EXHIBIT 5

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

APPLE INC.,

V.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC. AND SAMSUNG TELECOMMUNICATIONS AMERICA, LLC

Case No. 11-CV-01846-LHK

EXPERT REPORT OF ANDRIES VAN DAM, PH.D. REGARDING INVALIDITY OF U.S. PATENT NO. 7,469,381

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I. INTRODUCTION

1. I have been retained by counsel for Samsung Electronics Co., Ltd., Samsung Electronics America, Inc. and Samsung Telecommunications America, LLC (collectively, "Samsung") as an expert in this Investigation.

2. As part of that engagement I have been asked to provide analysis and expert opinions on the following topics: (a) the disclosure of U.S. Patent No. 7,469,381 (the "'381 patent"); (b) the proper claim construction for the terms of the '381 patent; and (c) the invalidity of claims 1-20 of the '381 patent (the "Asserted Claims").

3. I am being compensated for my work on this case at my standard consulting rate of $1,000 per hour. I am also being reimbursed for expenses that I incur. My compensation is not contingent upon the results of my study or the substance of my testimony.

4. I expect to be called to provide expert testimony regarding opinions formed resulting from my analysis of the issues considered in this report if asked about those issues by the Court or by the private parties' attorneys. If asked to do so, I may also provide testimony describing tablet and touch screen computing devices, graphical user interface design, user interface software, computer programming, as well as the field of human interface interaction generally. I may also discuss the use of hardware and devices related to these technologies in the 1990s and 2000s. Additionally, I may discuss my own work, teachings, and publications in the field, and knowledge of the state of the art in the relevant time period. I may rely on handbooks, textbooks, technical literature, and the like to demonstrate the state of the art in the relevant period and the evolution of relevant technologies.

5. In reaching the conclusions described herein, I have considered the documents and materials identified in Exhibit 2 that is attached to this report. My opinions are also based upon my education, training, research, knowledge, and personal and professional experience.

6. I reserve the right to modify or supplement my opinions, as well as the basis for my opinions, in light of any documents, testimony, or other evidence that may emerge during the course of this matter, including depositions that have yet to be taken.

7. It is also my understanding that Apple may submit an expert report responding to this report. I reserve the right to rebut any positions taken in that report.

II. BASIS FOR OPINIONS

A. Qualifications

8. A detailed record of my professional qualifications, including a list of publications, awards, and professional activities, is attached as Exhibit 1 to this report and summarized below.

9. I am a tenured professor in the Computer Science department of Brown University, where I hold the position of Thomas J. Watson, Jr. University Professor of Technology and Education Chair and I am also a Professor of Computer Science.

1. I received a B.S. in Engineering Sciences from Swarthmore College in 1960, and an M.S. and Ph.D. in Electrical Engineering from the University of Pennsylvania in 1963 and 1966 respectively.

2. I have taught at Brown University since 1965, where I started as an Assistant Professor teaching Computer Science in the Division of Applied Mathematics. In 1968 I became a tenured Associate Professor of Applied Mathematics, and in 1972 I was promoted to Full Professor. In 1976, I became a Professor of Computer Science, and have taught Computer Science continuously since 1965. I have held various positions at Brown University, including Chairman of the Computer Science Program (1976-1979), Founding Chairman of the Department of Computer Science (1979-1985), L. Herbert Ballou University Professor Chair (1992-1995), Thomas J. Watson, Jr. University Professor of Technology and Education Chair

(1995-present), and Vice President for Research (2002-2006). I have also served as a visiting professor on Sabbatical leave to teach and start research groups in Computer Graphics at University of Nijmegen in the Netherlands and University of Geneva in Switzerland.

3. I have also served as the Director of the National Science Foundation Science & Technology Center for Computer Graphics and Scientific Visualization (the STC). The STC was physically located across 5 universities, including Brown and ran for its allotted 11 years, with its financial home at the University of Utah. In my role as director, which I filled for three years, I was logistically responsible for the operation and the research programs of the Center.

4. While on my year's Sabbatical at the University of Geneva in 1978-79 I was also Visiting Scientific Associate at CERN, the European Nuclear Research Institute in Geneva and was invited back for many visits to consult and lecture. While at CERN as a Visiting Scientific Associate, I co-designed a special-purpose microcomputer specializing in fast event processing for handling data from physics experiments, and its microprogramming, and gave various lectures. My subsequent visits generally involved consultation on a variety of subjects relating to workstations, scientific visualization, and hypermedia.

10. I have over forty years of experience in the fields of computer graphics, hypermedia systems and user interfaces. In my research, I have recently worked on projects relating to pen- and touch-centric computing, educational software, and electronic book authoring and delivery systems. I have authored or co-authored 120 articles, 9 books, and 3 National Research Council Reports. I have presented over 44 invited lectures since 2000. My lectures in the past two decades have been primarily focused on the area of interaction in immersive virtual environments and scientific visualization, with a recent focus on pen- and touch- computing. I have publicly shown work on pen computing on tablet PCs and touch computing on Microsoft Surface devices, using both research-based and commercial devices. I

have most recently focused on applications in digital humanities (or, as it has become known, "e-humanities"). For example, I worked on a humanities project called Large Artwork Displayed on the Surface (LADS) for examining large pieces of artwork on any touch-enabled surface supported by Windows 7. I also recently helped design a scholarship tool to allow users to easily create selections of hyperlinked multimedia documents, entitled WorkTop. Before we acquired a Microsoft Surface, my students had built our own "touch table," a "home brew" prototype touch device, for which we had created multiple applications. My group's most recent work on touch computing has been sponsored by both Microsoft Research and Sharp. I have shown multiple unpublished projects using touch computing at the annual Microsoft Faculty Summit. My group and I have also produced the Garibaldi Panorama Application, a precursor to LADS, which was shown to thousands of people as a key exhibit in a special exhibit at British Library on the future of digital scholarship.

11. I have worked as an expert in several legal matters as a consulting expert, a fact witness, and an expert witness. I have written expert reports, have had my deposition taken, and provided testimony during arbitration.

12. I attach as Exhibit 1 my *curriculum vitae*¸ which includes a more detailed list of my qualifications and also includes a list of matters in which I have provided expert testimony, either at deposition or at trial in the last 5 years.

13. I provide the details of my analysis, and the conclusions that form the basis for any testimony that I may give, below. Any testimony I give may include appropriate visual aids, some or all of the data or other documents and information cited herein or identified in Exhibit 2, and additional data or other information identified in discovery, to support or summarize my opinions. For example, I may include information cited by the experts of Apple or Samsung, as well as witness testimony.

B. Materials Considered

14. As part of my preparation for writing this report, I reviewed the materials listed in Exhibit 2. Those documents include, but are not limited to the following: the '381 patent; relevant portions of the file histories of the '381 patent, and copies of the prior art references described in this report.

C. Level of Ordinary Skill in the Art

15. I understand that a person having ordinary skill in the art is a hypothetical person who is used to analyzing the prior art without the benefit of hindsight. A person of ordinary skill in the art is presumed to be one who thinks along the lines of conventional wisdom in the art and is not one who undertakes to innovate, whether by extraordinary insights or by patient and often expensive systematic research.

16. I understand that the hypothetical person of ordinary skill is presumed to have knowledge of all references that are sufficiently related to one another and to the pertinent art, and to have knowledge of all arts reasonably pertinent to the particular problem that the claimed invention addresses.

17. I understand that the parties have agreed that a person of ordinary skill in the art relevant to the '381 patent at the time of the invention had at least a bachelor's degree in computer science or electrical engineering, and approximately two years of software design and implementation experience, including experience with graphical user interface design and with touch-sensing technologies, or would have equivalent educational and work experience. I concur. My opinions in this report use this definition.

18. I meet these criteria and consider myself a person with at least ordinary skill in the art pertaining to the '381 patent. I would have been at least such a person at the claimed time of invention of the '381 patent.

III. TECHNOLOGY BACKGROUND

19. The '381 patent claims generally relate to a number of well-known user interface technologies. In this section I briefly discuss some of these technologies.

20. Graphical User Interfaces (GUIs) offer visual interfaces on display screens that are designed for simplicity and ease of learning. A common and well-known GUI is the "desktop metaphor" of personal computers, where files, applications, etc. of the computer system are represented as graphical icons on a virtual desktop shown on the computer screen, and where the user interacts with those icons using a pointing device such as a mouse.

21. A common issue in GUIs is how to deal with the situation where the content to be viewed is larger than can be viewed all at once on the available screen real estate. In this case, one must have a way of moving the currently visible portion to expose other content. There are two equivalent and complementary ways of thinking about moving the visible portion. Historically, the mouse was used to manipulate a slider in a vertical scroll bar such that moving the slider down slides the display window over the text and the text appears to scroll upwards. Similarly, dragging a slider in a horizontal scroll bar to the right moves the text to the left. In effect, one can think of this as moving the display window over the fixed document. With pen and especially with touch interfaces, it may feel more natural to move the text directly as if one's pen or finger is pinned to the text and the text moves in the same direction as the pen or finger. This corresponds to thinking of sliding the text under a fixed window. Adobe's PDF Viewer for many years has made both mechanisms available – one can use the hand icon to drag the text or the sliders in the scroll bars to drag the window. In short, these two mechanisms are entirely equivalent since both result in moving the visible portion of the document.

22. GUIs can also work in conjunction with touch sensors so that user input is entered using a provided pointing mechanism. The provided pointing mechanism can be a stylus but

are often times the user's own fingers. For certain scenarios, the touch sensor is strictly an input device. A common example is the touchpad on a laptop, where the user's finger movements translate into the cursor movement. For other scenarios however, for example mobile devices, ATM machines, computer kiosks, etc., it is desirable to combine the touch input device with the screen where the user is allowed to directly point to and interact with objects shown on the screen. This enables a user that is unfamiliar with a particular system to explore it by using the provided pointing mechanism to examine visual objects on the screen to see what they do.

23. Broadly speaking, the '381 patent relates to a computer-implemented GUI method and device for scrolling or translating an electronic document displayed on a touch screen display device. (*See*, *e.g.*, '381 patent at Abstract.) The '381 patent describes a "snap back" feature for an "over-scroll" correction where, if the user scrolls or translates an electronic document beyond the edge of that document, an area beyond the edge will be displayed. When the user lifts her finger from the touch screen, the over-scroll is corrected by the document snapping back so that the edge of the document is aligned with the edge of the screen, such that no area beyond the edge of the document is displayed. ('381 patent at Figs. 5, 6A-6D, and accompanying text at 23:60-26:63.) The '381 patent recites "electronic documents" including a list of items, e.g., a list of emails displayed in an inbox ('381 patent at claim 9, Figs. 6A-6D), word processing, spreadsheet, email or presentation documents ('381 patent at claim 8), web pages ('381 patent at claim 6, Figs. 8A-8D), and digital images ('381 patent at claim 7, Figs. 13A-13C).

24. Scrolling and translating various electronic documents was a mundane problem in the computer science field. As the '381 patent acknowledges, the decreasing size of portable electronic devices and the increasing numbers of functions were being addressed with user

interface changes. ('381 patent at col. 1:52-2:36.) Indeed, from nearly the onset of using computers to display and edit electronic documents, programmers have been developing user interface solutions to aid the user's ability to navigate through an electronic document. Scrolling or translating an electronic document was a common functionality in user interfaces at that time. On some devices, the user could use his finger to scroll the content displayed within a window – in these situations the content would scroll in the same direction as the finger movement. On other devices, the user could use her finger to scroll the display window – in these situations the content would scroll in the opposite direction as the finger movement. Both types of scrolling were common and well known to one of ordinary skill in the art. Many user interfaces, some of which I discuss in detail below, included functionalities to alert the user when the user had translated to the end of the document. In particular, by 1990s and 2000, user interfaces for the translation past the edge of an electronic document to display an area beyond the edge, followed by a snapping back of the document to align the document's edge with the edge of the screen existed and were well-known in the art.

25. This section provides an overview of some of the relevant technologies involved in the design of user interfaces for the translation of electronic documents and provides examples systems applying user interfaces with snap back functionality to the translation of electronic documents.

A. Translating and Scrolling User Interface Claimed in the Asserted Claims

26. The '381 patent claims as an invention the snap back functionality to correct an overscroll of an electronic document.

27. The independent claims of the '381 patent relate to the general overscroll correction functionality. Claim 1 is "computer-implemented" method claim, claim 19 is an apparatus claim, and claim 20 is a "computer readable storage medium" claim.

28. Dependent claims 2 through 18 add limitations to the method claim of independent claim 1. Dependent claim 2 claims display of electronic document portions at same magnification. Dependent claims 3 through 5 are limitations of a finger touching the touch screen display and the movement of finger in a vertical, horizontal or diagonal direction. Dependent claims 6 through 9 claim types of electronic documents. Dependent claims 10 through 18 concern various aspects of the translation of the electronic document such as direction and speed and distance of translation.

B. Electronic Documents

29. Electronic documents were well-known in the art long before 2006. The '381 patent itself discloses at least the following examples of electronic documents as well known to those of ordinary skill in the art: a web page ('381 patent at claim 6), a digital image ('381 patent at claim 7), a word processing, spreadsheet, email or presentation document ('381 patent at claim 8), and a list of items ('381 patent at claim 9). That an electronic document is electronic data that can be stored and displayed and has a defined set of boundaries was well known in the art before the priority date of the '381 patent. Documents composed of subdocuments were also well known in the art long before the critical date of the '381 patent.

30. Prior art disclosing electronic documents includes: the LaunchTile/XNav system, detailed in Exhibit 10; the Glimpse references, detailed in Exhibit 3; the DTFlash references, detailed in Exhibit 8; the Lira reference, detailed in Exhibit 5.

31. For example, the Lira reference discloses electronic documents, including logical HTML columns and spreadsheets. (*See* Exhibit 5.) The Lira reference describes the display and formatting of electronic documents such as web pages: "Web pages and other electronic documents generally are formatted for viewing and navigation in display windows of standard-sized or over-sized displays, such as, for example, in a display window on a monitor for a

desktop computer." (Lira at 1 lns. 6-8.) Lira also describes electronic documents that include "logical columns" of information to be displayed and that may have a hierarchical organization of the displayed information. For example, Lira discloses:

> Implementations may include one or more of the following features. For example, detecting the layout of the electronic document may include detecting logical columns of the electronic document, and reformatting the electronic document may include reformatting each logical column to have a width that does not exceed the width of the display window. Detecting the layout of the electronic document may include identifying a format code of the electronic document, such as a HTML format code (e.g. a header tag, a body tag, or a table tag).

(Lira at 2 lns. 4-8.) Both web pages and spreadsheets are examples of electronic documents with logical columns.

C. Area Beyond the Edge

32. Similarly displaying an area beyond the edge of a document was also well-known in the art prior to 2006. Scrolling through a content region, such as an electronic document or list, was well known in the prior art long before the '381 patent's priority date. Multiple prior art systems informed users that the terminus of a content region had been reached during a scroll operation by providing a visual representation of some area beyond the edge of and visually distinct from the content region.

33. Prior art teaching displaying an area beyond the edge of a content region in response to reaching the terminus of the content region during a scroll includes: the LaunchTile/XNav system, detailed in Exhibit 10; the Glimpse references, detailed in Exhibit 3; the DTFlash references, detailed in Exhibit 8; the Lira reference, detailed in Exhibit 5.

D. "Physics"-based Art

34. In my opinion, the asserted claims of the '381 patent recite a combination of prior art elements. As I explain *infra*, this combination of known elements was obvious to try in light of prior work in the area of user interface design, including work on animation and "physics"-based metaphors in user interfaces. (Indeed, as described below, this combination of known elements was in fact implemented in the LaunchTile and XNav systems to provide a user interface with animated "physics"-based feedback for certain operations.) The idea of a user interface with animated "physics"-based feedback was not new in 2006. Each of these techniques had already been used alone or in combination to solve problems relating to movement and alignment. Such art includes but is not limited to: the LaunchTile/XNav system, detailed in Exhibit 10; the Glimpse references, detailed in Exhibit 3; the DTFlash references, detailed in Exhibit 8; the Lira reference, detailed in Exhibit 5.

35. For several decades, the concepts of using physics-based metaphors (for example, magnetism, gravity, or friction) in human computer interaction have been known and discussed widely in the field of user interface design and computer graphics. Many papers discuss the use of "physics" in user interface design to make human-computer interactions seem more realistic to a user. These physics-based metaphors tap into a user's pre-existing knowledge regarding the physical world, thereby making the user interface feel immediately familiar and comfortable. I note that Apple's own publications from the early 1990s on user interface design discussed the utility of "physics" as a user interface metaphor. (*See, e.g.*, Thomas D. Erikson, Working With Interface Metaphors, in Brenda Laurel, ed., *The Art of Human-Computer User Interface Design* (Addison Wesley 1990), at 65-73. As this publication notes:

> [O]ne particularly useful approach is to focus on the user problems you've identified and look for real-world events, objects, or

> institutions that embody some of the characteristics that users find difficult to understand. These make good candidates for new interface metaphors. For example, what are some real-world things that exhibit directionality? Rivers flow in one direction; TV images are transmitted from a broadcaster to a receiver; newspapers are mailed from a publisher to subscribers; forces like gravity and magnetism have direction.

Id. at 70.

36. Other papers from this period provide specific examples of "physics"-based metaphors, such as simple collision "physics" in which objects bump into and displace each other. *See, e.g.*, George Robertson, Mary Czerwinski, Kevin Larson, Daniel C. Robbins, David Thiel, and Maarten van Dantzich, *Data Mountain: Using Spatial Memory for Document Management* (UIST 1998) at 153-162. In this metaphor, multiple web pages displayed at once on a screen in a three-dimensional space could be dragged and collided to "transitively propagate displacement" to other pages. These collisions occurred in real-time so that the user "sees what state will result when the drag is terminated." Because the displayed web page objects collide to displace each other, "you cannot move a page and leave two pages in the same location," meaning that "the pages never get fully obscured." *Id.* This approach is a direct application of simple collision "physics" to a user interface.

37. As an additional example, computer-aided design ("CAD") programs have used physics-based metaphors for attractive forces, such as gravity or magnetism, for many years in user interfaces. CAD programs often include so-called "grid gravity" mechanisms for object alignment. In these systems, the user interface is often organized into a Cartesian grid; each element of the grid is imbued with attractive properties akin to a gravitational or magnetic force, such that when an object on the user interface comes within some small distance of a point on the grid, that object will "snap" to the grid. This system aids the user in aligning objects with the

points or lines of the grid, or aligning edges of objects. These concepts are not limited to a Cartesian grid and can be used with vertices, edges, or other geometric features to align objects of arbitrary complexity, either with a grid or with each other. These snapping techniques have obvious utility for CAD programs and have therefore been an element of CAD programs for decades. See Mark Gross, *Grids in Design and CAD*, at 7 (ACADIA 1991, Los Angeles) (noting that "[g]rid snap behavior, or 'grid gravity,' is a feature in almost every drawing and drafting program"). Grid gravity mechanisms have obvious utility for many other user interfaces, in particular where it is advantageous to enable precise placement and alignment of user interface elements.

38. Among the many publications discussing the advantages "physics"-based metaphors offer in general in user interface design is Benjamin Bederson & James D. Hollan, *Pad++: A Zooming Graphical Interface for Exploring Alternate Interface Physics* (Association of Computing Machinery, 1994). Bederson and Hollan teach several advantages of physics-based metaphors over other popular user interface metaphors. For example, when a UI metaphor is no longer useful or prevalent, as is common in the rapidly developing world of computer technology, a whole series of code based on that metaphor may need to be scrapped. For example, Bederson and Hollan note that "menu" and "desktop" metaphors frequently evolve in a manner that may cause prior code bases to be jettisoned. *Id.* at 24. However, when the metaphor is "physics," it is unlikely to ever have to be scrapped, as the laws of physics are ubiquitous and unchanging. *Id.* Another known advantage to physics-based metaphors is the reduced learning curve. *Id.* at 25. One cost that comes with any new UI metaphor "is that designers can no longer rely on users' familiarity with the [older] metaphorical reference[s] and this has learnability consequences." *Id.* However, these learnability problems are diminished when the metaphor is based on physics, as "empirical knowability naturally follows from a physics perspective." *Id.* A

person of ordinary skill, having familiarity with publications such as Bederson and Hollan, would understand that users quickly grasp the design of interfaces that mimic attributes of physical systems, since these interfaces build on the users' intuition and their experiences with the physical world.

39. Assorted "physics" metaphors and their benefits for user interface design are discussed in Bay Wei Chang and David Ungar, *Animation: From Cartoons To The User Interface*, Sun Microsystems Laboratories Inc. Technical Report No. SMLI-TR-95-33 (March 1995). As an example, Chang and Ungar discuss techniques used in the Self user interface to replicate the "physics" of real-world interactions. These include collision "physics" metaphors in which an object "reacts to the contact with a small wiggling jolt" (*id.* at 7 & Fig. 4), spring "physics" metaphors in which an object that is about to move "anticipates that move with small, quick contrary movement" similar to "the Coyote in the Road Runner cartoons, springing back onto its rear leg before dashing off after the Road Runner" (*id.* at 9 & Fig. 7), acceleration and deceleration "physics" used on moving objects to begin motion slowly and end motion slowly, "giv[ing] a feeling of weight to the [object] and physicality to the movement" (*id.* at 10 & Fig. 8), and inertial "physics" that cause objects that cause "[o]bjects coming to a stop [to] wiggle at the end of their motion, as if reacting to a small spring at the end of their travel" (*id.* at 11 & Fig. 10). Each of these metaphors had long been known in the cartoon animation realm; Chang and Ungar merely recognize that these same principles of animated "physics" are useful as applied to user interface design.

40. Apple's expert, Dr. Balakrishnan, has observed the same advantages to the use of "physics" in the user interface in his publications. For example, Dr. Balakrishnan addressed this subject in *Keepin' It Real: Pushing the Desktop Metaphor with Physics, Piles and the Pen*, Proceedings of the ACM (2006 Conference on Human Factors in Computing Systems (CHI) at

1283-1292). In this paper, Dr. Balakrishnan appealed to the use of physical systems in user interfaces, and in particular took the model of a desktop that could have objects piled on top of each other, rather than filed in two-dimensional folders, and then modeled the movement of these objects using "a variety of interaction and visualization techniques" that are "influenced by friction and mass, *much like we would manipulate lightweight objects in the real world*." *Id.* at Abstract (emphasis added). The paper echoes earlier publications lauding the utility of "physics" metaphors in user interface design:

> Physics-based movement of objects is simulated with rigid body dynamics, collision detection, and frictional forces. When objects collide they bump against and displace one another in a physically realistic fashion. A simulated gravitational force keeps objects on the ground. The introduction of physics simulation to a desktop environment makes the desktop more lively, and offers increased degrees-of-freedom for potentially more expressiveness than a traditional GUI desktop where icons are kept axis- aligned and have little resemblance to their physical counterparts. We believe that this physical simulation has a positive and subtle effect on object placement and appearance. For example, if a few documents are casually tossed to a corner they will collide and begin to accumulate. Their messy appearance subtly affords an unorganized state, without the user having to explicitly specify it.

Id. at 1286.

41. These types of references fall into the category of "auto-correct functions", a characterization the Court used in its order denying Apple's motion for preliminary injunction on December 2, 2011. Order on Apple's motion for PI at 58:17.

42. There are a number of other reference that disclose the physics metaphors such as the snap back functionality. For example, the LaunchTile system discloses the snap back functionality in its graphic user interface for document display. (*See* Exhibit 10 at claim 1.) For

example, to correct an overpan of a Zone view, the LaunchTile system snaps the Zone view back into alignment with the display screen after an overscroll or underscroll. (Amy K. Karlson, Benjamin B. Bederson & John SanGiovanni, "AppLens and LaunchTile: Two Designs for One-Handed Thumb Use on Small Devices," at 5, *CHI* 2005, April 2-7, 2005 ("Upon thumb release, the zoomspace animated to align Blue with the closest zone's empty hub. The visual and automated guidance ensures the user is never caught between zones.").)

43. The Glimpse references disclose a similar snap back functionality for document display. (*See* Exhibit 3 at claim 1; *see also* Clifton Forlines, Chia Shen, Bill Buxton, "Glimpse: A Novel Input Model for Multi-Level Devices," at 3 (CHI 2005), reprinted as MERL Technical Report No. 2005-024 ("a user may click and drag using light input to pan to other portion of the document, easily able to return to their previous position. Taking a temporary glimpse at details that are too small to see clearly or (in the case of zooming) or off-screen (in the case of panning) becomes a single touch operation.") The Glimpse system allows a user to overscroll a document so that an area beyond the edge of the document is displayed. A release of the user's scroll will be followed by a snap back into the document.

44. The Lira reference also disclose methods for browsing a large electronic document, such as a web page or a column of a web page, using a small touch screen display, by scrolling through the page using a finger or stylus. When the user lifts her finger or stylus off the touch screen display, Lira will snap the edge of the edge of the column to the edge of the browsing window. Lira further discloses that this snap functionality "can also be animated to provide an appearance of movement as the display scrolls." (Lira at 15.) The Lira reference is discussed in greater detail in Exhibit 5.

45. As Dr. Balakrishnan explained in his paper *Keepin' It Real: Pushing the Desktop Metaphor with Physics, Piles and the Pen*, Proceedings of the ACM (2006 Conference on

Human Factors in Computing Systems (CHI) at 1283-1292), the use of physics in graphic user interfaces also frequently includes simulation of gravity or friction in modeling the movement of objects, i.e., the translation of documents. In this paper, Dr. Balakrishnan modeled the movement of these objects using "a variety of interaction and visualization techniques" that are "influenced by friction and mass, *much like we would manipulate lightweight objects in the real world*." *Id.* at Abstract (emphasis added).

46. The '381 includes dependent claims that include limitations describing translation based on physics metaphors such as the simulation of friction. These physic-based animation techniques were also well-known and described in the art prior to 2006.

47. Prior art teaching the use of animation techniques in graphic user interface software includes: the LaunchTile/XNav system, detailed in Exhibit 10; the Glimpse references, detailed in Exhibit 3; the Lira reference, detailed in Exhibit 5; B-W Chang & D. Ungar, "Animation: From Cartoons to the User Interface," UIST '93 Proceedings of the 6th Annual ACM Symposium on User Interface Software and Technology, 1993, pp. 1-18 ("Chang & Ungar"); Bruce H. Thomas, Ph.D. Thesis: "Animating Direct Manipulation in Human Computer Interfaces" (1997) (mimicking physical effects such as inertia and friction in user interfaces) ("Thomas Thesis"); Bruce H. Thomas & Paul Calder, "Animating Direct Manipulation Interfaces," UIST '95 Proceedings of the 8th Annual ACM Symposium on User Interface Software and Technology, November 1995, pp. 3-12 (same) ("Animating Direct Manipulation Interfaces"); U.S. Patent No. 6,111,577 to Zilles et al. (damping and friction force effects in graphic user interfaces) ("US Patent 6,111,577"); Toshiyuki Masui et al., "Elastic Graphical Interfaces for Precise Data Manipulation," ACM Conference on Human Factors in Computing Systems (CHI 95) Conference Companion, April 1995, pp 143-44 (disclosing a rubber-band graphic user interface for speed of movement) ("Masui"); U.S. Patent No. 6,677,965

to C. Ullmann et al. (US Patent 6,677,965") (disclosing a rubber band variable rate graphic user interface control for scrolling); and U.S. Patent No. 5,495,566 to A. Kwatinetz (disclosing varying the speed of scrolling of a document in response to the user varying the acceleration of touch) ("US Patent 5,495,566"). (collectively the "**Animation Art**").

48. For example, the XNav system discloses translation of a document in the second direction with a damped motion. *See* Exhibit 10 at claim 15. Likewise, Lira discloses translation of a document with a simulation of motion having friction. *See* Exhibit 5 at claim 15. With regard to translation with a simulation of an equation of motion having friction ('381 claim 12) or translation with a damped motion ('381 claim 15), Thomas & Calder disclosed using graphic user interface techniques that "mimic physical effects such as inertia and friction to reinforce the illusion of substance." Animating Direct Manipulation Interfaces at 202. Additionally, US Patent 6,111,577 discloses an embodiment of graphic user interface method that calculates damping and friction forces to be applied to the user."

49. The Animation Art also discloses the related animation of effects of (1) making the edge of a document appear to be elastically attached to the edge of the display, (2) having a shorter translation movement for the second direction than the first direction, and (3) translating the electronic document in the second direction at a slower speed than translation in the first direction (claims 16-18 of the '381 Patent). For example, Thomas & Calder in "Animating Direct Manipulation Interfaces" disclose a graphic user interface that produces an effect of manipulating a heavy rubber object as the object is dragged across the display. Animating Direct Manipulation Interfaces at 4-5; see also "Animating Direct Manipulation in Human Computer Interfaces," Ph.D. thesis 1997.

50. US Patent 5,495,566 to Kwatinetz discloses varying the speed of scrolling of a document in response to the user varying the acceleration of the pointing device upon reaching

the edge of a window. Kwatinetz at 2:16-29 and Figure 3.

IV. SUMMARY OF OPINIONS

20. It is my opinion that claims 1-20 of the '381 patent (the "Asserted Claims") are anticipated or rendered obvious in light of the prior art, for the reasons set out in Exhibits 2-11.

21. It is my opinion that Claim 19 is indefinite for failure to disclose an algorithm as corresponding structure for the computer-implemented functions recited in the claims. My opinions regarding the anticipation or obviousness of claim 19 are offered only to the extent that claim 19 is found to be definite.

22. Depending on Apple's positions regarding the knowledge of one skilled in the art and their ability to use and combine the prior art elements recited in the claims, one or more claims of the '381 patent are invalid for lack of enablement or written description.

V. LEGAL UNDERSTANDINGS

23. In this section I describe my understanding of certain legal standards. I have been informed of these legal standards by Samsung's attorneys. I am not an attorney and I am relying only on instructions from Samsung's attorneys for these legal standards.

A. Legal Standard for Prior Art

24. I am informed that "prior art" includes public information, public knowledge, and public acts that occur before an application for a patent was filed. Prior art includes patents, journals, Internet publications, systems, products and prior inventions.

25. I am further informed that Section 102 of the Patent Act provides that "[a] person shall be entitled to a patent unless . . . (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or . . . (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

. . . (e) the invention was described in . . . (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, . . . or, (f) he did not himself invent the subject matter sought to be patented, or (g) . . . (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it."

26. Under Section 102 of the Patent Act, claims may be invalidated for lack of novelty. I have been informed by counsel that a claimed invention is invalid for anticipation or lack of novelty when all of the limitations of the claim as construed by the Court are present in a single prior art reference. I understand, however, that all limitations of the claim need not be shown directly so long as all limitations are necessarily present in the single prior art reference and thus are inherent.

27. I am informed that the evidence must be "clear and convincing" for a patent to be found invalid.

B. Legal Standard for Anticipation

28. I understand that, once the claims of a patent have been properly construed, the second step in determining anticipation of a patent claim requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

29. I understand that a prior art reference "anticipates" an asserted claim, and thus renders the claim invalid, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (i.e., necessarily present or implied). I further understand that the reference does not need to disclose the same purpose or problem to be solved as in the patent in order to anticipate the patent, unless the purpose is one of the claim limitations.

30. I have written this Report with the understanding that anticipation must be shown by clear and convincing evidence.

31. I understand that a patent is anticipated if before such person' invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it.

C. Legal Standard for Obviousness

32. I have been instructed by counsel on the law regarding obviousness, and understand that even if a patent is not anticipated, it is still invalid if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the pertinent art.

33. I understand that a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious.

34. I understand that a person of ordinary skill in the art looking to overcome a problem will often be able to fit the teachings of multiple publications together like pieces of a puzzle. I understand that obviousness analysis therefore takes into account the inferences and creative steps that a person of ordinary skill in the art would employ under the circumstances.

35. I also understand that an obviousness determination includes the consideration of various factors such as (1) the scope and content of the prior art, (2) the differences between the prior art and the Asserted Claims, (3) the level of ordinary skill in the pertinent art, and (4) the existence of secondary considerations such as commercial success, long-felt but unresolved needs, failure of others, etc.

36. I am informed that secondary indicia of non-obviousness may include (1) a long felt but unmet need in the prior art that was satisfied by the invention of the patent; (2) commercial success or lack of commercial success of processes covered by the patent; (3) unexpected results achieved by the invention; (4) praise of the invention by others skilled in

the art; (5) taking of licenses under the patent by others; and (6) deliberate copying of the invention. I also understand that there must be a relationship between any such secondary indicia and the invention. I further understand that contemporaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

37. I understand that an obviousness evaluation can be based on a combination of multiple prior art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the nexus linking two or more prior art references is simple common sense. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

38. I understand that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

39. I also understand that practical and common sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I further understand that a person of ordinary skill in the art looking to overcome a problem will often be able to fit the teachings of multiple publications together like pieces of a puzzle. I understand that obviousness analysis therefore takes into account the inferences and creative steps that a person of ordinary skill in the art would employ under the circumstances.

40. I understand that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill

and common sense.

41. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability.

42. It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

43. I understand that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense of one of skill in the art.

44. In sum, my understanding is that prior art teachings are properly combined where a person of ordinary skill in the art having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

45. I have been informed and understand that the obviousness analysis requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

46. I understand that obviousness must be proven by clear and convincing evidence.

47. I have written this Report with the understanding that obviousness must be shown by clear and convincing evidence.

D. Legal Standard for Written Description and Enablement

48. It is my understanding that a patent must contain a written description of the claimed invention. The written description must clearly convey to those skilled in the art that, as of the filing date sought, the applicant was in possession of the invention claimed.

49. I have further been advised that a claimed invention must be enabled. A claimed invention is not enabled and, therefore, unpatentable if the specification does not teach those of ordinary skill in the art how to make and use the invention as it is claimed, without undue experimentation. Undue experimentation is based on the level of skill in the art as of the effective filing date of the patent.

50. I understand that invalidity for lack of adequate written description or enablement must be shown by clear and convincing evidence.

51. I have written this report with understanding that invalidity for lack of written description or enablement must be shown by clear and convincing evidence.

E. Legal Standard for Claim Construction

52. I have been instructed by counsel on the law regarding claim construction and patent claims, and understand that a patent may include two types of claims, independent claims and dependent claims. An independent claim stands alone and includes only the limitations it recites. A dependent claim can depend from an independent claim or another dependent claim. I understand that a dependent claim includes all the limitations that it recites in addition to all of the limitations recited in the claim from which it depends.

53. I have been instructed by counsel that claim construction is a matter of law for the

arbiter of law to decide. Claim terms should be given their ordinary and customary meaning within the context of the patent in which the terms are used, i.e., the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention in light of what the patent teaches.

54. I understand that to determine how a person of ordinary skill would understand a claim term, one should look to those sources available that show what a person of skill in the art would have understood disputed claim language to mean. Such sources include the words of the claims themselves, the remainder of the patent's specification, the prosecution history of the patent (all considered "intrinsic" evidence), and "extrinsic" evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.

55. I understand that, in construing a claim term, one looks primarily to the intrinsic patent evidence, including the words of the claims themselves, the remainder of the patent specification, and the prosecution history.

56. I understand that extrinsic evidence, which is evidence external to the patent and the prosecution history, may also be useful in interpreting patent claims when the intrinsic evidence itself is insufficient.

57. I understand that words or terms should be given their ordinary and accepted meaning unless it appears that the inventors were using them to mean something else. In making this determination, however, of paramount importance are the claims, the patent specification, and the prosecution history. Additionally, the specification and prosecution history must be consulted to confirm whether the patentee has acted as its own lexicographer (i.e., provided its own special meaning to any disputed terms), or intentionally disclaimed, disavowed, or surrendered any claim scope.

58. I understand that the claims of a patent define the scope of the rights conferred by

the patent. The claims particularly point out and distinctly claim the subject matter which the patentee regards as his invention. Because the patentee is required to define precisely what he claims his invention to be, it is improper to construe claims in a manner different from the plain import of the terms used consistent with the specification. Accordingly, a claim construction analysis must begin and remain centered on the claim language itself. Additionally, the context in which a term is used in the asserted claim can be highly instructive. Likewise, other claims of the patent in question, both asserted and unasserted, can inform the meaning of a claim term. For example, because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.

59. I understand that the claims of a patent define the purported invention. I understand that the purpose of claim construction is to understand how one skilled in the art would have understood the claim terms at the time of the purported invention.

60. I understand that a person of ordinary skill in the art is deemed to read a claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. For this reason, the words of the claim must be interpreted in view of the entire specification. The specification is the primary basis for construing the claims and provides a safeguard such that correct constructions closely align with the specification. Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim as set forth in the patent itself.

61. I understand that it is improper to place too much emphasis on the ordinary meaning of the claim term without adequate grounding of that term within the context of the

specification of the asserted patent. Hence, claim terms should not be broadly construed to encompass subject matter that, although technically within the broadest reading of the term, is not supported when the claims are read in light of the invention described in the specification. Put another way, claim terms are given their broadest reasonable interpretation that is consistent with the specification and the prosecution history. Art incorporated by reference or otherwise cited during the prosecution history is also highly relevant in ascertaining the breadth of claim terms.

62. I understand that the role of the specification is to describe and enable the invention. In turn, the claims cannot be of broader scope than the invention that is set forth in the specification. Care must be taken lest word-by-word definition, removed from the context of the patent, leads to an overall result that departs significantly from the patented invention.

63. I understand that claim terms must be construed in a manner consistent with the context of the intrinsic record. In addition to consulting the specification, one should also consider the patent's prosecution history, if available. The prosecution file history provides evidence of how both the Patent Office and the inventors understood the terms of the patent, particularly in light of what was known in the prior art. Further, where the specification describes a claim term broadly, arguments and amendments made during prosecution may require a more narrow interpretation.

64. I understand that while intrinsic evidence is of primary importance, extrinsic evidence, e.g., all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises, can also be considered. For example, technical dictionaries may help one better understand the underlying technology and the way in which one of skill in the art might use the claim terms. Extrinsic evidence should not be considered, however, divorced from the context of the intrinsic evidence. Evidence beyond the

patent specification, prosecution history, and other claims in the patent should not be relied upon unless the claim language is ambiguous in light of these intrinsic sources. Furthermore, while extrinsic evidence can shed useful light on the relevant art, it is less significant than the intrinsic record in determining the legally operative meaning of claim language.

65. I understand that in general, a term or phrase found in the introductory words of the claim, the preamble of the claim, should be construed as a limitation if it recites essential structure or steps, or is necessary to give life, meaning, and vitality to the claim. Conversely, a preamble term or phrase is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention. In making this distinction, one should review the entire patent to gain an understanding of what the inventors claim they actually invented and intended to encompass by the claims.

66. I understand that language in the preamble limits claim scope (i) if dependence on a preamble phrase for antecedent basis indicates a reliance on both the preamble and claim body to define the claimed invention; (ii) if reference to the preamble is necessary to understand limitations or terms in the claim body; or (iii) if the preamble recites additional structure or steps that the specification identifies as important.

67. I understand that claims of a patent may be written in what is known as a "means-plus-function" form. I understand that a claim element is in means-plus-function form when it is expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support of the function. I understand that such claims are construed to cover the corresponding structure, material, or acts described in the specification and their equivalents. I also understand that in a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the

disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. Absent any such algorithm, the claim lacks sufficient disclosure of structure and is therefore indefinite.

F. Legal Standard for Indefiniteness

68. I understand that a patent specification must conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention. Claims are indefinite if they do not reasonably apprise those skilled in the relevant art of the applicant's intended scope of the invention when read in light of the specification.

69. I understand that claims of a patent may be written in what is known as a "means-plus-function" form. I understand that a claim element is in means-plus-function form when it is expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support of the function. I understand that such claims are construed to cover the corresponding structure, material, or acts described in the specification and their equivalents. I also understand that in a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. Absent any such algorithm, the claim lacks sufficient disclosure of structure and is therefore indefinite.

70. I understand that indefiniteness must be proven by clear and convincing evidence.

71. I have written this Report with the understanding that indefiniteness must be shown by clear and convincing evidence.

G. Legal Standard for Priority Date

72. I further understand that the "critical date" for a patent is one year prior to its

filing date. It is my understanding that the critical date is significant because patents, systems, or documents that are public prior to the critical date, if they disclose each and every limitation of the claims, will invalidate a patent regardless of whether the inventors invented the claim.

73. I further understand that the "priority date" of a patent is the date on which it is filed. I further understand that the priority date is significant because patents, systems, or documents that are public less than one year prior to the priority date may invalidate the claims. My understanding is that, for such prior art references, a patentee may attempt to show that the claimed invention was conceived prior to the publication date of the prior art reference.

74. I understand that a patent may be valid over prior art that was published or was publicly available before the priority date but after the critical date. To do so, it is my understanding that Complainant must prove with corroborating evidence that the named inventors conceived of the claimed invention before the prior art, and were diligent in reducing the claimed inventions to practice.

VI. THE '381 PATENT

A. The '381 Patent Generally

51. The '381 patent generally relates to correcting the display of an document when a user has translated or scrolled past the edge of the document, i.e. "overscroll correction." (*See, e.g.*, '381 patent at col. 26:63-67 ("The method . . . provides a simple visual indicator to a user that one or more edges of an electronic document are being displayed.").) Independent claims 1, 19 and 20 of the '381 patent disclose translating an electronic document displayed on a touch screen display in response to detecting movement of an object on or near the touch screen. The '381 Patent claims a snap-back functionality where, if the user translates an electronic document beyond the edge of that document, an area beyond that edge will be displayed. When the user lifts her finger from the touch screen, the document will snap back so that the edge of the

document is aligned with the edge of the screen, such that no area beyond the edge of the document remains in view. As an analysis of the prior art below will demonstrate, as of the date of invention, this was not a new problem and solutions to this problem existed in the art. The '381 patent specification discloses a particular functionality for solving this problem based on the display of an area beyond the edge of the electronic document to indicate that the user has translated past the edge of the document and then reversing the direction of translation to "snap" the document back to its edge. (*See*, *e.g.*, '381 patent at claim 1, 19 and 20.) As discussed in further detail below, prior to 2006, others were aware of this problem and had developed solutions to address it, including the solution claimed by the '381 patent.

52. Figure 5 of the '381 patent, reproduced below, describes an abstract, high-level flow chart of the purported invention of the '381 patent ('381 patent at Fig. 5 and accompanying text at col. 23:60-24:44.)

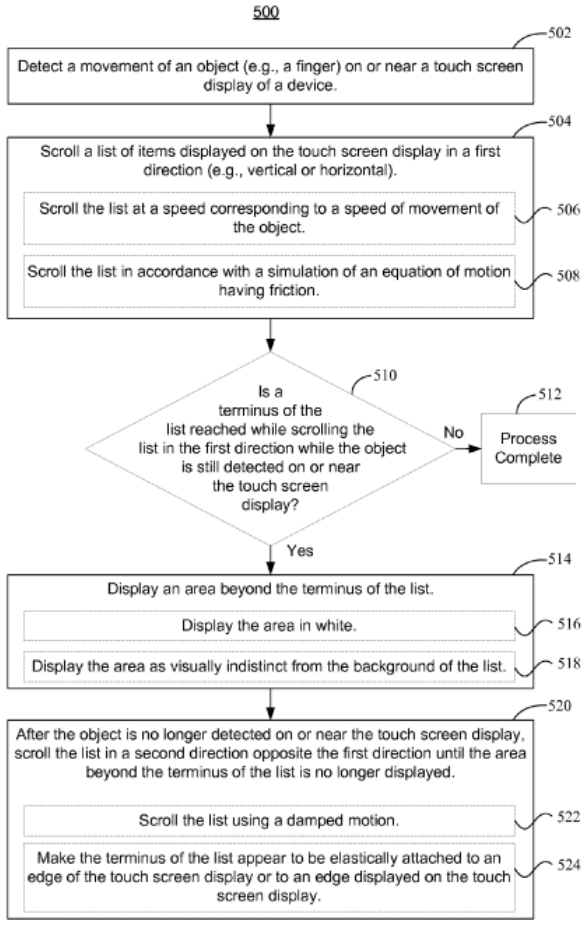

Figure 5

53. Figures 6A through 6D, reproduced below, are pictorial representations of the results of scrolling or translating an electronic document that is a list of items, e.g. a contacts list, to the terminus of the list. ('381 patent at col. 25:18-19.) Once the terminus of the list has been reached, an area beyond the terminus is displayed and the list is then scrolled in an opposite direction until the area beyond the terminus of the list is no longer displayed. ('381 patent at col. 25:19-22.)

54. Figures 6A and 6 B from the '381 patent are reproduced below:

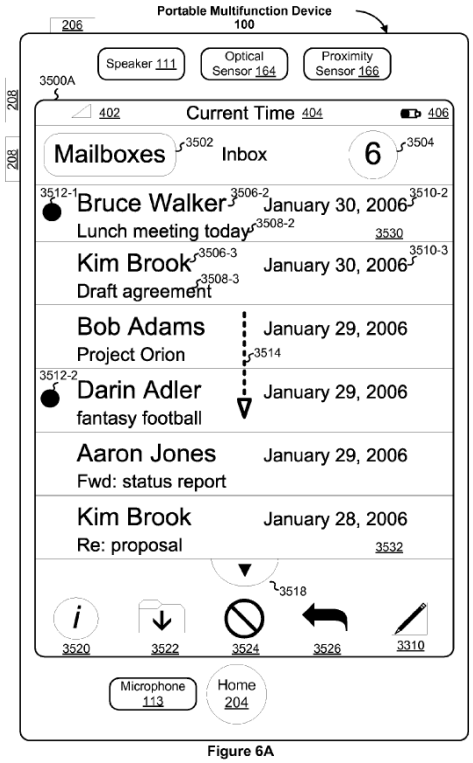

Figure 6A

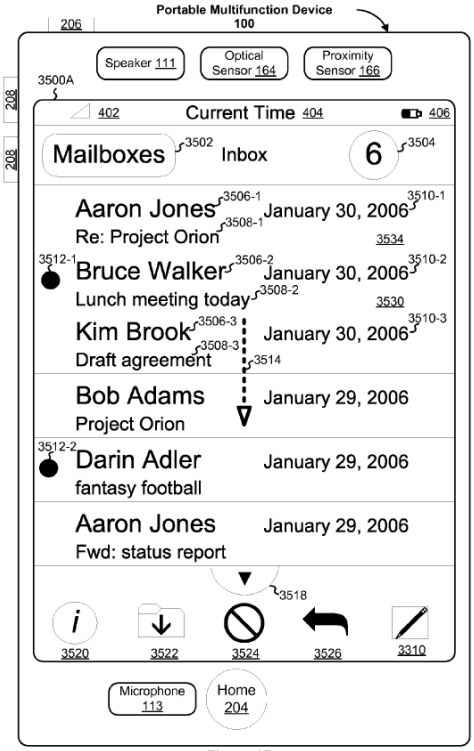

Figure 6B

('381 patent at Figs. 6A to 6B.)

55. The specification provides the following disclosure for Figures 5, 6A and 6B:

> In the example of FIG. 6A, a portion of a list of emails is displayed in the screen area, including a top displayed email 3530 from Bruce Walker and a bottom displayed email 3532 from Kim Brook. A user performs a vertically downward swipe gesture 3514 to scroll toward the top of the list. The vertically downward gesture 3514, which may be a finger gesture, corresponds to the movement of an object on or near the touch screen that is detected in operation 502 of process 500 (FIG. 5).
>
> ***
>
> As a result of detecting the vertically downward gesture 3514, in FIG. 6B the displayed emails have shifted down, such that the previous bottom displayed email 3532 from Kim Brook is no longer displayed, the previous top displayed email 3530 from Bruce Walker is now second from the top, and the email 3534 from Aaron Jones, which was not displayed in FIG. 6A, is now

> displayed at the top of the list. This shifting of emails is an example of the scrolling described in operation 504 of process 500 (FIG. 5).
>
> In this example, the email 3534 from Aaron Jones is the first email in the list and thus is the terminus of the list.

('381 patent at col. 26:2-10, 26:16-26 (text accompanying Figs. 5, 6A and 6B).)

56. The result of continued scrolling of the list past the terminus of the list to display an area beyond the terminus is shown in Figure 6C. Figure 6D shows the result of the translation in a second and opposite direction until the area beyond the terminus of the list is no longer displayed.

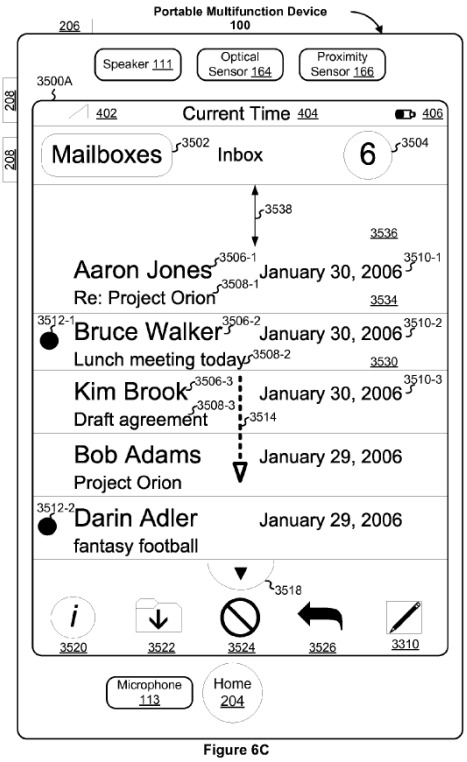

Figure 6C

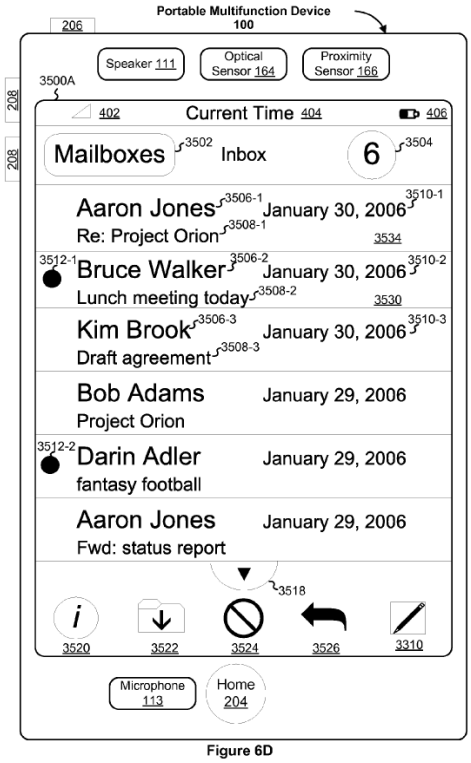

Figure 6D

('381 patent at Figs. 6C to 6D.)

57. The specification provides the following disclosure for Figures 5, 6C and 6D:

> Upon reaching this email 3534, in response to continued detection of the vertically downward gesture 3514, an area 3536 (FIG. 6C) above the first email 3534 (i.e., beyond the terminus of the list) is

> displayed, as described in operation 514 of process 500 (FIG. 5). In some embodiments, the area displayed beyond the terminus of the list is visually indistinct from the background of the list, as described in operation 518 of process 500 (FIG. 5). In FIG. 6C, both the area 3536 and the background of the emails (e.g., emails 3534 and 3530) are white and thus are visually indistinct.
>
> Once vertically downward gesture 3514 is complete, such that a corresponding object is no longer detected on or near the touch screen display, the list is scrolled in an opposite direction until the area 3536 is no longer displayed. FIG. 6D illustrates the result of this scrolling in the opposite direction, which corresponds to operation 520 of process 500 (FIG. 5): the email 3534 from Aaron Jones is now displayed at the top of the screen area allotted to the list and the area 3536 is not displayed.

('381 patent at col. 26:26-45 (text accompanying Figs. 5, 6C and 6D).)

58. For ease of explanation, I note that the elements of the asserted claims are (1) an electronic document, (2) an area beyond the edge of the electronic document, and (3) the snap back translation from displaying an area beyond the edge until the area beyond the edge is no longer displayed.

59. I understand that Apple has accused Samsung of infringing claims 1-20 of the '381 patent. A representative claim, claim 1, is reproduced below:

> 1. A computer-implemented method, comprising:
>
> at a device with a touch screen display:
>
> displaying a first portion of an electronic document; detecting a movement of an object on or near the touch screen display;
>
> in response to detecting the movement, translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion;
>
> in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen display: displaying an area beyond an edge of the electronic document, and displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion; and

> in response to detecting that the object is no longer on or near the touch screen display, translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion.

B. File History

60. I understand that the '381 patent was filed on December 14, 2007. It was originally filed with twenty claims.

61. I understand that the '381 patent was prosecuted through accelerated examination. As part of the accelerated examination proceeding, the applicant was required to submit support documents that identified § 112 support for each claim. The applicant was also required to identify representative prior art references and chart those references against the claims. Applicant identified both list-based and document-based portions of the specification as support for descriptions of the claimed "electronic document," including as support for dependent claim 9. ('381 File History, Accelerated Examination Support Document (Dec. 14, 2007) (identifying Figures 6A-6D as support for electronic document as defined in claim 9).

62. Applicant identified four references as "most closely related" to the pending claims: (1) Zimmerman et al., US Pat. No. 6.690,387, (2) Kwatinez et al, U.S. Pat. No. 5,495,566, (3) Pallakoff, U.S. Pat. App. Pub. 2005/0012723, and (4) Miller, "PersonalJava Application Environment," http://java.sun.com/products/personaljava/touchable (June 8, 1999). ('381 File History, Supplemental Accelerated Examination Support Document (April 30, 2008).)

63. Applicant contended that only Miller disclosed displaying an area beyond the edge of the document in response to an edge of the electronic document being reached during translation. ('381 File History, Supplemental Accelerated Examination Support Document (April 30, 208).) Applicant also represented that none of these references disclosed translating a document in a second direction in response to no longer detecting the object on the screen

(finger, stylus, etc.). ('381 File History, Supplemental Accelerated Examination Support Document (April 30, 2008).)

64. The examiner conducted a June 2, 2008 telephone interview with the applicant and discussed a proposed rejection over Zimmerman et al. (US Pat. No. 6,690,387), Microsoft Word screenshots (unidentified), and Collins et al (US Pat. App. No. 2008/0104544). The substance of the interview is not summarized in writing, but following the call, the applicant amended the independent claims to include the limitation: "in response to detecting that the object is no longer on or near the touch screen display, translating the document in a second direction until the area beyond the edge of the document is no longer displayed." ('381 File History, Examiner-Initiated Interview Summary (June 9, 2008).)

65. The examiner conducted another telephone interview June 30, 2008 to discuss a potential rejection over Photo Mesa (unidentified) and Jaeger ('381 File History, Examiner-Initiated Interview Summary (October 20, 2008)). This interview was also not summarized in writing.

66. Following these interviews, the examiner amended the claims through an Examiner's Amendment, and allowed the claims as amended. ('381 File History, Examiner's Amendment (October 29, 2008).) The examiner's changes to the claims are shown below in redline:

A computer-implemented method, comprising:

at a device with a touch screen ~~display,~~ display;

displaying a first portion of an electronic document;

detecting a movement of an object on or near the touch screen display;

in response to detecting the movement, translating ~~an~~ the electronic document displayed on the touch screen display in a first direction to

> display a second portion of the electronic document, wherein the second portion is different from the first portion;
>
> in response to an edge of the electronic document being reached while translating the electronic document in the first direction while the object is still detected on or near the touch screen ~~display,~~ display:
>
> > displaying an area beyond the edge of the document, and
> >
> > displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion; and
> >
> > ~~after~~ in response to detecting that the object is no longer detested on or near the touch screen display, translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion.

1. Reexamination History

67. On April 28, 2010, Brient Intellectual Property Law, LLC filed an *ex parte* reexamination request based on three new references: (1) Forlines et al., Glimpse: A Novel Input Model for Multi-Level Devices (MERL April 2005), (2) Millhollon et al., Microsoft Office Word 2003 Inside Out (Microsoft Press 2003), and (3) Robbins et al., U.S. Pat. App. No. 2005/0195154 A1. ('381 Reexamination History, Request for Reexamination (April 28, 2010).)

68. On July 14, 2010, the USPTO granted the request for reexamination, stating that the newly identified references raised a substantial new question of patentability with respect to all claims of the '381 patent. Specifically, the examiner stated that the three new references (Glimpse, Inside Out, and Robbins), in combination with Zimmerman et al. (US Pat. No. 6,690,387 – cited by the examiner during the original '381 patent prosecution), taught the limitations highlighted in the original examiner's notice of allowance for the '381 patent. ('381

Reexamination History, Order Granting Request for *Ex Parte* Reexamination (July 14, 2010.)

69. On January 13, 2011, the examiner issued a Notice of Intent to Issue *Ex Parte* Reexamination Certificate. The examiner's statement of reasons for patentability stated that the new references did not teach a subset of the limitations that had been identified as missing from the prior art at the time of the original Notice of Allowance:

> The prior art does not teach or fairly address the invention as recited in independent claims 1, 19, and 20 of U.S. Patent No. 7,469,381 B2. Specifically, the prior art references of Glimpse, Inside Out, Robbins, and Zimmerman fail to disclose "in response to detecting that the object is no longer on or near the touch screen display, translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion" as recited in claims 1, 19, and 20.

('381 Reexamination History, Notice of Intent to Issue *Ex Parte* Reexamination Certificate (Jan. 13, 2010).)

C. Priority Date

75. As discussed in Section V, my understanding is that the "critical date" for a patent is one year prior to its filing date. It is my understanding that the critical date is significant because patents, systems, or documents that are public prior to the critical date, if they disclose each and every limitation of the claims, will invalidate a patent regardless of whether the inventors invented the claim prior to the filing date of the patent.

70. The '381 patent was filed in the United States on December 14, 2007, and claims a priority date of January 7, 2007, based upon provisional applications Nos. 60/883,801 and 60/879,253. It is my understanding that the "critical date" for the '381 patent is January 7, 2006, one year before the filing date of these provisional applications.

VII. CLAIM CONSTRUCTION

76. In conducting my analysis of the '381 patent claims, I have applied the legal understandings set out of this report.

77. I understand that the Court has not yet issued a claim construction order in this case. In this report, I have attempted to apply the claim constructions that Apple and Apple's expert Dr. Balakrishnan appear to have applied. My understanding of those claim constructions is based on the parties' claim construction briefing and accompanying expert reports and exhibits as well as Dr. Balakrishnan's deposition transcript.

78. During claim construction briefing and hearing, the parties disputed the construction of the term "an edge of the electronic document." The table below sets forth the parties' proposed constructions.

Claim Term	Samsung's Construction	Apple's Construction
"an edge of the electronic document"[1] (claims 1, 11, 13, 14, 16-20)	A boundary of the electronic document that distinguishes it from another electronic document, other content, or a background area.	No construction needed.

79. While Apple asserted in its brief that no construction was needed, Apple instead argued at the Markman hearing that only the outer boundary of an electronic document is "an edge of the electronic document." Samsung argued that this construction would introduce an distinction between the internal and external edges that does not appear in the claim language. Furthermore, in my opinion, electronic documents can be hierarchical; one electronic document can exist inside another electronic document. For example, the '381 Patent describes a web

[1] This term appears in various forms in different claims of the '381 patent, but these variations are minor and not relevant to the primary points of dispute between the parties.

page which can include digital images. *See* '381 Patent at 28:62-64. In this situation, the edge of the digital image, which is an electronic document, can exist within another electronic document, the web page. The edge of the electronic document therefore does not need to be the outermost boundary.

80. I further understand that the Court has interpreted the claims of the '381 Patent in its order on Apple's motion for preliminary injunction. I understand that the Court has interpreted Claim 1 of the '381 patent to require that an electronic document always translate in a second direction ("bounce back") after reaching the edge of the electronic document. I have performed my analysis both under the Court's interpretation as well as under the alternative interpretation that Claim 1 of the '381 patent does not prohibit behavior in addition to the bounce back described by the claim.

VIII. DESCRIPTIONS OF THE PRIOR ART

81. As I discussed above, the snap back functionality as applied to electronic documents was well-known in the field in the 1990s and 2000s. By 2007, there were numerous examples of systems that included the snap back feature to respond to an overscroll of an electronic document. Below I describe below several such systems, as well as patents and printed publications related to the techniques described in the '381 patent claims. My detailed opinions on these prior art references and systems are provided in the attached Charts.

A. Prior Art Systems

1. LaunchTile and XNav

82. In early 2004, a team of human computer interface researchers at the University of Maryland, including Benjamin Bederson, developed a program for mobile devices called

LaunchTile. LaunchTile is a program for touch screen mobile devices that included the a rubberbanding feature. The Bederson team also created a variant of the LaunchTile program, called XNav, that was developed using the same code base and contained many of the same features, but was designed to run on different mobile touch-screen devices and operating systems. LaunchTile and XNav both displayed an interactive "World" that consisted of 36 application tiles divided into 9 "Zones" of 4 tiles each. A user can zoom into a particular Zone so that the Zone fills the entire screen. The user can tap on an individual tile to launch that application, or swipe across the screen to move to a neighboring Zone. If the user scrolls so that the zone moves by less than a predetermined amount, 1/6 of the width of a zone, and lifts his finger, the original zone will slide or bounce back.

83. A similar effect exists for an email list.

84. The Bederson team presented their work on LaunchTile at two conferences on human-computer interaction in 2005. They also submitted a paper on the LaunchTile project, Amy K. Karlson, Benjamin B. Bederson & John SanGiovanni, "AppLens and LaunchTile: Two Designs for One-Handed Thumb Use on Small Devices," *CHI* 2005, April 2-7, 2005, showed a video demonstration of the software, and brought a working prototype to use for live demonstrations with attendees. Additionally, videos of LaunchTile and XNav were publicly

available online as of May 2005, and a copy of the XNav source code was freely distributed to Microsoft as of August 25, 2005. These applications are discussed in greater detail in Exhibit 10 to this Report.

85. I understand that the LaunchTile and XNav systems were in public use before the critical date of the '381 patent and thus are prior art to the '381 patent. I base this understanding in part on the declaration and deposition of Benjamin Bederson.

2. DiamondTouch system

86. In 2001, Mitsubishi Electronics Research Laboratories (MERL) developed a capacitive multi-touch table, called the "DiamondTouch."

87. MERL employees developed many applications for the DiamondTouch system, in a number of different programming languages, and publicly demonstrated those applications running on DiamondTouch hardware in a variety of settings: trade shows, academic conferences, and meetings with educational institutions, potential business partners (*e.g.*, Apple and Google),

and public officials (*e.g.*, the New York Police Department's Real Time Crime Center).

88. A number of these applications responded to a user overscrolling an electronic document with the snap back of the document. One of these applications include "Glimpse," an application that allowed a user to save his current view of a document, temporarily change his view of the document using a touch input, and then return to his saved view of the document by lifting his finger and ending the touch input. The Glimpse system was disclosed in a paper by Clifton Forlines, Chia Shen, Bill Buxton, "Glimpse: A Novel Input Model for Multi-Level Devices" (CHI 2005), reprinted as MERL Technical Report No. 2005-024.

89. The Glimpse application is discussed in greater detail in Exhibit 3 to this Report.

90. Another DiamondTouch application was Tablecloth DTFlash application. Tablecloth was an application developed with DTFlash, a software toolkit, released as early as year-end 2005, that allowed programmers to write DiamondTouch-aware Macromedia/Adobe Flash applications. Tablecloth implemented a feature that allowed the user to scroll an image inside a window. When scrolling, the user may overscroll the image, lift his finger, and cause the image to snap back so that the edges of the window and the image align.

91. Two published papers disclose DTFlash: Alan Esenther and Kent Wittenburg, "Multi-User Multi-Touch Games on DiamondTouch with the DTFlash Toolkit," Mitsubishi Electric Research Laboratories, TR 2005-105, Dec. 2005, and Alan Esenther, Cliff Forlines, Kathy Ryall, Sam Shipman, "DiamondTouch SDK: Support for Multi-User, Multi-Touch Applications," Mitsubishi Electric Research Laboratories, TR 2002-48, Nov. 2002 ("MERL TR 2002-48"). This application is discussed in greater detail in Exhibit 8 to this Report.

92. I understand that the DiamondTouch system was publicly available running each of these applications by at least January 7, 2007, and in fact was publicly available running at least the Glimpse and Tablecloth by at least by January 6, 2006, before the critical date of the

'381 patent, and is therefore prior art to the '381 patent. I base this understanding in part on the declarations and depositions of Adam Bogue and Clifton Forlines.

B. Patents

93. In addition to the systems and publications described above, several patents that were available in the 1990s and 2000s describe the state of the art of snap back functionality before January 2007. I discuss one of these below.

1. International Patent Application No. WO 03/081458 to Lira et al.

94. International Patent Application No. WO 03/081458 ("Lira") is an international patent application that states on its face that it published on October 2, 2003. It was filed on March 19, 2003.

95. I understand that the '381 patent should only be entitled to a priority date of the filing date of its provisional application, January 7, 2007. Thus, Lira was published before the priority date of the '381 patent and is prior art to the '381 patent.

96. WO 03/081458 to Lira (and U.S. Patent No. 7,872,640 to Lira) disclose methods for browsing a large electronic document, such as a web page or a column of a web page, using a small touch screen display, by scrolling a window over a page using a finger or stylus. When the user lifts her finger or stylus off the touch screen display, Lira will snap the viewing window so that the edge of the column lines up with the edge of the browsing window.

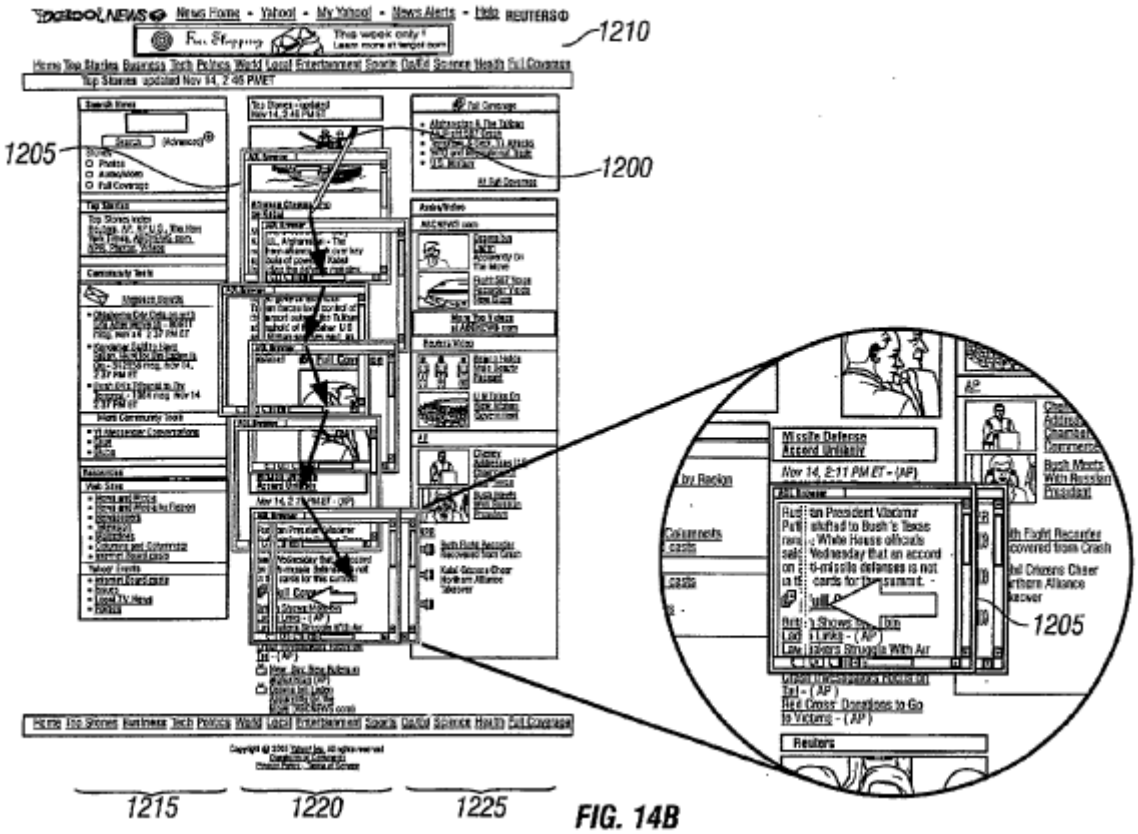

FIG. 14B

97. Additionally, Lira discloses scrolling across the window displaying the electronic document as a whole, in contrast to the scrolling by column.

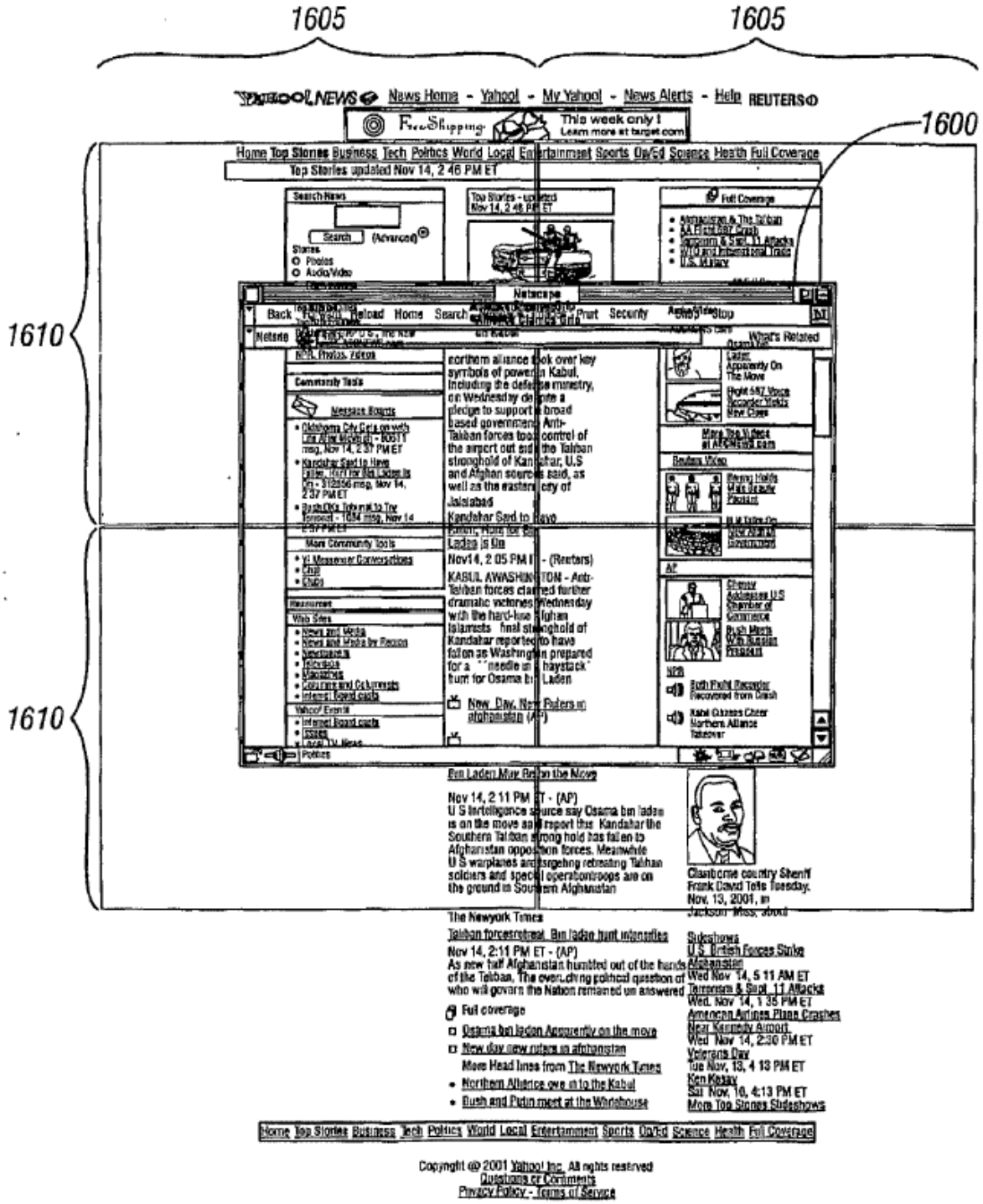

FIG. 16

98. Lira further discloses that this snap functionality "can also be animated to provide an appearance of movement as the display scrolls." (Lira at 15.) The Lira reference is discussed in greater detail in Exhibit 5 to this Report..

IX. ANALYSIS OF THE VALIDITY OF THE '381 PATENT

A. Anticipation

99. As discussed above, it is my opinion that the Asserted Claims are anticipated by Glimpse, Lira, DT Flash / Tablecloth, and LaunchTile / XNav under Apple's apparent claim construction.

100. In the following sections, I provide a narrative of my opinions. I have also attached for each reference detailed charts identifying the anticipating disclosure for each prior art reference.

101. As I discussed above, I have been informed that to anticipate, a prior art reference must contain an enabling disclosure that allows one of ordinary skill to practice the claims without undue experimentation.

102. I have reviewed each of the references described below from this perspective.

1. LaunchTile System

103. In my opinion, the LaunchTile system used in public no later than April 2005, embodied each and every limitation of claims 1-5, 7-11, 13-16, 18-20 of the '381 patent .

104. In my opinion, the LaunchTile system discloses to one of ordinary skill in the art how to practice or carry out the claims in sufficient detail, without requiring undue experimentation. One of ordinary skill viewing the LaunchTile system in operation, including the applications described above, would understand how to practice or carry out the claims of the '381 patent using the LaunchTile system. I note that the disclosures of the LaunchTile system, as used in public and as described in numerous prior art references are more detailed than the

relevant disclosures in the '381 patent itself.

105. In any event I am informed that a public use need not enable the claims.

106. Exhibit 10 provides an element-by-element analysis of the LaunchTile system, Exhibit 11a-f are videos showing the operation of LaunchTile / XNav and illustrates the invalidity analysis. Both are incorporated by reference into this report.

2. Lira

107. In my opinion, Lira embodied each and every limitation of claims 1-8, 10-20 of the '381 patent.

108. In my opinion, the XNav system discloses to one of ordinary skill in the art how to practice or carry out the claims in sufficient detail, without requiring undue experimentation. One of ordinary skill viewing the XNav system in operation, including the applications described above, would understand how to practice or carry out the claims of the '381 patent using the XNav system. I note that the disclosures of the XNav system, as used in public and as described in numerous prior art references are more detailed than the relevant disclosures in the '381 patent itself.

109. In any event I am informed that a public use need not enable the claims.

110. Exhibit 5 provides an element-by-element analysis of the Lira system, Exhibits 6 and 7 are videos showing the operation of Lira and illustrates the invalidity analysis. Both are incorporated by reference into this report.

3. Glimpse

111. In my opinion, the Glimpse system used in public no later than 2005, embodied each and every limitation of claims 1-5, 7, 10, 13-20 of the '381 patent.

112. In my opinion, the Glimpse system discloses to one of ordinary skill in the art how to practice or carry out the claims in sufficient detail, without requiring undue

experimentation. One of ordinary skill viewing the Glimpse system in operation, including the applications described above, would understand how to practice or carry out the claims of the '381 patent using the Glimpse system. I note that the disclosures of the Glimpse system, as used in public and as described in numerous prior art references, are more detailed than the relevant disclosures in the '381 patent itself.

113. In any event I am informed that a public use need not enable the claims.

114. Exhibit 3 provides an element-by-element analysis of the Glimpse system, Exhibit 4 is a video showing the operation of Glimpse and illustrates the invalidity analysis. Both are incorporated by reference into this report.

4. DT Flash/Tablecloth

115. In my opinion, the DTFlash system used in public no later than 2000, embodied each and every limitation of claims 1-7, 10-11, 13-16, 18-20 of the '381 patent.

116. In my opinion, the DTFlash system discloses to one of ordinary skill in the art how to practice or carry out the claims in sufficient detail, without requiring undue experimentation. One of ordinary skill viewing the DTFlash system in operation, including the applications described above, would understand how to practice or carry out the claims of the '381 patent using the DTFlash system. I note that the disclosures of the DTFlash system, as used in public and as described in numerous prior art references, are more detailed than the relevant disclosures in the '381 patent itself.

117. In any event I am informed that a public use need not enable the claims.

118. Exhibit 8 provides an element-by-element analysis of the DT Flash / Tablecloth system. Exhibit 9 is a video showing the operation of DT Flash / Tablecloth and illustrates the invalidity analysis. Both are incorporated by reference into this report.

B. Obviousness

119. It is my opinion that the Asserted Claims are rendered obvious by the prior art. To the extent that the above-discussed references do not anticipate limitations in the asserted claims, this section demonstrates that those limitations consist only of obvious applications of art and known techniques in January 2007 (and in fact many years earlier), and thus each asserted claim is invalid for obviousness.

120. As noted above, I am informed by counsel that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. I likewise understand that if a technique had been used to improve one device, and a person of ordinary skill would recognize that it would improve similar devices in the same way, using the technique is obvious, unless its actual application is beyond his or her skill. Further, I understand that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical knowledge. It is my understanding that if a person of ordinary skill can implement a predictable variation of the prior art in the manner claimed, the claim is obvious.

1. One Skilled In The Art Would Have Found It Obvious To Combine The Known Elements In The '381 Claims

121. As shown below and in the Appendices attached to this report, prior art devices and publications not only foreshadow these combinations, but in fact actually practiced them. Persons of ordinary skill were motivated to, and in fact did, combine the prior art elements recited in the '381 patent claims to achieve the same results described in the '381 patent specification.

122. To the extent that Apple argues that a particular combination of limitations were not found in the prior art, it is my opinion that any combinations would have been nothing more than a design choice. The Asserted Claims do not overcome any drawbacks in the prior art. Instead, to the extent that there are differences between the prior art and the Asserted Claims, these differences are a result of the Asserted Claims merely choosing from among several interchangeable elements that happen to be different from the interchangeable element found in the prior art.

C. Indefiniteness

123. In my opinion, as detailed in my Expert Reports on Claim Construction and incorporated into this Report, claim 19 is indefinite for failing to disclose the corresponding structure for several means-plus-function limitations. If called to testify or to give additional opinions regarding this matter at the hearing, I reserve the right to rely on my previous Expert Reports on this matter.

124. Specifically, claim 19 is invalid as indefinite under 35 U.S.C. § 112 ¶ 2 because the '381 patent specification fails to identify or describe the necessary corresponding structure to perform claimed functions subject to 35 U.S.C. §112 ¶ 6 such as "instructions for displaying a first portion of an electronic document"; "instructions for detecting a movement of an object on or near the touch screen display"; "instructions for translating the electronic document displayed on the touch screen display in a first direction to display a second portion of the electronic document, wherein the second portion is different from the first portion, in response to detecting the movement"; "instructions for displaying an area beyond an edge of the electronic document and displaying a third portion of the electronic document, wherein the third portion is smaller than the first portion, in response to the edge of the electronic document being reached while

translating the electronic document in the first direction while the object is still detected on or near the touch screen display"; and "instructions for translating the electronic document in a second direction until the area beyond the edge of the electronic document is no longer displayed to display a fourth portion of the electronic document, wherein the fourth portion is different from the first portion, in response to detecting that the object is no longer on or near the touch screen display." The bases for this contention are found in the claims, specification and prosecution of the '381 patent, as well as the understanding of one of ordinary skill in the art.

125. The '381 patent specification fails to set out sufficiently particular algorithms for performing these specialized computer-implemented functions. The '381 specification neither describes the algorithms necessary to perform each of the recited functions or provides exemplar source code for the "one or more programs" that perform the claimed functions. Moreover, to the extent that these terms are not subject to § 112 ¶ 6, they are invalid under § 112 ¶¶ 1-2 because the specification fails to disclose any specific and enabling instructions for these operations in full, clear, concise and exact terms, or to provide sufficient notice of the set of instructions that the inventors regarded as the invention.

X. OTHER COMMENTS

126. My opinions are subject to change based on additional opinions that Complainant's experts may present and information I may receive in the future or additional work I may perform. With this in mind, based on the analysis I have conducted and for the reasons set forth below, I have preliminarily reached the conclusions and opinions in this report.

127. At trial and as discussed above, I may rely on visual aids and may rely on analogies concerning elements of the '381 patent, the accused products, the prior art referenced in this report, or any related technologies.

128. In connection with my anticipated testimony in this action, I may use as exhibits various documents produced in this case that refer or relate to the matters discussed in this report. I have not yet selected the particular exhibits that might be used. In addition, I may create or assist in the creation of certain demonstrative evidence to assist me in testifying, and I reserve the right to do so, such as working computer systems or code highlighting to further support the positions in this report.

129. At hearings and at trial, and as discussed above, I may rely on visual aids and may rely on analogies concerning elements of the '381 patent, the accused products, the prior art referenced in this report, or any related technologies.

March 22, 2012

Andries van Dam, Ph.D. | Date

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

APPLE INC.,

V.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC. AND SAMSUNG TELECOMMUNICATIONS AMERICA, LLC

Case No. 11-CV-01846-LHK

CORRECTIONS TO EXPERT REPORT OF ANDRIES VAN DAM, PH.D. REGARDING INVALIDITY OF U.S. PATENT NO. 7,469,381

HIGHLY CONFIDENTIAL – OUTSIDE ATTORNEYS' EYES ONLY

1. Exhibit 5 - Invalidity Claim Chart for Lira, page 23, last line: "option of advancing to the next **Zone**" → "option of advancing to the next **column**"

2. Exhibit 5 - Invalidity Claim Chart for Lira, page 23: Cross out "electronic document" in line 3 of paragraph 1 and line 3 of paragraph 2 below the figures

3. Exhibit 2 - Materials Considered: Add "Deposition transcript of Ben Bederson"

4. Page 47, line 2: cross out "declaration and"

5. Exhibit 8, page 1, footnote 1, line 3: "available in the lobby of MERL as of **2000**." → "available in the lobby of MERL as of **2000 timeframe**."

6. Exhibit 8, page 4 – Invalidity Claim Chart for Tablecloth/DTFlash: Change all the instances of "electronic document" → "image"

7. Exhibit 8, page 4 – Invalidity Claim Chart for Tablecloth/DTFlash, second to the last line: "second instance of the **electronic** is visible" → "second instance of the **image** is visible"

Andries van Dam, Ph.D.

May 1, 2012

Date