functions it contains operate. Similarly, Hisatomi explains that the user setting and detailed settings refer to functions that are “rarely” used and thus a user would be less inclined to understand or remember how the specific setting functions operate. In situations where a user is new to the interface or where

the function being used is complex and/or rarely used, a help function would be an obvious inclusion within such a function list.

171. In addition, the '993 patent explains that the “icons are adapted to represent services or settings of the operations system of said computer unit, such as back ground picture, clock, users, help, etc.” EX1001 at 2:31-34, 4:23-25, 4:36-40, FIG. 3. The '993 patent does not specify what services the claimed “Help” function provides. Therefore, the '993 patent appears to rely on the knowledge of a POSA to recognize such functions and know how to implement them. This further supports the obviousness of including a basic function like a Help function within the icons disclosed by Hisatomi, and explicitly disclosed by Allard-656.

**C. Claim 5 is Rendered Obvious by Hisatomi in view of POSA Knowledge and Tanaka and/or Ren and Tanaka**

**1. Claim 5: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises a clock function.”**

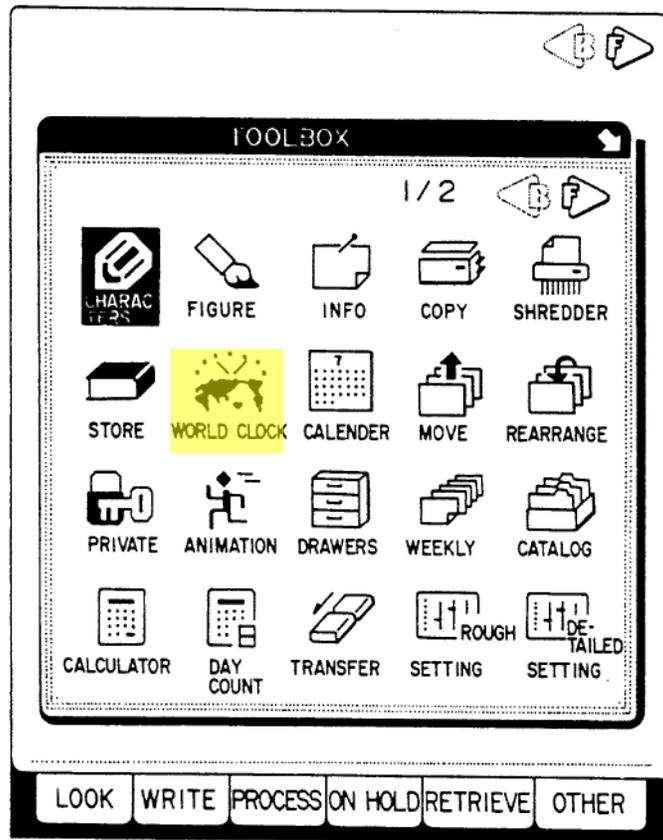
172. Claim 5 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of one of skill in the art, or alternatively, Ren. Hisatomi in combination with Ren and Tanaka or Palm renders this limitation obvious.

173. First, Hisatomi discloses a user interface having a state in which one or more function lists may be displayed on the screen. *See, e.g.*, EX1004, 0020-21, 0025, 0037, 126, FIGS. 7, 30. The “various processing functions” represented in

the lists may be “classified into [different] categories” and assigned to different function or classification lists. EX1004, 0020; *see also id.* at Claims 1, 4, 9.

Hisatomi discloses exemplary functions include a search function, character input, image processing and editing functions, and save functions. EX1004, 0022; *see also id.* at FIG. 9 (describing the same categories). Hisatomi also describes the desire to not obscure the image on the editing screen. EX1004, 0005. Therefore, it would have been desirable to include a clock function, which a POSA would have recognized should be, and was, included in nearly every user interface in some form, whether persistent at the edge of the screen or in the form of an icon.

174. The '993 patent's explains that the “icons are adapted to represent services or settings of the operations system of said computer unit, such as back ground picture, clock, users, help, etc.” EX1001 at 2:31-34,4:36-40. The '993 patent does not specify what services or functions the claimed “Clock” function provides. Tanaka discloses a “Clock” function button. Tanaka discloses selecting and opening a “Toolbox” window that “contains various icons.” EX1010, 4:13-21. One of the icons displayed in the Toolbox menu is a “World Clock” icon.



EX1010, FIG. 5 (emphasis added)

175. It would have been obvious to a POSA to implement the Hisatomi device to include an icon representing a clock function as disclosed in the '993 patent and Tanaka at least because such functions would have been well known to a POSA. A POSA would have been motivated to include a clock function, such as that disclosed in Tanaka, in Hisatomi's list of icons because the ability to identify the current time as well as the passage of time without viewing a separate device was desirable across the variety of devices in which Hisatomi's system could be implemented, including a "still camera, a video camera, a notebook computer, a

head mounted display, [or] a car navigation system.” EX1005 at 0243. Further, Tanaka teaches the inclusion of such a well-known feature in handheld device user interface in a similarly brief manner as the disclosure in the '993 Patent, which is consistent with the ubiquity of the feature in the art. Tanaka also teaches incorporating the clock functionality within menus with other icons and functions, similar to the context menus of Hisatomi. The benefits of a clock functionality within consumer electronic devices was well known and a POSA would have been motivated to incorporate such a feature as one of a handful of well-known, common features, like the clock of Tanaka, into other user interfaces. One well-known example in the prior art was the Palm handheld organizer device, which included a clock function, as shown below.

**To open an application on your handheld:**

1. Tap the Applications icon .



EX1027, 18.

176. It would have been within the level of ordinary skill to implement a well-known function such as a clock icon with predictable results, particularly given its ubiquity in the art.

**D. Claim 6 is Rendered Obvious by Hisatomi in view of POSA Knowledge and Kodoma and/or Ren and Kodoma**

**1. Claim 6: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises an alarm function.”**

177. Claim 6 depends from independent claim 1, which Hisatomi renders obvious in combination with the knowledge of a POSA, or alternatively Ren. Hisatomi in combination with the knowledge of a POSA and Kodoma, or alternatively Ren and Kodama, renders the limitation of claim 6 obvious.

178. As discussed in reference to claim 5, Hisatomi discloses the use of numerous different system functions that may be included within the function lists, including character input, color palette selection, image editing or processing, word processing, search, saving, user settings, and more detailed settings. Hisatomi discloses a device that includes a camera and can be used to capture, edit, save, search, etc., photographs. EX1004, 0013-14, FIG. 1.

179. One well-known example is the alarm function is Kodama. Kodama discloses a portable, touchscreen device that displays a plurality of icons, referred to as “stamps.” EX1016, 1:8-23. Kodama teaches displaying a “list of stamps,” including “an alarm stamp 101, a To Do stamp 102, ... an automatic erase stamp.”

EX1016, 8:21-28. Kodama describes when “the alarm stamp 101 is selected” from the list of stamps, “[t]his causes an alarm setting box 90 shown in FIG. 6B to be displayed on the screen.” EX1016, 8:54-56. “When the alarm has been set as described above, an alarm is given by an electronic sound or vibration to notify the user that the date and/or time for which the alarm has been set has arrived.”

EX1016, 9:1-4;

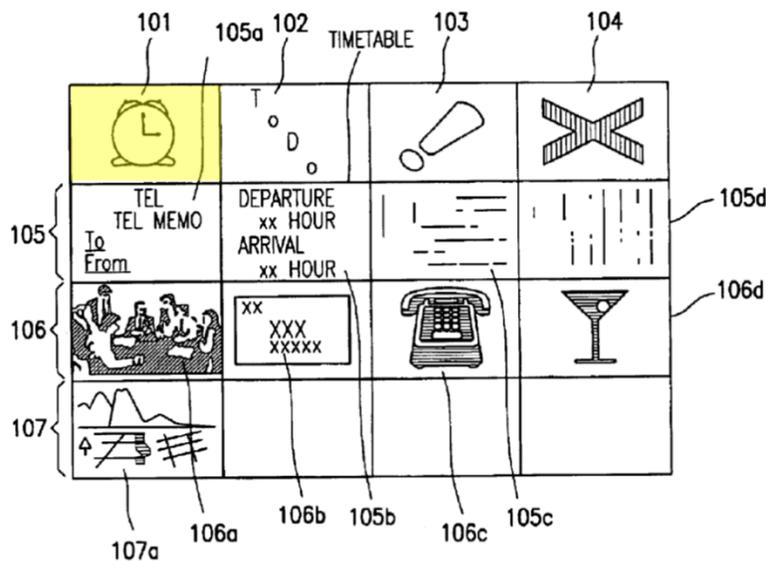


FIG. 4

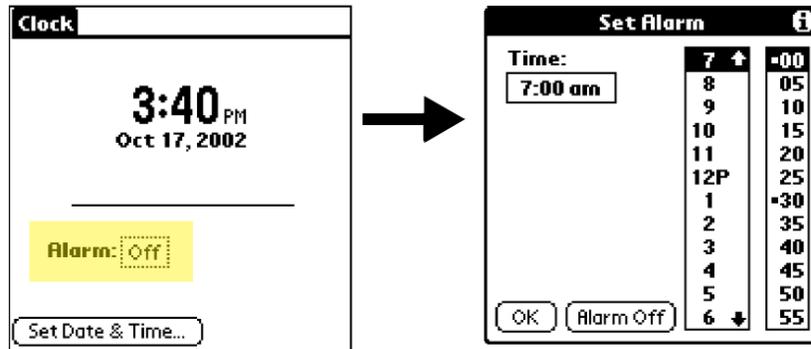
EX1016, FIG. 4 (annotated)

180. Kodama’s disclosure of an alarm icon and function was common in the art. Indeed, another well-known example of claim 6 was the Palm organizer devices, which included an alarm function. As discussed above in regard to claim 5, it was well known in the art to include a clock function, such as disclosed in Palm organizers. EX1027, 18. The Palm clock function also included an alarm

feature.

**To set an alarm:**

1. Tap the Applications icon .
2. Tap the Clock icon .
3. Tap the Alarm box to open the Set Alarm dialog box.



EX1027, 130.

181. It would have been obvious to a POSA to include an alarm function, such as disclosed by Kodama or Palm, as one of the icons disclosed by Hisatomi, such as in the settings pull-out menu. A POSA would have been motivated to combine these teachings at least because Hisatomi, Kodama, and Palm are all directed to user interfaces for pen-based handheld devices. A POSA would have recognized that, with the teaching of Hisatomi to not obstruct the view of the image being edited that a clock function would likely not be included on the main display screen, and therefore, it would be desirable to have an alarm that a user could set to manage the amount of time the user spends on editing functions. Alarm functions were basic functions well-known to a POSA and could have been

implemented with predictable results.

182. The ability to notify a user of a specific event by date and time is beneficial across the variety of devices in which Hisatomi's system could be implemented, including a "still camera, a video camera, a notebook computer, a head mounted display, [or] a car navigation system." EX1005 at 0243. Further, Kodama and Palm teach the implementation of such a well-known feature. Kodama and Palm also teach incorporating the alarm functionality within a menu with other selectable functions, similar to the context menus of Hisatomi.

**E. Claims 1-3, 7, and 8 are Rendered Obvious by Hansen in view of Gillespie**

**1. Claim 1**

**[1.pre]: "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,"**

183. To the extent that the is preamble is deemed limiting, Hansen discloses the preamble through disclosure of a memory unit 14 (recited "*computer readable medium*") that stores instructions executed by CPU 12 (recited "*processor*") of a computer system with touch-sensitive screen 35 (recited "*electronic device having a touch-sensitive display screen*") to provide a user interface displayed through video monitor 30 (recited "*user interface*"). EX1029, 3:49-4:25.

184. CPU 12 includes electronic componentry to execute software that permits CPU 12 to control the computer system, including displaying working windows and various icons, and activating corresponding computer programs. EX1029, 3:58-4:4. CPU 12 also functions as a control means for generating and processing signals relating to input strokes. *Id.* Given this disclosure, Hansen describes that CPU 12 “enable[s]” the interface displayed through video monitor 30. *Id.* Additionally, since memory 14 is disclosed and claimed as defining data relating to interface elements (e.g., input stroke, plurality of icons), Hansen describes that the memory 14 “store[s] instructions” that cause CPU 12 to enable the interface displayed through video monitor 30. *Id.*, 3:58-4:4, 4:5-8, Claims 1, 16, 20. Thus, the combination of Hansen and Gillespie discussed in Section VII.M renders this preamble obvious.

**[1.a] “the user interface comprising at least two states, namely,”**

185. Hansen discloses this limitation. *See* discussion of limitations [1.b] and [1.c] below addressing each of the “tap-present state” and “tap-absent states” referenced by the “at least two states,” as recited.

**[1.b]: “(a) 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”**

186. Hansen discloses this limitation. As discussed above in Section VII.J,

Hansen's interface provided through video monitor 30 (recited "user interface") provides a user with access to computer programs displayed in work windows.

EX1029, FIGS. 2, 3A-3C. Figure 3B (annotated below) shows a display of Hansen's interface in the recited "tap-present state" after a user completes an input stroke. EX1029, 5:23-35. The Figure 3A display includes icons 50 (recited "plurality of tap-activatable icons"). The annotated version of Figure 3B below shows the display of Hansen's interface (highlighted in red) and the icons 50 (highlighted in purple).

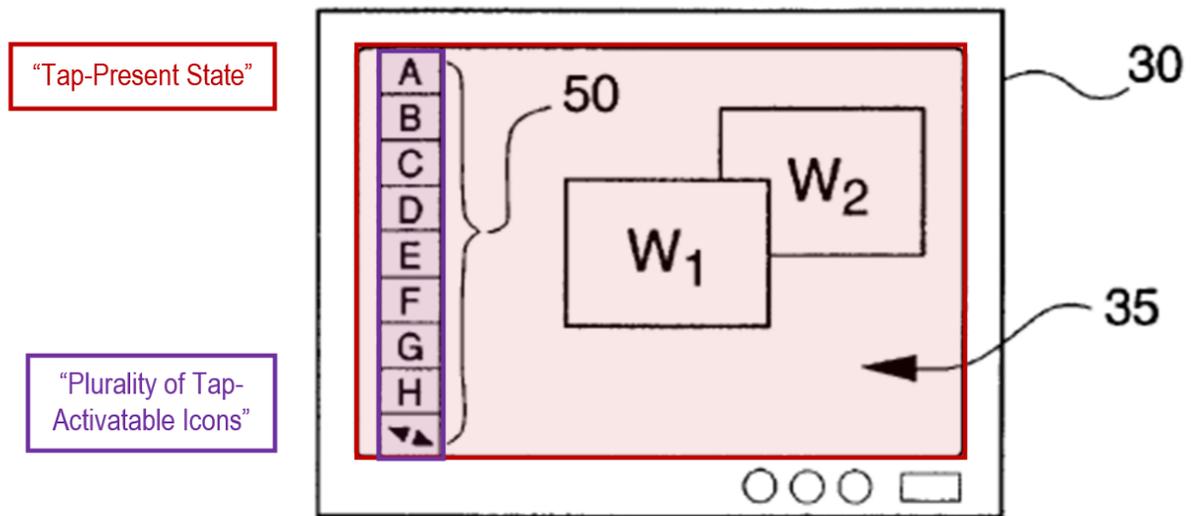


FIG. 3B

EX1029, Figure 3B (annotated).

187. Each of the icons 50 "corresponds to a computer program that can be run in [a] working window," and thus, the computer programs corresponding to the

icons 50 represent the recited “respective plurality of pre-designated system functions.” EX1029, 5:17-36. In discussing prior art personal computer operating systems, Hansen defines “icons” (e.g., icons 50) as “graphical representations of various computer programs [that] are displayed on a computer screen,” and a POSA would have understood a computer program to be at least one type of “system function.” *Id.*, 1:34-43. Each of icons 50 can be selected by “momentarily touching one of the plurality of icons 50,” *i.e.*, a tap input. *Id.*, 5:33-36. In response to icon selection, a “working window associated with the icon selected by the user is scrolled onto the video monitor 30” such that the computer program is “activated in response to a tap on its respective icon,” as recited. EX1029, 5:36-46.

**[1.c]: “(b) a tap-absent state, wherein tap-activatable icons are absent but an otherwise-activatable graphic is present in a strip along at least one edge of the display screen for transitioning the user interface from the tap-absent state to the tap-present state in response to a multi-step user gesture comprising”**

188. Hansen combined with Gillespie renders this limitation obvious. As discussed above (*see* Section VII.B.2), Hansen’s interface displayed through video monitor 30 (recited “*user interface*”) provides access to computer programs displayed in work windows. EX1029, FIGS. 2, 3A-3C. Figure 3A (annotated below) shows a display of Hansen’s interface in a “*tap-absent state*” before a user performs an input stroke. EX1029, 5:9-13.

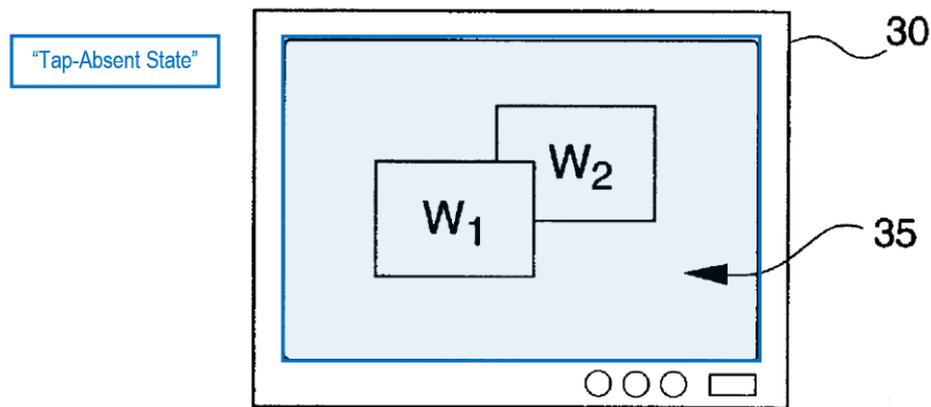


FIG. 3A

EX1029, FIG. 3A (annotated).

189. With respect to FIG. 3A, Hansen describes that “video monitor 30 is showing any of a number of windows w1, w2 . . . .” EX1029, 5:11-12 (emphasis added). A POSA would have understood that, in a case where the user has not yet executed any programs and therefore not opened any windows, the display would not contain any windows and instead look similar to the blank display in FIG. 2. Thus, in this case, there can be no doubt that Hansen discloses a state in which “tap-activatable icons are absent,” as claimed.

190. Applicant previously argued that “Hansen’s computer system, prior to opening windows w1 and w2, provides tap-activatable icons for opening these windows.” EX1003, 156. However, this interpretation find no support in Hansen. Regardless, it would have at least been an obvious design choice to a POSA to open the windows w1 and w2 from icons 50 after a user provided the first

predetermined input, leaving no tappable icons on the screen before the first predetermined input.

191. Hansen also discloses that input strokes are recognized only if an “initial starting position X1, Y1” of a touch input is within a “predetermined area” of screen 35 (recited “*strip*”). EX1029, 6:65-7:5; FIG. 4 (conditional block 106). Further, Hansen teaches that this “predetermined area or edge is user definable.” *Id.*, 7:2-3 (emphasis added). Yet Hansen’s figures do not show any visible indicator representing an “*otherwise-activatable graphic.*”<sup>9</sup> EX1029, 4:34-48.

192. However, as discussed above in Section VII.B.2.c, this feature would have been made obvious when Hansen is combined with techniques well-known

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<sup>9</sup> In reference to FIG. 1, Hansen teaches that “arrow 45 does not appear on the video monitor but is shown merely for purposes of illustrating the first predetermined user input stroke.” EX1029, 4:46-48. It is notable that even though Hansen teaches that the arrow 45 is not displayed in its preferred embodiment, Hansen recognized the benefit of providing the arrow in FIG. 1 to explain the concept of the “first predefined input stroke” to the reader. This is evidence of the benefit of providing such a visual indication for the “first predefined input stroke” to a person learning about the system. *Id.*

by the Critical Date of using an icon to visually indicate a control region of a touch-screen display where special types of touch-based input (e.g., input stroke) are available. Gillespie, for example, discloses displaying icons that “indicate control regions that respond specifically to finger motions and/or finger taps...” EX1030, ¶[0056]. Gillespie’s Figure 4 (reproduced below) illustrates examples of such “control regions” (e.g., icons 402 and 404) that are used to indicate regions of a touch interface where a user can perform scrolling/swiping motions. *Id.*, ¶[0047]; *see also* ¶[0041] (discussing prior art that displays “graphical icons to indicate...scrolling regions on [a] touch sensor surface...”).

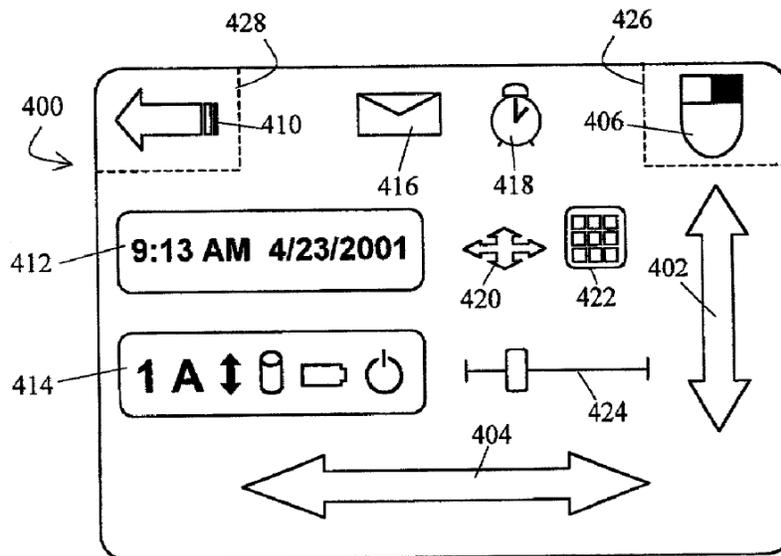
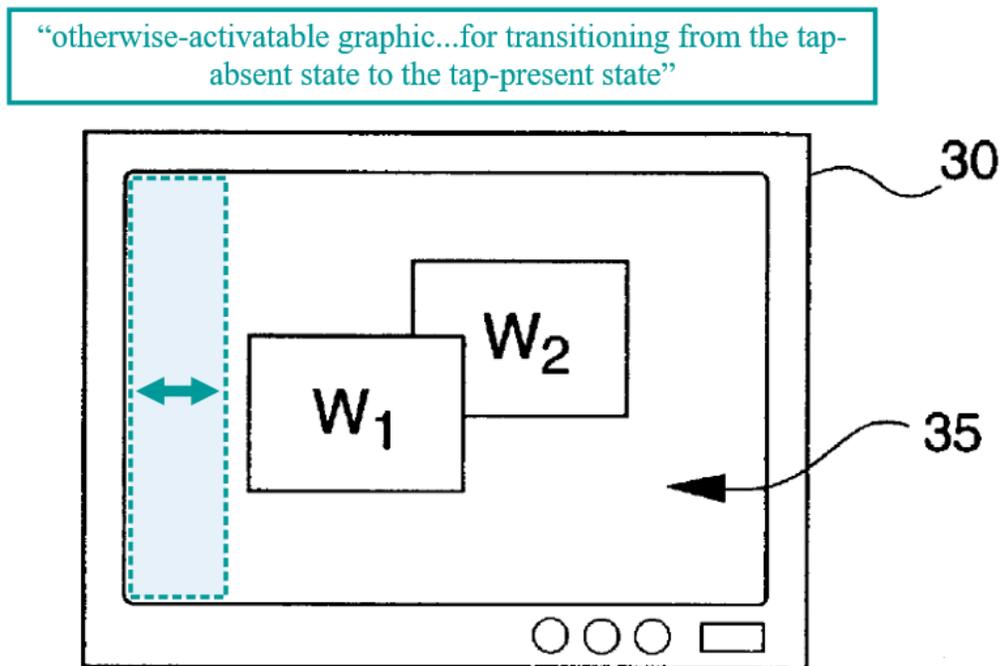


Figure 4

EX1030, FIG. 4. The modified user interface enabled by the Hansen-Gillespie combination would have included a visual convention that indicates to a user that a predetermined area is a control region within which a user can provide a touch

input for initiating a stroke input. EX1029, 6:65-7:5; FIG. 4; EX1030, ¶¶[0047], [0056]. And, since Hansen describes that only touch inputs with initial starting positions within the predetermined areas are recognized as input strokes, in the Hansen-Gillespie combination, the visual convention would have surrounded the region of screen 35 corresponding to the predetermined area.

193. The modified version of Hansen's Figure 3A below shows an example of the user interface that would have been provided by the Hansen-Gillespie combination. As shown, the user interface includes a visual convention (shown in turquoise) to indicate to the user that a predetermined area (e.g., two centimeters from the left-hand edge of the display 35, as taught by Hansen as the ideal width of the area) is a control region (recited "*strip along at least one edge of the display screen*") for initiating an input stroke.



**FIG. 3A**

EX1014, Figure 3A (annotated and modified to incorporate Gillespie’s visual convention, e.g., dashed lines 426, 428). The visual indication taught by Gillespie (i.e., the dashed lines with a colored background and other visual “affordances,” such as text and arrows) incorporated into Hansen’s display is “*an otherwise-activatable graphic,*” and it is coextensive with Hansen’s predetermined area, which is “*a strip along at least one edge of the display screen.*” The modified figure is intended solely to be illustrative and not intended to be drawn to scale to represent the actual graphics a POSA would have implemented when combining Hansen and Gillespie as discussed in this section.

194. The ’993 patent does not define the term “strip,” or even use the term

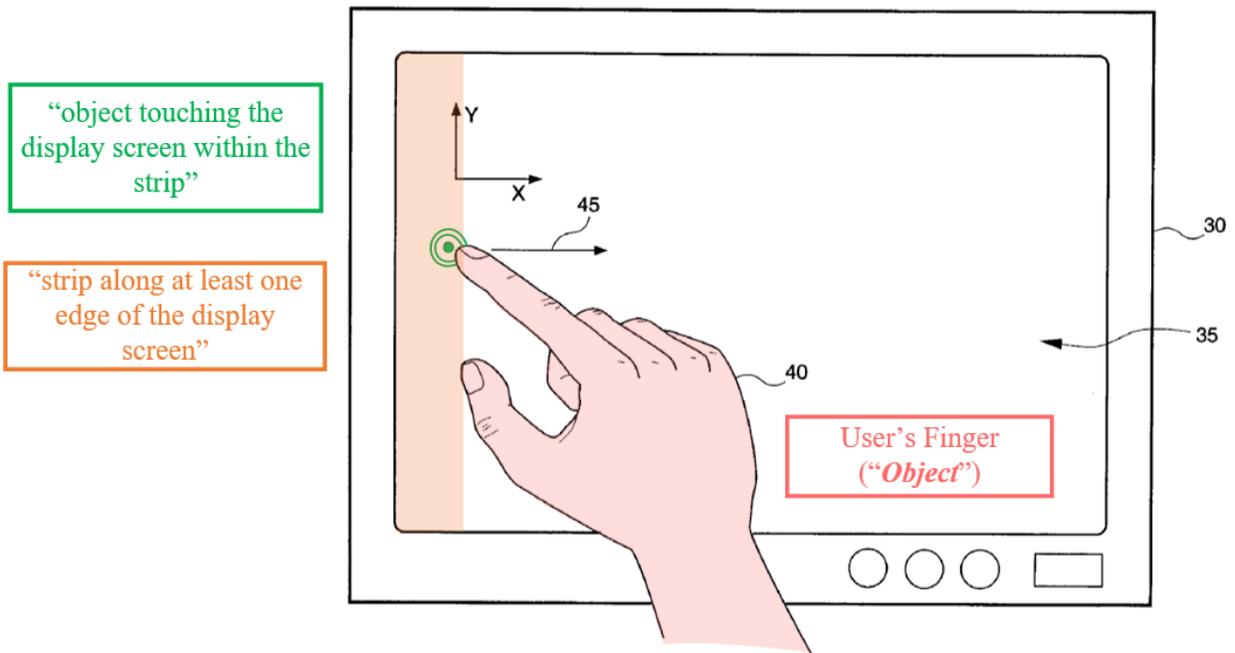
outside of the claims. *See generally* EX1001. The Applicant also did not define the term “strip” during the prosecution that led to the ’993 patent. *See, e.g.*, EX1003, 76-80, 153-159. In light of the specification, a POSA would have understood the recited “strip” to encompass Hansen’s “predetermined area” at the left edge of the screen.

195. When amending the claims to include the term “strip,” Applicant cited alleged support in “the original specification at least by page 5, lines 5-11, and” FIGS. 1 and 2. EX1003, 158. This portion of the ’993 patent simply explains that “a touch sensitive area 1 . . . is divided into a menu area 2 and a display area 3.” EX1001, 3:57-65. Consistent with this disclosure, Hansen similarly discloses the touch-sensitive screen 35 is divided to include a predetermined area within 2cm of the edge of the screen and the remaining area of the screen. EX1029, 4:34-37, 4:65-67, FIG. 2.

196. Additionally, Hansen describes that the input stroke being completed on the Figure 3A display (recited “*tap-absent state*”) results in the Figure 3B display (recited “*tap-present state*”) being shown, which means that Hansen’s input stroke with respect to the otherwise-activatable graphic can be used for “*transitioning the user interface from the tap-absent state to the tap-present state.*” EX1029, 5:6-47.

**[1.d]: “[in response to a multi-step user gesture comprising] (i) an object touching the display screen within the strip, and (ii) the object gliding on the display screen away from and out of the strip.”**

197. Hansen combined with Gillespie renders this limitation obvious. As discussed above in Section VII.B.2.a, Hansen discloses that a user can perform an input stroke (recited “*multi-step user gesture*”) including two steps. EX1029, 4:34-47. In the first step, a user uses a finger (recited “*object*”) to touch screen 35 at an initial starting position within a predetermined area, such as an area extending two centimeters from at least a portion of the left-hand of the edge of the display 35 (recited “*display screen within the strip*”). EX1029, 4:34-47. An annotated version of Figure 2 (reproduced below) shows a user’s hand (highlighted in pink) touching the initial starting position (highlighted in green) within the predetermined area (highlighted in orange).



EX1029, FIG. 2 (annotated).

198. The annotated version of Figure 3A below shows the same concepts discussed above for this limitation but applied to Hansen's Figure 3A display (*"tap-absent state"*).

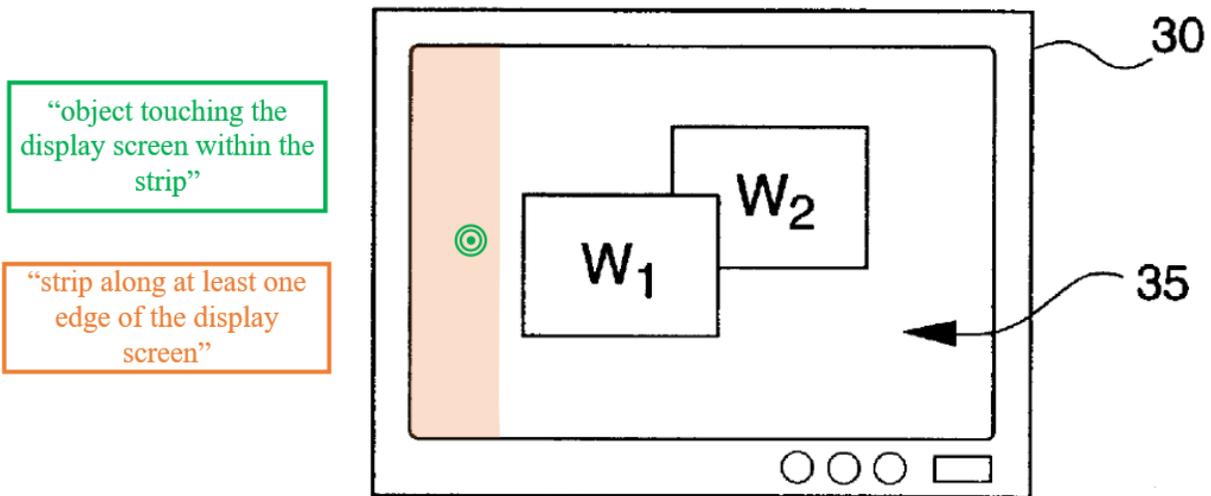
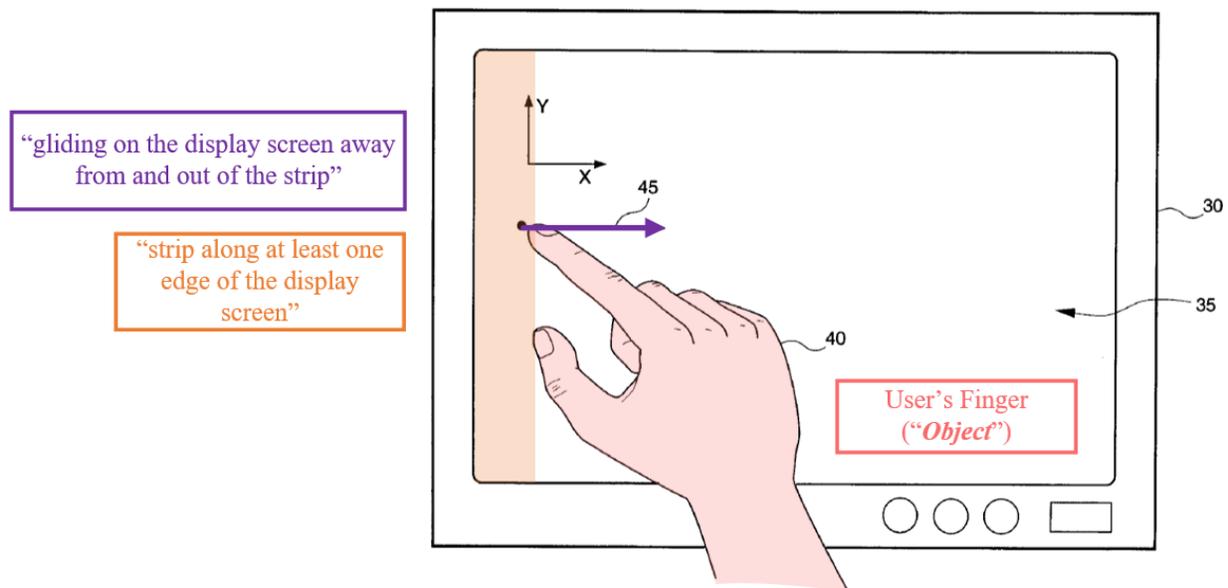


FIG. 3A

EX1029, FIG. 3A (annotated). In the Hansen-Gillespie combination, the user would touch the display screen in Hansen’s predetermined area (which is identified by a Gillespie-type visual convention added to the Hansen interface) that extends 2 cm from the left side of the screen. As described with respect to limitation [1.b], this visual convention (e.g., Gillespie’s dashed lines and colored background) is one example of a visual indication to the user of a “control region[] that respond[s] specifically to finger motions,” as taught by Gillespie. EX1030, ¶[0056].

199. In the second step, after touching screen 35 within the predetermined area (recited “*strip*”), the user moves the finger towards the middle of screen 35 along the direction of arrow 45 such that the finger “glid[es] on the display screen away from and out of the strip,” as recited. EX1029, 4:34-67 (“the first

predetermined user input stroke is defined as a continuous horizontal movement by the user's finger on the touch sensitive screen 35 from a point sufficiently near (e.g., within 2 cm of) the left-hand side of the touch-sensitive screen 35 towards the center of the screen 35"). An annotated version of Figure 2 (reproduced below) shows a user's hand (highlighted in pink) moving in a direction 45 (highlighted in purple) away from and out of the predetermined area (highlighted in orange). Indeed, Hansen describes that the input stroke is determined to have been complete when computer determines that "the user has moved his/her finger in the X direction by more than a predetermined length," and, in its example embodiment, that length is longer than the predetermined area (i.e., 3cm length stroke from a 2cm predetermined area). EX1029, 4:62-67, 7:37-49.



EX1029, Figure 2 (annotated).

200. The annotated version of Figure 3A below shows the same concepts discussed above for this limitation but applied to the Figure 3A display (recited “tap-absent state”).

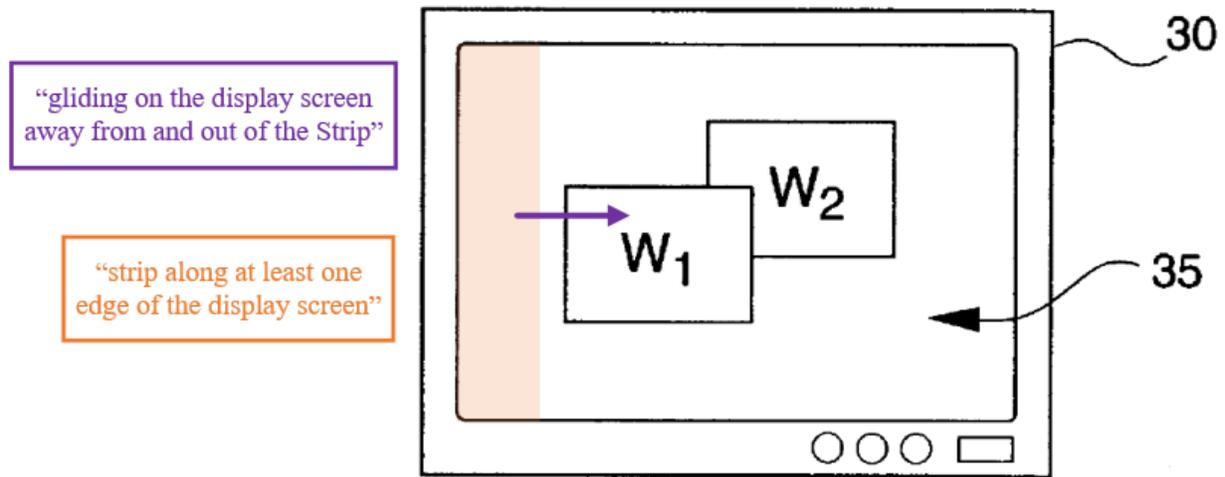


FIG. 3A

EX1029, Figure 3A (annotated).

2. **Claim 2: “The computer readable medium of claim 1, wherein any state transition elicited by a user gesture that begins at a location at which the otherwise-activatable graphic is provided, transitions to the tap-present state.”**

201. Claim 2 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen discloses the limitations of claim 2.

202. As discussed in reference to limitations [1.b] and [1.c], Hansen describes transitioning from the Figure 3A display (recited “tap-absent state”) to

the Figure 3B display (recited “tap-present state”) in response to a user completing an input stroke (recited “multi-step user gesture”) that includes two steps.

EX1029, 4:34-47. In the first step, a user uses a finger to touch screen 35 at an initial starting position within a predetermined area, such as two centimeters from the left-hand of the edge of the display 35 (recited “location at which the otherwise-activatable graphic is provided”). EX1029, 4:34-47. In the combination of Hansen and Gillespie described in Section VII.M, the user would touch the display screen within Hansen’s predetermined area (as visually indicated by the Gillespie-type visual convention added to the Hansen interface), which is coextensive with the 2cm strip described by Hansen.

203. Hansen does not describe or suggest that an input stroke being performed on the Figure 3A display results in any action other than transitioning to the Figure 3B display. Specifically, Hansen describes that “FIG. 3A illustrates the video monitor 30 before the user has drawn the first predetermined input stroke.” EX1029, 5:6-20 (emphasis added). Hansen further teaches that “CPU 12 displays a plurality of icons 50 on the touch-sensitive screen 35” if a received input on the Figure 3A display matches the first predetermined user input stroke. *Id.* In other words, the display of icons 50 shown in the Figure 3B display are “a result of the user performing the first predetermined input stroke” within the predetermined area of the Figure 3A display. *Id.* Thus, since the only result that Hansen

describes in response to an input stroke being performed on the Figure 3A display is transitioning to the Figure 3B display, Hansen discloses that any state transition elicited by an input stroke that begins at an initial starting position within a predetermined area (recited “location at which the otherwise-activatable graphic is provided”), transitions to the Figure 3B display (recited “tap-present state”).

**3. Claim 3: “The computer readable medium of claim 1, wherein the tap-present state does not display the tap-activatable icons within a window frame.”**

204. Claim 3 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen discloses the limitations in claim 3. As discussed for limitation [1.b], in the combination of Hansen and Gillespie, Hansen describes that the Figure 3B display (recited “tap-present state”) is provided after a user completes an input stroke on the Figure 3A display (recited “tap-absent state”). EX1029, 5:23-35. The annotated version of Figure 3B below shows the display of Hansen’s interface (highlighted in red) and icons 50 (highlighted in purple).

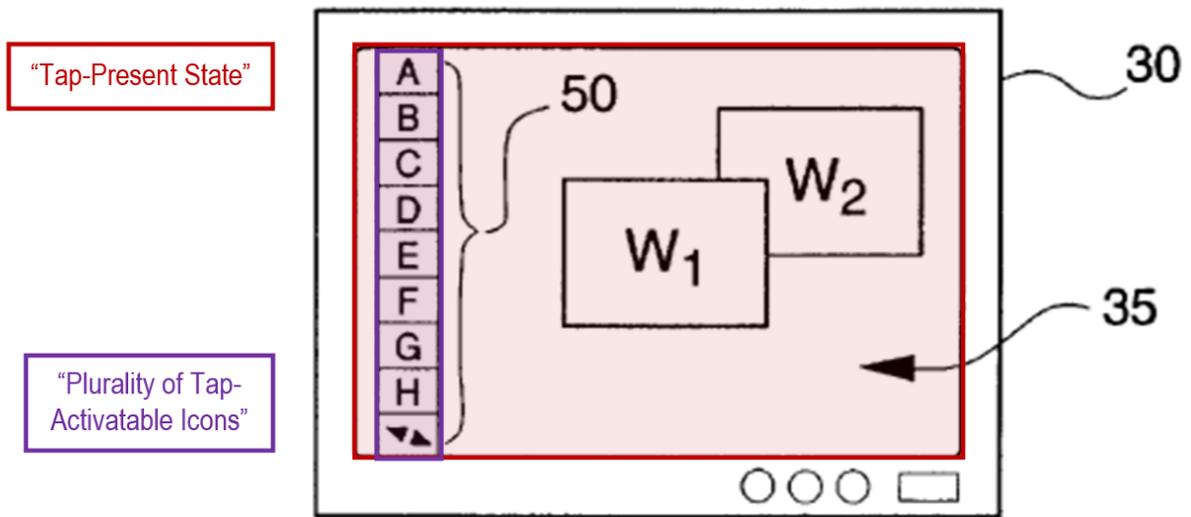


FIG. 3B

EX1029, FIG. 3B (annotated).

205. Hansen describes that “the plurality of icons 50 are displayed in a line along a predetermined edge of the monitor 30.” EX1029, 5:21-23. Because icons 50 are not presented on the Figure 3B display within in any distinct user interface element, Hansen discloses that the Figure 3B display (recited “tap-present state”) does not display icons 50 (recited “tap-activatable icons”) “within a window frame,” as recited. Hansen’s description of the display icons 50 being presented “in a line” is markedly distinct from its description of other display elements Hansen specifically calls “windows.” See EX1029, 5:6-25 (describing “a number of windows w1, w2” distinctly from the “icons 50” being “displayed in a line”). Indeed, Hansen separately confirms that “a specific area in which the program

appears on the screen, called a window, is displayed” after a user selects an icon.

EX1029, 1:42-46. Thus, Hansen distinguishes display of the icons from the windows are created to display the programs associated with those icons.

**4. Claim 7: “The computer readable medium of claim 1, wherein the strip is less than a thumb's width wide within the display screen”**

206. Claim 7 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen discloses the limitation of claim 7. Neither the claims nor the '993 patent specification provide any explicit indication as to a distance represented by the recited “*thumb's width*.” Hansen describes that the predetermined area in which an edge-based gesture can be received (recited “*strip*”) is positioned within 2cm of the left-hand edge of display 35. Hansen, 4:62-5:5. A POSA would have understood that Hansen’s 2cm-wide predetermined area (recited “*strip*”) is less than a thumbs-width wide.

207. Moreover, Hansen describes configurations in which the predetermined area in which an input stroke can be received (recited “*strip*”) is “user definable,” which indicates that the width of the predetermined area is configurable to various distances, including distances “less than a thumb’s width wide,” as recited. EX1029, 6:65-7:5. With this disclosure, a POSA would have recognized that Hansen contemplates the width of the predetermined area to be a design choice for minimizing inaccurate recognition of initiating an input stroke.

For example, a user can define the width of the predetermined area to extend to a certain distance from the screen edge so that touch input received near the middle region of the screen 35 is not incorrectly identified by Hansen's system as satisfying conditional block 106 of the process shown in FIG. 4A (determining that an initial starting position X1, Y1 is within the predetermined area). *Id.* This would have been useful to prevent unwanted detection of input stroke recognition in scenarios where the user provides a tap input to interact with an icon displayed in the middle region of screen 35 (and not to initiate an input stroke). *Id.*

**5. Claim 8: “The computer readable medium of claim 1, wherein the multi-step user gesture comprises (i) the object touching the otherwise-activatable graphic, and (ii) the object gliding on the display screen away from and out of the strip.”**

208. Claim 8 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen discloses the limitation of claim 8. As discussed above regarding limitation [1.c], Hansen discloses that a user can perform an input stroke (recited “multi-step user gesture”) including two steps. EX1029, 4:34-47. In the Hansen-Gillespie combination, with the first step, a user uses a finger (recited “object”) to touch screen 35 at the Gillespie-type graphical icon added to the Hansen interface, which is positioned within the 2cm strip described by Hansen (recited “object touching the otherwise-activatable graphic”). EX1029, 4:34-47. In the second step, the user moves the finger towards the middle

of screen 35 along the direction of arrow 45 such that the finger “glid[es] on the display screen way from and out of the strip” as discussed above in regards to limitation [1.d]. EX1029, 4:34-67.

**F. Claim 4 is Rendered Obvious by Hansen in view of Gillespie and Allard-656**

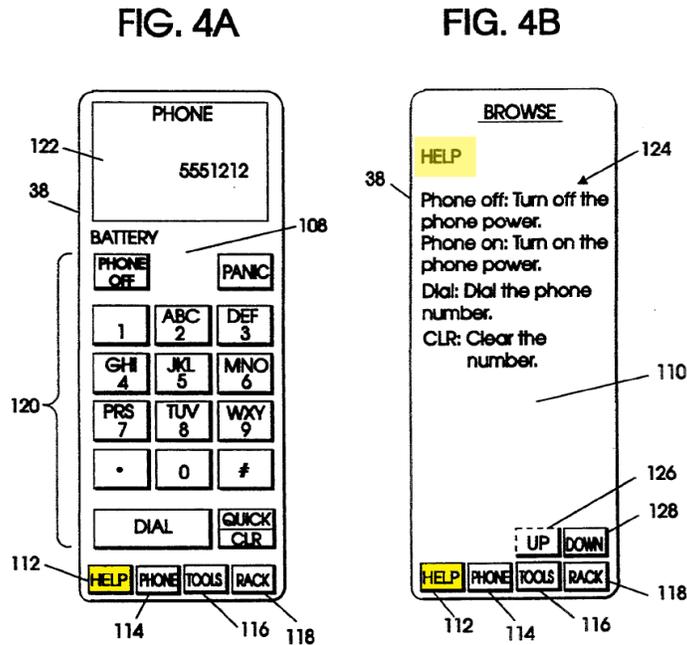
**1. Claim 4: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises a help function.”**

209. Claim 4 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen in combination with Gillespie and Allard-656 renders claim 4 obvious.

210. As discussed for claim 1, Hansen discloses a user interface having a state in which icons 50 are displayed on the screen. EX1029, 1:34-43, 5:17-46, FIG. 3B. It would have been obvious to a POSA to include an icon representing a help function in one or more of icons 50. A help function is one of a handful of common and typical functions a POSA would have known to include, or at least would have been obvious to try, in a user interface such that the user could obtain more information about how to interact with the interface, and the information and functionality available. *Id.* For example, Allard-656, which discloses user interface features of the well-known IBM Simon, discloses a “Help” function button on a touch screen “located in a predetermined position” on the screen.

EX1009, 6:48-49. When the HELP button is selected it performs the function of

displaying a Help screen to aid the user in navigating the user interface. EX1009, 5:51-55; *see also id.*, 6:12-38.



EX1009, FIGS. 4A, 4B (annotated).

211. It would have been obvious to a POSA to configure the Hansen device such that one or more of the icons in icons 50 corresponded to a help function, as disclosed in Allard-656. A POSA would have been motivated to do so at least because utilizing a help icon was a well-known practice with benefits that would have been immediately apparent to a POSA. *Id.*

212. A POSA would have recognized Allard-656 and Hansen are both directed to pen input on a touch user interface of a handheld device. A POSA would have understood the teachings of Allard-656 address the same issues

discussed in Hansen and solve the same problem in a manner that would provide benefits when working with smaller screen sizes. *Id.* Allard-656 discloses the HELP button presents information related to the “current screen at the time the HELP button is [] selected.” EX1009, 6:31-38. A POSA would have understood a help button could be placed in one or more of the icons 50 of Hansen.

213. The obvious need for user assistance and its well-known prevalence in user interfaces would have motivated a POSA to include icons indicating a pre-designated help function, as taught by Allard-656, in the menus of Hansen. It would have been within the level of ordinary skill to implement such a technique with predictable results as it was merely an implementation detail.

**G. Claim 5 is Rendered Obvious by Hansen in view of Gillespie and Tanaka**

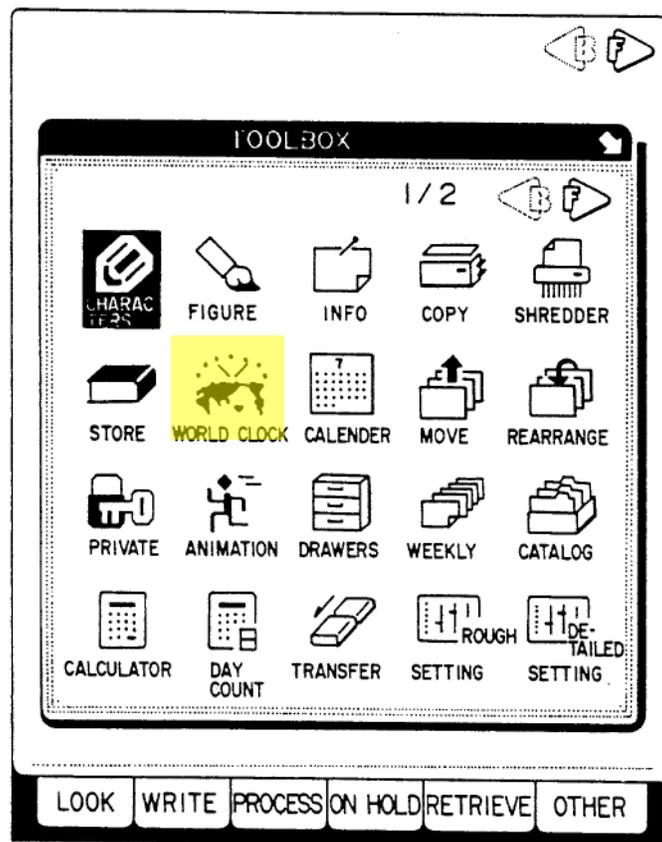
**1. Claim 5: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises a clock function.”**

214. Claim 5 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen in combination with Gillespie and Tanaka or Palm renders claim 5 obvious.

215. As discussed for claim 1, Hansen discloses a user interface having a state in which icons 50 are displayed on the screen. EX1029, 1:34-43, 5:17-46, FIG. 3B. It would have been desirable for icons 50 to include an icon for a clock function, which a POSA would have recognized should be, and was, included in

nearly every user interface in some form, whether persistent at the edge of the screen or in the form of an icon.

216. The '993 patent's explains that the "icons are adapted to represent services or settings of the operations system of said computer unit, such as background picture, clock, users, help, etc." EX1001 at 2:31-34,4:36-40. The '993 patent does not specify what services or functions the claimed "Clock" function provides. Tanaka discloses a "Clock" function button. Tanaka discloses selecting and opening a "Toolbox" window that "contains various icons." EX1010, 4:13-21. One of the icons displayed in the Toolbox menu is a "World Clock" icon.



EX1010, FIG. 5 (emphasis added).

217. It would have been obvious to a POSA to implement the Hansen device to include an icon representing a clock function as disclosed in the '993 patent and Tanaka at least because such functions would have been well known to a POSA. A POSA would have been motivated to include a clock function, such as that disclosed in Tanaka, in Hansen's icons 50 because the ability to identify the current time as well as the passage of time without viewing a separate device was desirable across the variety of devices in which Hansen's system could be implemented. Further, Tanaka teaches the inclusion of such a well-known feature in handheld device user interface in a similarly brief manner as the disclosure in the '993 Patent, which is consistent with the ubiquity of the feature in the art. Tanaka also teaches incorporating the clock functionality within menus with other icons and functions, similar to icons 50 of Hansen. The benefits of a clock functionality within consumer electronic devices was well known and a POSA would have been motivated to incorporate such a feature as one of a handful of well-known, common features, like the clock of Tanaka, into other user interfaces. One well-known example in the prior art was the Palm handheld organizer device, which included a clock function, as shown below.

**To open an application on your handheld:**

1. Tap the Applications icon .



EX1027, 18.

218. It would have been within the level of ordinary skill to implement a well-known function such as a clock icon with predictable results, particularly given its ubiquity in the art.

**H. Claim 6 is Rendered Obvious by Hansen in view of Gillespie and Kodama**

1. **Claim 6: “The computer readable medium of claim 1, wherein the plurality of pre-designated system functions comprises an alarm function.”**

219. Claim 6 depends from independent claim 1, which is rendered obvious by Hansen in combination with Gillespie. Hansen in combination with Kodoma or Palm, renders claim 6 obvious.

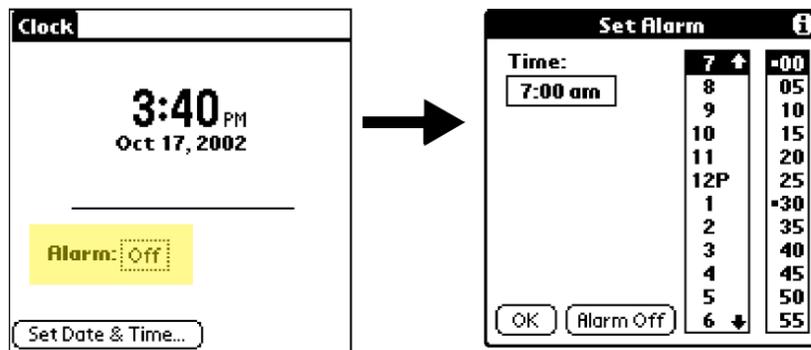
220. Claim 6 depends from independent claim 1, which Hansen renders obvious in combination with Gillespie. Hansen in combination with Gillespie and

Kodoma or Palm renders claim 6 obvious.

221. As discussed for claim 1, Hansen discloses a user interface having a state in which icons 50 are displayed on the screen. EX1029, 1:34-43, 5:17-46, FIG. 3B. One well-known example in the prior art of claim 6 was the Palm organizer devices, which included an alarm function. As discussed above in regard to claim 5, Palm organizers included a clock function. EX1027, 18. This clock function also included an alarm feature.

**To set an alarm:**

1. Tap the Applications icon .
2. Tap the Clock icon .
3. Tap the Alarm box to open the Set Alarm dialog box.



EX1027, 130.

222. As another explicit example of this limitation in the prior art, U.S. Patent No. 6,710,791 to Kodama et al. (“Kodama”) discloses the claimed alarm function. Kodama discloses a portable information gathering apparatus, such as an input display tablet operated with a pen, that displays a plurality of icons. EX1016,

1:8-23. Kodama teaches the disclosed information gathering apparatus “handles a wide variety of information and the volume may be as large as over 100 pages,” and “[t]herefore, the user is required to manage entered information by alarm setting or some other method according to the type of information when reading a particular piece of information ... .” EX1016, 2:11-14. Kodama teaches display of a “list of stamps,” including “an alarm stamp 101, a ToDo stamp 102, ... an automatic erase stamp” (EX1016, 8:21-28), and discloses when “the alarm stamp 101 is selected” from the list of stamps, “[t]his causes an alarm setting box 90 shown in FIG. 6B to be displayed on the screen.” EX1016, 8:54-56. “When the alarm has been set as described above, an alarm is given by an electronic sound or vibration to notify the user that the date and/or time for which the alarm has been set has arrived.” EX1016, 9:1-4.

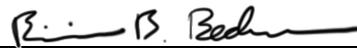
223. It would have been obvious to a POSA to include an alarm function, such as disclosed by Kodama or Palm, as one of the icons 50 disclosed by Hansen. A POSA would have been motivated to combine these teachings at least because Hansen, Kodama, and Palm are all directed to user interfaces for pen-based handheld devices. A POSA would have recognized that it would be desirable to have an alarm that a user could set to manage the amount of time the user spends on editing functions. Alarm functions were basic functions well-known to a POSA and could have been implemented with predictable results.

224. The ability to notify a user of a specific event by date and time is beneficial across the variety of devices in which Hansen's system could be implemented. Further, Kodama and Palm teach the implementation of such a well-known feature. Kodama and Palm also teach incorporating the alarm functionality within a menu with other selectable functions, similar to the icons 50 of Hansen.

**IX. CONCLUSION**

225. 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.

Date: November 5, 2020



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Dr. Benjamin B. Bederson