

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner

v.

SMITH INTERFACE TECHNOLOGIES, LLC

Patent Owner

IPR2024-01091

Patent No. 10,936,114

DECLARATION OF DR. VIJAY MADISETTI

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I. INTRODUCTION

1. My name is Dr. Vijay Madiseti. I have been retained by Smith Interface Technologies, LLC as an independent expert consultant in this inter partes review (“IPR”) proceeding before the United States Patent and Trademark Office (“PTO”) regarding US Patent No. 10,936,114 (“the ’114 Patent”).

II. PROFESSIONAL BACKGROUND

2. All of my opinions stated in this Declaration are based on my own personal knowledge and professional judgment. In forming my opinions, I have relied on my knowledge and experience in designing, developing, and researching the technology referenced in this Declaration.

3. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. I understand that a copy of my current curriculum vitae, which details my education and professional and academic experience, is being submitted as EX2009. The following provides a brief overview of some of my experience that is relevant to the matters set forth in this Declaration.

4. I received my Bachelor of Technology (Honors) in Electronics and Electrical Communication Engineering at the Indian Institute of Technology (IIT) in Kharagpur, India in 1984. I obtained my Ph.D. in Electrical Engineering and Computer Science at the University of California at Berkeley in 1989. I received the

Demetri Angelakos Outstanding Graduate Student Award from the University of California, Berkeley and the IEEE/ACM Ira M. Kay Memorial Paper Prize in 1989.

5. I am now a tenured Full Professor in the Colleges of Computing and Engineering at Georgia Tech and serve as its representative to the European Telecommunications Standard Institute (ETSI). I am knowledgeable and familiar with topics including software engineering, web applications, cloud computing, user interface design, data analytics, wireless communications, messaging protocols, microprocessor architecture, hardware, RF, cellular networks, computer engineering, digital signal processing, and associated software and firmware design—including software and firmware design for wireless and telecommunications terminals and base stations in general and ETSI/3GPP/3GPP2 standards based cellular architecture and infrastructure in particular. I have created and taught undergraduate and graduate courses in hardware and software design for computer science and engineering applications at Georgia Tech for the past thirty years. I have been the principal investigator (“PI”) or co-PI in several active research programs in these areas, including DARPA’s Rapid Prototyping of Application Specific Signal Processors, the State of Georgia’s Yamacraw Initiative, the United States Army’s Federated Sensors Laboratory Program, and the United States Air Force Electronics Parts Obsolescence Initiative. I have received an IBM Faculty Award and NSF’s Research Initiation Award.

6. I have designed several specialized computer and communication systems over the past two decades at Georgia Tech for tasks such as wireless audio/video processing and messaging/protocol processing for portable platforms, such as cell phones and Personal Digital Assistants. I also developed UIs for tools for electronic design automation of complex chipsets and their reverse engineering processes for the U.S. Air Force and Lockheed Martin and Boeing in the late 1990s and early 2000s. I have worked on designing systems that are efficient from performance, size, weight, area, and thermal considerations. I have developed courses and classes for the industry on these topics, and many of my lectures in advanced computer system design were developed under the sponsorship of the United States Department of Defense in the late 1990s and have been used by several U.S. and international universities as part of their course work. I graduated more than 20 Ph.D. students that now work as professors or in technical positions around the world.

7. Over the years, I have been an active consultant to industry and various research laboratories (including Massachusetts Institute of Technology Lincoln Labs and Johns Hopkins University Applied Physics Laboratory). As part of that involvement in the industry, I have been actively involved in product development. For example, in the early 2000-2001 timeframe I designed three GSM multiband mobile phones for a leading telecom equipment manufacturer in Asia, and in the

2002-2007 timeframe, I developed wireless baseband and protocol stack software and assembly code for a leading telecommunications handset vendor that focused on efficient realization of speech codecs and echo-cancellation and for another in the optimization of their 3G software stack. My work in this regard included creation of software code, and analysis and revision of existing software code.

8. I have also founded three companies in the areas of embedded software, military chipsets involving imaging technology, and wireless communications. The first of these companies, VP Technologies, offers computing systems for helicopter imaging systems for the United States Air Force. The second of these companies, Soft Networks, LLC, offers software for multimedia and wireless computing platforms, including the development of a set-top box for Intel that decodes MPEG-2 video streams and imaging codes for multimedia phones. The third of these companies, Elastic Video, uses region-of-interest based video encoding to capture high quality video at low bit rates, with primary application for wireless video systems. I also have extensive experience developing user interfaces for products. Recent examples of such work include my work developing a crypto exchange prototype, and my work on a web-based document management environment, called CatchUp, which is now commercialized as CatchUp Cloud (<https://catchup.cloud>).

9. I have authored more than 110 refereed journal publications and around forty peer-reviewed conference publications. I have served as associate editor or on

the editorial board for technical journals, including IEEE Transactions on Circuits & Systems II, International Journal in Computer Simulation, and International Journal in VLSI Signal Processing. I have also authored or co-authored several books, including VLSI Digital Signal Processors (IEEE Press 1995) and the Digital Signal Processing Handbook (CRC Press, 1998, 2010). I also co-authored Quick-Turnaround ASIC Design in VHDL (Kluwer Academic Press 1996) and Platform-Centric Approach to System-on-Chip (SoC) Design (Springer 2004). I am also the editor of several books, including the three-volume DSP Handbook set: Volume 1: Digital Signal Processing Fundamentals, Volume 2: Video, Speech, and Audio Signal Processing and Associated Standards, and Volume 3: Wireless, Networking, Radar, Sensory Array Processing, and Nonlinear Signal Processing, published in 2010 by CRC Press, Boca Raton, Florida. More recently I have authored Cloud Computing (2014, CreateSpace Press), and Internet of Things (2014, CreateSpace), and the book, Cloud Computing, was nominated as a Notable Book of 2014 by the Association of Computing Machinery (ACM) in July 2015.

10. I have worked in the area of user interfaces over the past twenty years as part of my extensive development in mobile and portable applications for mobile phones and portable devices since the early 2000 timeframe. I developed commercial products for leading companies, and was part of the team that developed the user interfaces for a Soft Switch, called SNX 8500, that provides voice and VOIP services

for enterprises. In addition to authoring textbooks and research papers in the area of wireless messaging interfaces, I have developed web-based document management systems and web-based fintech applications. I have submitted approximately 100 invention disclosures and provisional patents over the past ten years. I am listed as a first inventor on over thirty issued US patents, and am listed as an inventor on several patents related to wireless messaging. Many of my patents also disclose techniques for efficient user interface design including use of multilevel hierarchies and other UI innovations in the area of user interfaces for work environments.

11. Additionally, I have extensive experience analyzing, designing, and testing systems based on 3GPP Technical Specifications, including specifications describing WCDMA and HSDPA technologies. I have been active in the area of location-based services and wireless localization techniques since the mid-1990s, and have authored several papers on location-based services, including, Vijay K. Madisetti et al., Mobile Fleet Application Using SOAP and System on Devices (SyD) Middleware Technologies, Communications, Internet, and Information Technology (2002) at 426-31.

12. I have been extensively involved in the activities of one of the premier standard setting organizations in the world, the IEEE, since the 1980s, and was a member of the IEEE Press Board from 1995-1997. I was the Technical Program Chair of IEEE ICASSP in 1996. I was also the Associate Editor of IEEE

Transactions on Circuits & Systems II from 1994 to 1997. I am also the director of the IEEE Atlanta Chapter, and the author of several drafts of IETF proposals in the area of VOIP and Voice/Video streaming over the internet. I have been elected a Fellow of the IEEE. The Fellow is the highest grade of membership of the IEEE, a world professional body consisting of over 300,000 electrical and electronics engineers, with only one tenth of one percent (0.1%) of the IEEE membership being elected to the Fellow grade each year. Election to Fellow is based upon votes cast by existing Fellows in IEEE.

13. I have also been awarded the 2006 Frederick Emmons Terman Medal by the American Society of Engineering Education for contributions to Electrical Engineering, including authoring a widely used textbook in the design of VLSI digital signal processors. I was awarded VHDL International Best Ph.D. Dissertation Advisor Award in 1997 and the NSF RI Award in 1990. I was Technical Program Chair for both the IEEE MASCOTS in 1994 and the IEEE Workshop on Parallel and Distributed Simulation in 1990. In 1989, I was recognized with the Ira Kay IEEE/ACM Best Paper Award for Best Paper presented at the IEEE Annual Simulation Symposium.

III. COMPENSATION

14. My work on this matter is being billed at my customary rate of \$700 an hour. Also, I am being reimbursed for reasonable expenses I incur in relation to my

services. I have no pecuniary interest in the outcome of this proceeding. I understand I will be paid regardless of the outcome of any proceeding in which my work is used.

IV. LEGAL CONSIDERATION

15. I am not an attorney. My understanding of the law is based on information provided by counsel for Smith Interface Technologies, LLC.

A. Obviousness

16. I understand that a claimed invention is obvious and, therefore, not patentable if the subject matter claimed would have been obvious to a person of ordinary skill in the art at the time that the invention of the '114 Patent (a "POSITA"), which I have been asked to treat as August 5, 2011.

17. I understand that a claim can be obvious in view of a single prior art reference (e.g., via modification of that prior art reference) or multiple prior art references (e.g., via a combination of two or more prior art references), if such a modification or combination was within the skill of a POSITA. I understand that there must be some articulated reasoning with some rational underpinning to support a conclusion of obviousness. I also understand that to establish a finding of obviousness one must show that one of ordinary skill in the art would have had a motivation to combine the prior art references to produce the claimed invention and a reasonable expectation that the combination would be successful.

18. I further understand that exemplary rationales that may support a conclusion of obviousness include: (1) simply arranging old elements in a way in which each element performs the same function it was known to perform, and the arrangement yields expected results, (2) merely substituting one element for another known element in the field, if the substitution yields no more than a predictable result, (3) combining elements in a way that was “obvious to try” because of a design need or market pressure, where there was a finite number of identified, predictable solutions, (4) that design incentives or other market forces in a field would have prompted variations in a work that were predictable to a person of ordinary skill in the art, and (5) that there was some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify or combine prior art references to arrive at the claimed invention.

B. Claim Interpretation

19. I understand that a claim term is interpreted according to its ordinary and customary meaning as a POSITA would have understood the term in light of the surrounding claim language, other claims, the specification, and the patent’s prosecution history, which are referred to as intrinsic evidence. I also understand that prior art references cited in the patent’s prosecution history are considered intrinsic evidence. I further understand that evidence outside the patent and its prosecution history (e.g., dictionaries and technical articles), may inform the context

in which a POSITA would have understood the claims of a patent. I understand this ordinary and customary meaning applies absent unique circumstances, such as where a patent clearly expresses an intent to set forth a special meaning for a term.

V. OVERVIEW OF TASK & BASIS FOR OPINIONS

20. I have been asked to review the '114 Patent. I have been asked to provide opinions related to certain issues from the perspective of a person of ordinary skill, having knowledge of the relevant art, as of August 5, 2011, and—except where otherwise noted—the opinions stated in this declaration are from that perspective. The qualifications and abilities of such a person are described in Section VII below.

21. More particularly, I have been informed that the Patent Trial and Appeal Board (the “Board”) will decide whether the Petition establishes by a preponderance of the evidence that at least one claim of the '114 Patent is invalid. I have been asked to focus my analysis on the Petition’s proposed invalidity theories related to the challenged claims of the '114 Patent.

22. My opinions are based on my education, training, and experience as well as items that I reviewed to prepare my opinions, including the Petition, the documents listed in the Exhibit List included with the Petition, the deposition of Dr. Cockburn, and any other items that I reference in my analysis below.

23. I understand that other issues may arise that require further explanation, and I will provide that explanation if appropriate. As a result, I respectfully reserve

the right to update and supplement this declaration and the information and opinions provided herein.

VI. OVERVIEW OF THE '114 PATENT

A. Multi-Part Pattern-Based Gestures

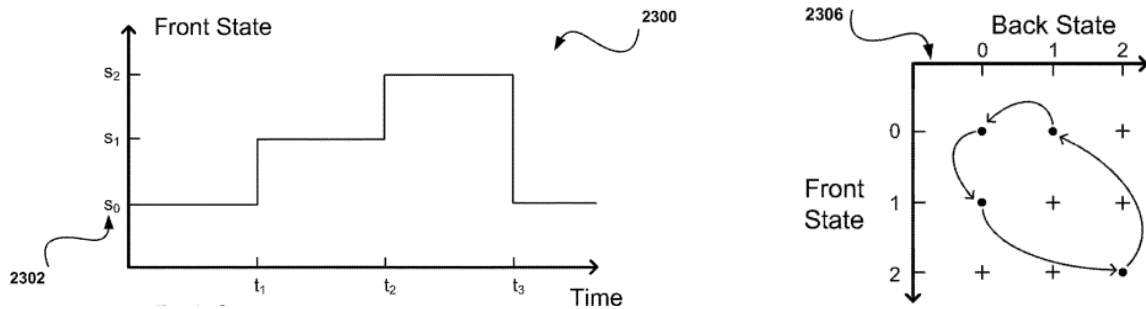
24. At the time of the '114 Patent's priority date, touch screen mobile devices were becoming increasingly capable of more complex tasks that required more control than possible with traditional, basic input methods. As more capable and precise sensors were being placed in mobile devices, the corresponding options for designers were increasing.

25. Additionally, advancements in cellular connectivity speed enabled more complex tasks on touch screen mobile devices such as gaming and more detailed remote office tasks. The introduction of 4G networks offered up to ten times faster speeds. Greater cellular speeds not only enabled enhanced multi-player gaming but also enabled users on the go to more readily access games, which in turn increased demand for mobile games. In person interactions with mobile phone users partly drove this demand. For example, when a user would show another user a game they had found, the second person would desire immediate access on their own mobile device. This immediate access was facilitated by greater cellular speeds leading to higher adoption rates. Remote office work performed on mobile devices also increased with increasing cellular speeds. Increased cellular speeds enabled

easier document access (e.g. presentations) on mobile devices. This in turn increased demand for modifying those documents on the go. The spread of mobile gaming and games as well as increased out of office work possibilities led to increasing capabilities for more complex tasks that required advancements over basic input methods.

26. Further, limited screen real estate meant that input and output techniques used for more complex tasks on desktop computers could not be used. The '114 Patent addresses this shortcoming by enabling users to operate these new powerful mobile devices, which had less real estate, and their feature-rich applications through implementation of multi-part gestures where users can take successive actions and receive feedback at each stage.

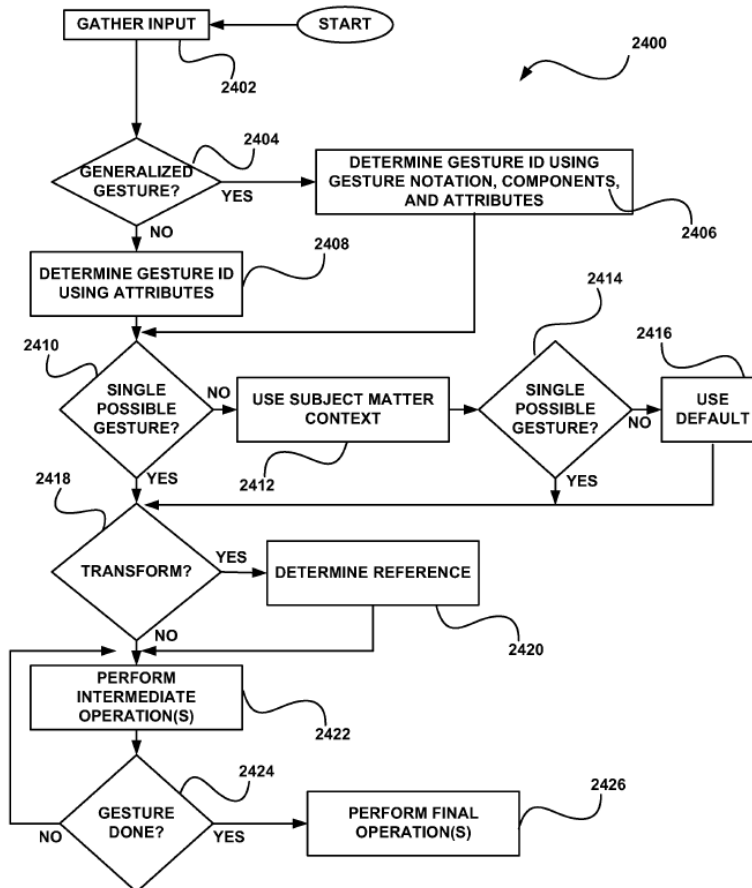
27. The '114 Patent describes these multi-part, multi-action gestures as “pattern-based gestures” that “may be recognized in the form of an ordered sequence” by, for example, “using a decision tree.” EX1001, 75:24-26; EX2010, [00581]. The “pattern-based gesture” may be defined as “a path through a phase space of one or more dimensions.” EX1001, 73:27-29; EX2010, [00564]. Exemplary “pattern-based gesture[s] 2302” are “described by a phase space path which represents the time evolution of the touch state associated with a contact point” on the touch screen. EX1001, 73:41-44; EX2010, [00566].



EX1001, FIG. 23; EX2010, FIG. 28. Each state, and transitions between states, may be defined by factors including “contact point changes” and “the time spent on each leg of the path through phase space.” EX1001, 73:47-74:7; EX2010, [00567]-[00570]. Consistent with the “decision tree” aspect of these pattern-based gestures, multiple patterns may share the same starting (and intermediate) points. EX1001, 75:24-26; EX2010, [00581]. Consistent internal device logic is important to keep a user engaged and appropriately aware of the response for a desired task. A user wishing to execute a final action contingent on a previous device state would be unsuccessful if the device did not predictably follow a decision tree. Predictability in starting and intermediate points is enabled by decision tree logic.

28. To detect these pattern-based gestures, the '918 Provisional, which the '114 Patent incorporates by reference (EX1001, 1:22-24), discloses techniques for “gesture differentiation,” which is distinguished from simply detecting a “basic user interaction (i.e., button press, basic application interaction, etc.).” EX2010, [00498], [00502]. The process begins by “determine[ing] whether there is any meaningful

user input,” including applying a “threshold above which user interaction may rise before it may be deemed meaningful.” EX2010, [00501]-[00502]. Detecting the gesture may involve “gesture subject matter context,” including “objects displayed at or near the location of the gesture.” EX2010, [00512]. For example, the starting point may be the beginning of a touch contact at a particular location of a specific object on the touch screen. EX2010, [00512]. A touch-capable device offers a user the ability to input at a desired location on the touch screen. The ability for a user to pick from a variety of locations on a touch-capable device requires device logic to start a decision tree with a detected user touch contact at a specific location. This location often corresponds to a desired object like an application. This location could also refer to other objects that a user would recognize that interacting with could lead to a desired result.



EX2010, FIG. 24.

29. Again, as indicated by the flow chart, multiple complete full patterns may share the same starting (and intermediate) points. From the flow chart, the start of a pattern begins with gathering input at block 2402. Further blocks, for example block 2406, describe gesture notation, components, and attributes. This reveals that the input gathering at one location could be at the same location based on later defined features of that input. Furthermore, the steps of the flow chart illustrate that a gesture pattern involves multiple steps that may share the same starting point as well as intermediate points. For example, a different gestures or input type at the

same location would thus share the same starting point. Other examples consistent with the '114 patent could include a common starting point in a pressure level. In both instances, the logic of the device analyzes a parameter associated with user contact. The same pressure level again could be the same starting point. Consistent with the multi-part nature, the device may perform “intermediate operations associated with the identified gesture.” EX2010, [00521]. “[E]ach execution of intermediate gesture operations may trigger a display update (i.e. rendering, etc.).” EX2010, [00512]. [00524]. One purpose of these intermediate gestures is so “a user may receive feedback on their gesture before terminating the interaction.” EX2010, [00522].

30. A “gesture may be ended by ending one or more user inputs” or “by performing a different gesture” at which time “the final operations associated with the identified gesture are performed.” EX2010, [00526]-[00528]. “For example, in one embodiment, a gesture which triggers the display of a pop-up menu and allows a user to cycle through menu items may have as a final operation the selection of the current menu item and removal of the pop-up menu.” EX2010, [00529].

31. Consistent with the '918 Provisional's disclosure of detecting multi-part pattern-based gestures through gesture differentiation, the '114 Patent describes a process by which a “gesture is identified from gesture input.” EX1001, 58:11; EX2010, [00385]. The process begins by “determin[ing] if a touch event has

occurred.” EX1001, 58:6; EX2010, [00383]. “If it is determined that a touch event has occurred, then the initial touch event attributes are determined.” EX1001, 58:8-9; EX2010, [00384]. Touch event attributes may include “one or more measurable aspects of the user interaction which resulted in a touch event,” EX1001, 55:1-3; EX2010, [00359], including *e.g.*, “gesture input” from which “a gesture may be identified.” EX1001, 58:26-27; EX2010, [00388]. Such gesture inputs may include “touch event attributes” evaluated “both initial[ly] and over time.” EX1001, 58:20; EX2010, [00386]. Another example may include the “time to complete [a] gesture.” EX2010, [00403]. The ’114 Patent distinguishes between gestures that may be identified solely from initial touch event attributes and “gestures [that] may only be identified after the gesture has been performed for some period of time.” EX1001, 58:28-30; EX2010, [00388].

32. The ’114 Patent explains that, “[o]nce the gesture has been identified, the corresponding operation is performed.” EX1001, 58:50-51; EX2010, [00390]. Identification of a gesture may include “determin[ing] whether the gesture is meant to trigger some sort of transformation,” such as a “scale” operation. EX2010, [00518]. Such transformations may be a result of a gesture “associated with operations that are carried out as functions of the gesture input.” EX1001, 60:58-60; EX2010, [00402]. The identification may also perform “intermediate operations associated with the identified gesture.” EX2010, [00521].

33. A corresponding operation may include “a gesture ... associated with the modification of one or more device attributes.” EX1001, 59:26-27; EX2010, [00393]. For example, “a device may have a status bar along one side of a display which indicates the status of device hardware, including ... Wi-Fi signal strength, cellular network type and signal strength, Bluetooth status (i.e., on, off, etc.), system volume, battery remaining, etc.” EX1001, 59:28-33; EX2010, [00393].

B. Independent Claims 1, 32, 34, and 64

34. Petitioner challenges independent claims 1, 32, 34, and 64 of the '114 Patent. Claims 1 and 32 are each directed to an “apparatus.” EX1001, 97:13, 107:40. Claims 34 and 64 are each directed to a “method.” EX1001, 107:40, 118:42. Claims 1, 32, 34 and 64 are similar to one another.

35. Claims 1, 32, 34, and 64 recite logic to process user gestures on a touch screen to recognize a set of gesture components that begin from a common starting point and perform operations upon recognizing various aspects of a gesture. The claims each recite “detect[ing] [at least one component of] **a gesture** [on/via] the touch screen on the [first] object.”¹ Limitations [1.e], [32.e], [34.f], [64.f]. Claims 1, 32, 34, and 64 then recite three logic operations:

¹ All emphasis is added unless specifically noted otherwise.

- “[when]/[based on]/[in response to] a magnitude of a duration of **the** **gesture** being detected on the touch screen on the object is less than a first magnitude threshold, perform an [operation]/function],”
- “[when]/[based on]/[in response to] the magnitude of the duration of **the** **gesture** being detected on the touch screen on the object is greater than the first magnitude threshold, perform a scaling ... , **and**”
- “[when]/[based on]/[in response to] the magnitude of the duration of **the** **gesture** being detected on the touch screen on the object is greater than a second magnitude threshold, perform another [operation]/[function].

Limitations [1.f, 1.g, 1.i], [32.f, 32.g, 32.i], [34.g, 34.h, 34.j], [64.g, 64.h, 64.j].

C. Independent Claims 30 and 62

36. Petitioner also challenges independent claims 30 and 62. Claim 30 is directed to an “apparatus.” EX1001, 107:12. Claim 62 is directed to a “method.” EX1001, 118:16. Claims 30 and 62 are similar to one another.

37. Claims 30 and 62 each recite “detect[ing] **a** **gesture** [on/via] the touch screen on the first object,” “[during detecting of at least a portion of **the** **gesture** before a completion thereof is detected]/[in response to a detection of at least a portion of **the** **gesture**], perform[ing] a scale operation, based on a change in a duration of the gesture,” and “[after at least a portion of the scale

operation]/[subsequent to the performance of the scale operation], vibrat[ing] the apparatus and performing an action.” Limitations [30.f, 30.g, 30.i], [62.g, 62.h, 62.j].

VII. LEVEL OF ORDINARY SKILL IN THE ART

38. At the time of the invention of the '114 Patent, a POSITA would have had at least a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and would have had at least two years of relevant work experience in the design and development of graphical user interfaces (GUIs) or equivalents thereof. Less work experience may be compensated by a higher level of education and vice versa.

39. I have reviewed the proposed level of ordinary skill in the art by Petitioner's expert, Dr. Cockburn. EX1003, ¶¶ 26–27. I disagree with Dr. Cockburn's definition of a POSITA to the extent it includes work experience in the design and development of human-computer interfaces, which is a broad field that includes physical interfaces, such as computer accessories, ergonomics, etc., that are not relevant to the graphical user interfaces at issue. Even so, I would have at least been a POSITA as of the priority date under either definition and can opinion on the perspective of a POSITA at that time. *See* § II; EX2009. Further, my opinions are the same under either definition.

VIII. OVERVIEW OF THE PRIOR ART

A. U.S. Patent Application Publication No. 2010/0302281 to Kim (“Kim”)

40. Kim discloses a mobile device and “touch-based zooming control method.” EX1004, Abstract. Kim discloses detecting gestures and taking responsive action across two modes: a “*selected mode*” “that allows displaying some kind of display target data outputted while a specific application selected at a user’s request runs in the mobile device,” including “a web page display mode,” and a “*zoom mode*” in which the device can perform a “zooming function” in response to further input. EX1004, [0041], [0043]. Kim describes moving across these modes by, first, “selected mode,” detecting “a long press event” for “activating a zoom mode” (EX1004, [0031], [0049]) and transitioning to zoom mode, then, in zoom mode, detecting “a hold event” for “execut[ing] a continuous zoom-in function” (EX1004, [0053], [0061]); and, while still in zoom mode, detecting “a double tap event” event and “returning to an initial state with a basic display size after a zoom-in or zoom-out action in a zoom mode” in select mode (EX1004, [0031]). Kim discloses a separate algorithm for detecting user gestures in selected mode and zoom mode.

1. *User gesture detected via “interrupt” in “selected mode” (i.e., non-zoom mode)*

41. With reference to Figure 2A, Kim discloses detection of user gestures and responsive functions in “selected mode” upon detection of an “interrupt,” which

Kim “refers to a signal or instructions, inputted through at least one of a touch screen and a special function key by a user, to stop the execution of a running application.” EX1004, [0048], FIG. 2A. In response to detecting “*a long press input*,” Kim discloses “activating the zoom mode.” EX1004, [0049]. Alternatively, upon detection of “an interrupt [that] is not a request for the activation of the zoom mode,” “perform[ing] some action in connection with an interrupt.” EX1004, [0048]-[0050].

42. Kim describes three examples of actions in response to interrupts that do not activate zoom mode. These examples are: (a) “display[ing] the requested menu” in response to an unspecified input that indicates “a request for a specific menu,” (b) “launch[ing] and enable[ing] one of an application and a function which is assigned to the selected icon” in response to an unspecified input that indicates “a selection input for a specific icon,” and (c) entering “toggle mode” in response to a “double tap.” EX1004, [0044]-[0045], [0050], [0089].

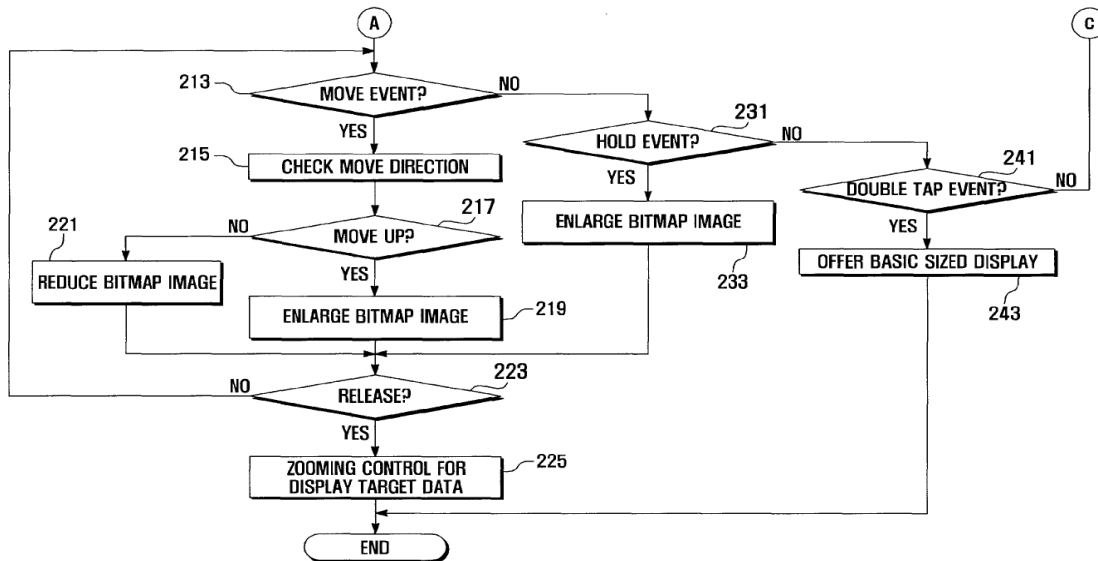
2. *User gestures in “zoom mode”*

43. Figures 2B and 7 illustrate detection of user gestures and responsive functions in zoom mode. EX1004, [0046], [0093] (describing FIG. 7 as illustrating “a process of executing a zooming function depending on a user gesture while a zoom mode is activated”). Specifically, Kim explains that after the mobile device activates the zoom mode it “waits for a user input, especially based on a gesture.” EX1004, [0051], FIG. 2a (211). I agree with Dr. Cockburn that, after activating zoom

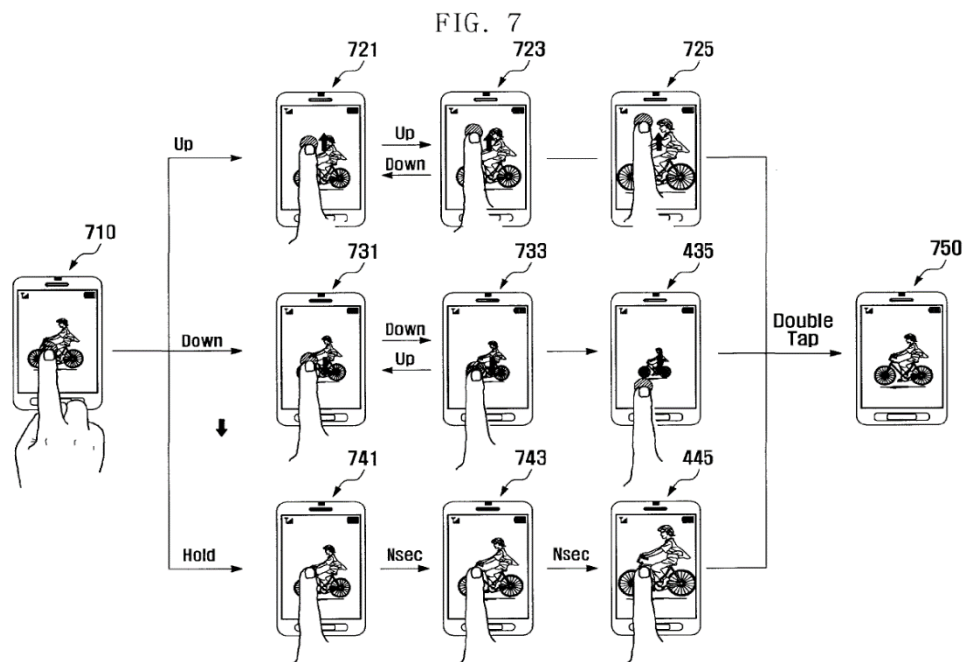
mode in step 209 in Figure 2a, Kim teaches waiting for an additional user input at step 211. EX2013, 44:5-7, 44:20-22. That is, the “user input” in “wait for user input” at step 211 is not a continuation of the same input/interrupt that resulted in the activation of the zoom mode at step 209. Kim makes this clear at paragraph [0052] where it explains that, at step 211, Kim’s device measures the passage of time “until a user gesture input is detected.” In other words, the duration of Kim’s “hold event” or long press gesture that activates zoom mode at step 209 necessarily ends before the duration of the subsequent (and different) “hold event” or long press gesture that performs a continuous zooming function begins.

44. Upon detecting a user gesture while in zoom mode, the mobile device “determines **the type** of an input event,” including whether the gesture is “a move event,” “a hold event,” or “a double tap event.” EX1004, [0053], FIG. 2b (hold event, 231; double tap, 241). That is, Kim teaches—while in a zoom mode—performing a *different* function depending on *the type* of gesture—e.g., whether the gesture is “a move event,” “a hold event,” on one hand or “a double tap event” on the other hand. EX1004, FIG. 2b (213, 231, 241), FIG. 7.

FIG. 2b



45. Figure 7 illustrates “perform[ing] a continuous zooming function” through “a hold event” at steps 741, 743, and 745 (EX1004, [0061]–[0063], [0095], [0104]–[0106]); and “returning to an initial state with a basic display size” via “a double tap event” at step 750 (EX1004, [0031], [0106]).



46. Separately, “*thereafter*, a user can invoke a double tap event on the screen.” EX1004, [0106], FIG. 2b (241). “*Then*, in response to the double tap event, the mobile device displays target data with a given basic magnification value, as indicated by the reference number 750.” EX1004, [0106], FIG. 2b (243), [0064].

47. Finally, Kim explains that, while in zoom mode, if the detected user gesture does not “correspond[] to” a “move event,” a “hold event,” or “a double tap event,” the mobile device “disregards the received input event and then proceeds to the previous step 211.” EX1004, [0053], FIGs. 2a, 2b. That is, Kim teaches disregarding an unrecognized gesture once the device is already in zoom mode. EX1004, [0053], FIGs. 2a, 2b. A POSITA would not understand this disclosure to refer to a minimum threshold of an intentional user input. Rather, this disclosure merely notes that there may be recognizable gestures (*e.g.*, a tap) for which no function is assigned in zoom mode and that such gestures are ignored. That is, Kim teaches that, while zoom mode is activated, if a user gesture is received that is not a move event, hold event, or a double tap event, then the mobile device ignores the gesture and returns to step 211. A POSITA would not understand from this disclosure, which occurs while the device is in zoom mode, that Kim is referring to a minimum threshold to be deemed an intentional touch, as the Petition states at pages 25-26. Instead, Kim is simply explaining that there may be gestures, *e.g.*, a

tap, which are recognized but have no corresponding function when Kim's device is in zoom mode.

B. U.S. Patent Application Publication No. 2009/0273571 to Bowens (“Bowens”)

48. Petitioner does not rely on Bowens to alter the functionality disclosed by Kim. Pet., 53; EX1003, ¶¶167-170. Rather, Petitioner asserts that “Kim leaves to well-informed POSITAs various specific implementation details pertaining to how the system identifies and differentiates the various touches and gestures” and Bowens provides such details by describing “various types of user actions and how each is identified.” Pet., 52-53; EX1003, ¶¶164-166.

49. Bowens discloses a “state machine gesture recognition algorithm for interpreting streams of coordinates received from a touch sensor.” EX1005, Abstract. Bowens discloses using a state machine to recognize gestures including “a tap,” which occurs “when the user quickly touches and releases the touch surface” (EX1005, [0056]); “a double tap,” which occurs “when the user quickly touches and releases the touch surface twice in quick succession” (EX1005, [0057]); and “a press,” which occurs “when the user touches and holds the touch surface” (EX1005, [0058]).

50. Bowens also discloses an “Idle state,” that “occurs whenever a user is not touching the touch surface.” EX1005, [0079]. Bowens explains that “no actions

[are] triggered by entering” the Idle state, and “no actions [are] performed while” in that state. EX1005, [0079].

51. Upon detecting a single-finger touch while in an Idle state, the state machine “transition[s] into a Touched state.” EX1005, [0079]. As soon as the Touched state is entered, “a timeout is started,” which is “used to distinguish between short duration gestures such as . . . taps and long duration gestures such as a press.” EX1005, [0080], FIG. 1 (“entry/timer(t_{tap})” in “Touched” state).

52. “[I]f the timeout expires” while the user is touching the touch surface, “the state machine . . . generate[s] a press event and then enters the Pressed state.” EX1005, [0080], FIG. 1. But, “[i]f the user releases their touch [before the timeout expires], the state machine enters the Second Tap Pending state,” and “[s]ubsequent actions will determine if a tap, double tap, or other gesture is later generated.” EX1005, [0080]. After the release of a tap, and entering the Second Tap Pending state, the “initial touch location is stored.” EX1005, [0081]. The timeout “is used to decide if the user has made a [single] tap gesture,” whereas the initial touch location “is used to decide if the user is making a double tap gesture.” EX1005, [0081].

53. If the timeout expires before a second touch is detected, “a [single] tap event is generated and the state machine enters the Idle state.” EX1005, [0081]. But “if the user touches the surface again before the timeout expires” and “the distance of the second touch from the first” is “less than a specified value,” the state machine

“enters the Double Tap Pending state.” EX1005, [0081], FIG. 1 (“press near tl [touch location]”).

54. Upon entering the Double Tap Pending state, “a timeout is started,” which “is used to decide if the user is making a double tap gesture.” EX1005, [0082]. Bowens explains that “if the user releases their touch” before the timeout expires, “the state machine generates a double tap event and enters the Idle state.” EX1005, [0082]. But, if the timeout expires before the user releases their touch, “it is assumed that the user has tapped and then touched and held the surface,” so “tap and press events are generated and the state machine enters the Pressed state.” EX1005, [0082].

C. U.S. Patent Application Publication No. 2010/0156818 to Burrough (“Burrough”)

55. Burrough discloses “a multi-touch touch screen” “and identifying at least one multi-touch gesture based on the data from the multi-touch sensing device and providing an appropriate multi-haptic response.” EX1007, Abstract. Petitioner asserts that “Burrough teaches providing haptic feedback in response to user input, including zooming operations” (Pet., 46; EX1003, ¶136), but this overstates Burrough’s disclosure. The portions of Burrough to which Petitioner cites only disclose providing haptic feedback *during* an ongoing “zoom gesture,” not as a response to the user entering into a zoom mode. EX1007, [0079]-[0081].

56. Burrough discloses providing haptic feedback to indicate the status of an ongoing zoom gesture where the feedback may change based on the distance traveled and pressure applied by multiple fingers engaging the ongoing zoom gesture. EX1007, [0079]-[0081]. Specifically, Burrough discloses that “[i]f the distance between the two fingers increases (spread[s] apart) at 1110, a zoom-in signal is generated,” and the “zoom-in signal, in turn, causes the haptic devices associated with the two fingers to provide a zoom-in haptic signal.” EX1007, [0080]; FIG. 11 (1116). That is, Burrough discloses providing haptic feedback “*as* the distance between the two fingers increases [or decreases].” EX1007, [0080]; EX1007, [0081] (“In most cases, the amount of zooming and the associated haptic effect varies according to the distance between the two objects” associated with “the set down of the fingers.... [A]s the fingers spread apart or close[] together, the object zooms in or zooms out at the same time and the corresponding haptic effect will change.”).

IX. CLAIM INTERPRETATION

A. “Conditional” Limitations: Claims 1, 32, 34, and 64²

57. Limitations [1.f, 1.g and 1.i], [32.f, 32.g and 32.i], [34.g, 34.h and 34.j] and [64.g, 64.h and 64.j] collectively recite three actions to be performed “[when]/[based on]/[in response to]” a “[a]/[the] magnitude of [a]/[the] duration of **the** gesture being detected” meeting recited criteria of being “less than” or “greater than” a recited threshold. These Limitations collectively describe logical functions/steps to process instances of user input on a touch screen that *begin* at a common starting point—the detection of the “gesture on the touch screen on the object.” This is consistent with “decision-tree” and detection logic for detecting multi-part pattern-based gestures as described in connection with Figure 23 of the ’114 Patent and Figure 24 of the ’918 Provisional. EX1001, FIG. 23; EX2010, FIG. 24.

1. [A] / [The] Gesture and Magnitude Of [A] / [The] Duration of The Gesture

58. The claim language itself defines the recited “gesture” as a user touch initially detected “on the touch screen at the object.” Limitations [1.e], [32.e], [34.f],

² I understand that the term “conditional” is being used to refer to limitations that recite an action to be performed when a precondition (*e.g.* detecting a gesture on the touchscreen) is met.

[64.f]. As explained in Section VI.A, above, “gestures” include multi-action “pattern-based gestures” that “may be recognized in the form of an ordered sequence” by, for example, “using a decision tree.” EX1001, 75:24-26; EX2010, [00581]. Accordingly, “component of the gesture being detected,” consistent with the specification and plain meaning, refers to one component of a multi-part gesture. In sum, a gesture may have multiple components, but the gesture repeatedly referenced in the claims is a user input that begins with detection of a touch on an object on the touch screen. A user input that begins at an intermediate component of a multi-component gesture is not the gesture.

59. The claim language itself also defines what is meant by a “duration of the gesture.” Specifically, the plain language conveys that a “duration of the gesture” is the magnitude of a period that begins when the gesture begins—which is upon detection of the touch on the touch screen.³ EX2004 (“duration” means “the time during which something exists or lasts”); EX2005 (“duration” means “the time during which something continues”). A period that starts after the gesture is not a duration of the gesture. Applying this plain language to each of the three logical instances:

³ A POSITA would understand that “magnitude of a duration” includes the length of the duration.

- “[when]/[based on]/[in response to] a magnitude of a duration of **the** **gesture** being detected on the touch screen on the object is less than a first magnitude threshold, perform an [operation]/function]” refers to logic determining that **the length of a period of time beginning at the start of the gesture and ending at the conclusion of the gesture is less than a first magnitude threshold.**⁴
- “[when]/[based on]/[in response to] the magnitude of the duration of **the** **gesture** being detected on the touch screen on the object is greater than the first magnitude threshold, perform a scaling ...” refers to logic determining that **the length of a period of time beginning at the start of the gesture and ending at the time of the execution of the logic or at the conclusion of the gesture is greater than a first magnitude threshold.**

⁴ A POSITA would understand that that the “duration” in this first logical Limitation refers to a period from the start of the gesture to after the gesture has concluded because determining that a duration is *less* than a threshold requires the duration be concluded and fixed. This is reinforced by the plain language of Limitation [32.f], which refers to “cessation of the gesture being detected.”

- “[when]/[based on]/[in response to] the magnitude of the duration of **the gesture** being detected on the touch screen on the object is greater than a second magnitude threshold, perform another [operation]/[function]” refers to logic determining that **the length of a period of time beginning at the start of the gesture and ending at the time of the execution of the logic or at the conclusion of the gesture is greater than a second magnitude threshold.**

60. With this context, the antecedent bases “the duration of” and “the gesture” indicate that evaluating the preconditions recited in each Limitation requires evaluating instances of user input beginning at a common starting point. Here, the plain language of the claims defines that common starting point as the initial detection of a user touch “on the touch screen at the object.” Limitations [1.e], [32.e], [34.f], [64.f]. Accordingly, it is not sufficient, in collectively mapping the conditional Limitations, to point to logic in the prior art for detection of gestures that do not share the common starting point or that are determined based on “durations” starting at any point other than the common starting point.

61. At the same time, because the claims refer to the logic used to evaluate numerous instances of user input, it is not necessary that the prior art include logic where the preconditions for each Limitation would be met in response to a single user input. This is again consistent with “decision-tree” and detection logic for

detecting multi-part pattern-based gestures as described in connection with Figure 23 of the '114 Patent and Figure 24 of the incorporated-by-reference '918 Provisional as further discussed in Section VI.A, above. It is also consistent with the fact that some, but not all, of the Limitations recite mutually-exclusive preconditions such that requiring all preconditions to be met in response to a single instance of user input is contrary to the plain claim language. For example, a single instance of user input that met Limitation [1.f] would not also meet [1.g] or [1.i] and, vice versa, and a single instance of user input that met Limitation [1.g] may also, but need not, meet Limitation [1.i].

2. Conditional Claims Are Not Optional

62. Nothing in the language of Claims 1, 32, 34 and 64 suggests any of the recited conditional Limitations are optional or may be ignored in mapping the prior art. As explained below, Limitation [1.f] will not be met during the same instance of a user touch as Limitations [1.g] or [1.i] (and vice versa).⁵ Additionally, Claims 34 and 64 include multiple conditional steps that specify different actions based on evaluation of the touch input against various criteria that must be performed when a precondition is met. Each condition leads to a different action, or set of actions, and understanding the claim fully requires evaluating all possible conditions and their

⁵ This is also true of the similar Limitations in Claims 32, 34, and 64.

corresponding actions. Further, claims 34 and 64 here recite the context of the method being performed “at an apparatus including a watch [with] / [having] ... a touch screen” (Limitation [84.a]), which, as discussed above, connotes a group of logic all expected to be met when a given precondition applies.

3. *Answers To The Board’s Specific Questions (Paper 10)*

63. I understand that the Board had specific questions regarding claim construction in its order for conduct of the proceedings. Section IX.A.1 provides explicit definitions of “gesture,” “magnitude of a duration of the gesture,” and “component of a gesture” and explains the impact of the antecedent basis “the” used with those terms. Sections VI.A and IX.A.1 identify relevant corresponding specification description. Section IX.A.2 addresses the impact of conditional language on what is necessary to map the claims. Applying that explanation:

64. “[W]hether conditional limitations [1.f, 1.g. and 1.i] could be met by a single detected gesture.” A single instance of user input that met Limitation [1.f] would not also meet [1.g] or [1.i] and, vice versa. A single instance of user input that met Limitation [1.g] may also, but need not, meet Limitation [1.i]. This is fully consistent with the Claims’ recitation of logic used to evaluate numerous instances of user input all meeting the requirements of “the duration.”

65. “[W]hether conditional limitations [1.f, 1.g, and 1.i] present alternatives such that no magnitude of the duration of a single detected gesture could

meet all three limitations.” The Limitations present different logical components, each of which must be met when the recited precondition is met. A single instance of user input will not meet all three Limitations. This is fully consistent with the Claims’ recitation of logic used to evaluate numerous instances of user input all meeting the requirements of “duration of **the** gesture.”

66. “[W]hether conditional limitations [1.f, 1.g, and 1.i] could be met by different gestures in which each gesture has a different duration that satisfies different alternatives.” The plain language does not permit pointing to “**different** gestures.” The plain language permits different instances of user input all meeting the requirements of “duration of **the** gesture.” The plain language defines **the** “gesture” as a user touch initially detected “on the touch screen at the object” that is the evaluated under the collective logic recited by the conditional Limitations.

67. “[W]hether or not all of conditional limitations [1.f, 1.g, and 1.i] need to be met in order to satisfy the claim and, if not all, which ones need to be met.” As explained in Section IX.A.2, the alleged prior art combination includes ***logic*** meeting each Limitation such that each Limitation will be performed when presented with an instance of user input when their given preconditions apply.

68. Regarding differences in claim language across independent claims, the differences identified below apply universally to each of Claims 1, 32, 34, and 64. Beyond the application of “second magnitude threshold” in each claim discussed

below, Claims 1 and 32's use of "when," Claim 34's use of "based on," and Claim 64's use of "in response to" all reflect the context of each of those claims in applying programming logic and the causal-connection is a tenant of programming logic.

X. CLAIMS 1, 32, 34, AND 64: "[THE] GESTURE BEING DETECTED"

A. Petitioner Maps "[T]he Gesture Being Detected" Limitations To Three Different Gestures

69. Petitioner asserts that, via the use of the indefinite article "**a**" in "**a** gesture," in Limitations [1.e], [32.e], [34.f] and [64.f] that any gesture can meet those Limitations. Pet., 18-20; EX1003, ¶¶52-53; EX2013, 116:12-14. To meet the "**a** gesture" language in these Limitations, Petitioner identifies Kim's Figure 7 and states that "Kim describes 'a continuous zoom-in action depending on a hold event.'" Pet., 18 (quoting EX1004, [0104]); EX1003, ¶52. Petitioner also generally asserts that "Kim provides various examples of gestures detected on the touch screen." Pet., 19; Pet., 62 (identifying generally under Ground 2, Bowens' "different gesture inputs, such as a tap, a press, and a long press"); EX1003, ¶¶52, 189.

70. No less than three times in each of Claims 1, 32, 34 and 64, the plain claim language refers to "**the** gesture being detected." The references to "**the** gesture being detected" plainly refer back to the "**a** gesture" that was "detect[ed] ... on the touch screen on the object" in Limitations [1.e], [32.e], [34.f] and [64.f]. A POSITA would understand that the use of "**the** gesture" references a single gesture. Yet, Petitioner points instead to **three different** gestures for each of the three recitations

of “the gesture” — *one* gesture that meets Limitations [1.f, 32.f, 34.g and 64.g], *another* gesture that meets Limitations [1.g, 32.g, 34.h and 64.h], and *yet another* gesture that meets Limitations [1.i, 32.i, 34.j and 64.j].

71. Petitioner identifies Kim’s “double tap event” as meeting “the gesture” in Limitations [1.f], [32.f], [34.g] and [64.g], under both Grounds 1 and 2. Pet., 20 (citing EX1004, [0031], [0064], [0099], [0103], [0106]); EX1003, ¶104; EX2013, 56:10-11 (explaining the gesture analyzed for Limitation [1.f] “is the double tap gesture”); EX2013, 109:9-11. Petitioner then maps the “the gesture” of Limitations [1.f], [32.f], [34.g] and [64.g] to Kim’s “double tap” gesture. After identifying the double tap as “the gesture” in Limitations [1.f], [32.f], [34.g] and [64.g], Petitioner then identifies a different gesture, Kim’s “hold event” or long press, to meet the “the gesture” in Limitations [1.g], [32.g], [34.h] and [64.h]. Pet., 21 (quoting EX1004, [0104]); EX1003, ¶56; EX2013, 99:17-100:1 (“Under the analysis of limitation [1.g] ... I’m analyzing how Bowens’ disclosures of a ‘tap and hold’ or ‘long press’ would satisfy the limitation” — not a double tap.”); 80:12-13 (explaining the analysis for Limitation [32.g] includes “no explicit mention of a double tap”). Then, to meet the “the gesture” language of Limitations [1.i], [32.i], [34.j] and [64.j], Petitioner points to an unidentified “user gesture” or interrupt in Kim. Pet., 26 (citing EX1004, [0050], FIG. 2a; EX1003, ¶64). Petitioner, however, recognizes that Kim’s “user gesture” is neither the hold event (or long press) mapped to Limitation [1.g] nor the double tap

mapped to Limitation [1.f]: “A POSITA would have understood that such an interrupt would be caused by a gesture that is ... *shorter than the duration necessary for a long press threshold*[] and *a different gesture than a double tap gesture*.” Pet., 26 (citing EX1003, ¶64).

72. For “the gesture” of Limitations [1.i], [32.i], [34.j], and [64.j] under Ground 2, the Petition identifies a simple “tap gesture” as described in Bowens. Pet., 68 (citing EX1003, ¶195). Petitioner’s expert confirmed that Bowens’ tap gesture is neither the hold event (or long press) mapped to Limitation [1.g] nor the double tap mapped to Limitation [1.f]: “To be clear, in [the analysis of Limitation [1.i]], I am not analyzing how Bowens’ disclosures of a press event or the pressed state would satisfy this limitation. Instead, I’m analyzing how Bowens’ disclosures of a *tap event* would satisfy the limitation.” EX2013, 100:11-17. Thus, after first identifying a double tap as “the gesture” corresponding to Limitation [1.f] and then identifying a hold event as “the gesture” corresponding to Limitation [1.g], the Petition now points to yet a different tap gesture to correspond to Limitation [1.i].

73. Based on the plain meaning of the claim language, a POSITA would understand that each recitation of “the gesture” is the *same* gesture. Thus, under both Grounds 1 and 2 — for each of Limitations [1.f, 1.g, 1.i], [32.f, 32.g, 32.i], [34.g, 34.h, 34.j] and [64.g, 64.h, 64.j] — Petitioner incorrectly maps each recitation of “the gesture” to a different gesture.

B. Petitioner's Mapping Of The "Duration Of The Gesture" Limitation

1. Plain meaning of "duration of the gesture"

74. Limitations [1.f], [1.g] and [1.i] recite instructions to perform specified actions (e.g., "an operation," "a scaling," "another operation") "when" it is determined that a user's contact with the touch screen satisfies certain conditions. Limitation [1.f] recites, in relevant part, "a duration of the gesture." A POSITA would understand that the plain claim language, "detect a gesture on the touch screen on the object," coupled with the subsequent language, "a duration of the gesture," requires a gesture that begins upon the initial detection of the gesture. Limitations [1.e], [1.f]; EX2013, 36:12-15 ("[A] person of skill in the art would understand that the initiation of contact could be one point at which time measurements begin."). That specific gesture, as already discussed, would be evaluated for the remaining limitations of the Challenged Claim.

a) Claim 1

75. The language, "a duration," defines a characteristic of "the gesture," and introduces a timing element to "the gesture" that is "detect[ed]" in Limitation [1.e]. Even though the timing recited in Limitations [1.f] and [1.g] differs, Claim 1 still requires evaluating the specifically detected gesture to determine if it meets one of the timing requirements. Moreover, the plain meaning of "the duration of the gesture" in each of Limitations [1.g] and [1.i], requires that the subject of the analysis

is “**the** duration” that was introduced in Limitation [1.f] of “**the** gesture” detected in Limitation [1.e]. Hence, the duration of the gesture being evaluated must be evaluated from the same point in time.

76. This interpretation is further confirmed when considering other language of Limitations [1.f], [1.g] and [1.i]. Specifically, those limitations recite that it is the gesture “**being** detected on the touch screen on the object” that is the subject of the analysis. Dr. Cockburn agrees that this active language (“being”) indicates that it is the gesture that is currently being detected that is under evaluation: “[L]imitation [32.g] requires a second component of the gesture is detected where the magnitude of the duration of the gesture being detected -- so the limitation is clear that there is a gesture that is being detected. It is underway of being detected.” EX2013, 117:11-17. This language, “**being** detected,” requires that the gesture being evaluated is a single gesture. That is, the gesture being evaluated is a single continuous touch (or contact) “on the touch screen on the [first] object.”

77. That each of Limitations [1.f], [1.g], and [1.i] may not be fully met in response to a single instantiation of a gesture is not inconsistent with a POSITA’s understanding that Claim 1 requires a single continuous interaction with the touch screen. For example, Limitation [1.f] recites “when ... **a** duration of **the** gesture being detected on the touch screen on the object is less than a first magnitude threshold, perform an action.” Limitation [1.g] recites “when ... **the** duration of **the**

gesture being detected on the touch screen on the object is greater than the first magnitude threshold, perform a scaling in connection with at least the object.” A POSITA understands that the action recited in Limitation [1.f] is not performed at the same time as the action recited in Limitation [1.g]. That is, a POSITA understands that the logic recited by Claim 1 includes at least two claimed paths that are distinguished from one another by the “first magnitude threshold.”

78. Specifically, a POSITA understands that to “perform an operation” as recited in Limitation [1.f], the duration of the user’s single continuous touch must be “less than a first magnitude threshold.” A POSITA also understands that to “perform a scaling” as recited in Limitation [1.g], the duration of the user’s single continuous touch must be “greater than the first magnitude threshold.” A POSITA further understands that to “perform another operation” as recited in Limitation [1.i], the duration of the user’s single continuous touch must be greater than *both* the “first magnitude threshold” and the “second magnitude threshold.”

79. Specifically, Limitation [1.f] requires that the action is performed “when” the user’s single continuous interaction with the touch screen, *i.e.* the gesture, is removed from the touch screen prior to the “first magnitude threshold.” Limitation [1.f]. Whether or not the recited action in Limitation [1.f] is performed, the evaluation of the “duration of the gesture” in Limitation [1.f] must occur.

b) Claim 32

80. The “duration of **the** gesture” in Limitation [32.f] also requires that the action is performed “**when**” the user’s single continuous touch is removed from the touch screen prior to the “first magnitude threshold.” Limitation [1.f]. Limitation 32(f) expressly states that: “when a first component of **the** gesture is detected where a magnitude of a duration of **the** gesture being detected on the touch screen on the first object is less than a first magnitude threshold, perform a function **upon a cessation of the gesture being detected.**” Limitation [64.g] (“performing a function upon a cessation of **the** gesture being detected”).

81. Claim 32 expressly recognizes that the “function” recited in Limitation [32.f] and the “scale operation” recited in Limitation [32.g] will not be met during the same instantiation of the already detected gesture. Limitations [32.f], [32.g]. That Limitation [32.f] expressly claims performing “a function” “upon a cessation of **the** gesture being detected,” but Limitations [32.g] and [32.i] contain no express mention of a “cessation” indicates that the actions recited in each of Limitations [32.g] and [32.i] may be performed in response to the single gesture, not just upon its cessation.

82. Specifically, the “scale operation” recited in Limitation [32.g] is performed “**when**” “**the** duration of **the** gesture being detected on the touch screen on the first object is greater than the first magnitude threshold.” And the “another function” recited in Limitation [32.i] is performed “**when**” “**the** duration of **the**

gesture being detected on the touch screen on the first object is greater than a second magnitude threshold.” That is, the action recited in Limitation [32.g] and the action recited in Limitation [32.i] are performed sequentially in response to a single continuous interaction with the touch screen satisfying the respective conditions. Limitations [32.g], [32.i], [64.h], [64.j].

83. Accordingly, it is not sufficient to point to logic in the prior art that detects gestures that do not share the same starting point, as Petitioner has done.

2. *Petitioner’s mapping of “the duration of the gesture”*

84. Petitioner identifies Kim’s “double tap event” that “return[s] to an initial state with a basic display size **after a zoom-in or zoom-out action**” to meet Limitation [1.f], Pet., 20; EX1003, ¶54. However, instead of pointing to the duration of the first gesture (the hold gesture that causes the continuous zoom) as meeting the first duration limitation, Petitioner points to the later used double tap gesture that “comprises two short duration taps in quick succession” as the gesture that meets the first duration, instead of treating the double tap gesture as the corresponding second duration (since it is the later referenced gesture in Petitioner’s mapping). Pet., 20; EX1003, ¶54.

85. To satisfy the “duration” requirement for Limitation [1.g], Petitioner references Kim’s Figure 7 and asserts that a “POSITA would have understood that Kim’s long press would be discriminated from a normal press based on the contact

being maintained (without moving) for longer than a threshold duration.” Pet., 22 (citing EX1004, [0140]); EX1003, ¶59. But, Petitioner’s mapping misses the mark. This second gesture depends on a duration that begins only after Kim’s device enters the zoom mode, at the start of the “long press” or “hold event.” EX1004, [0051]-[0053], [0095] (“*[a]fter* the zoom mode is activated, a user can ... perform a continuous zooming function”). Dr. Cockburn recognizes as much: “[A]t step 211, [Kim’s] device is waiting for subsequent user input ... in the zoom mode.” EX2013, 44:5-7. In other words, step 211 of Kim describes waiting for **another/different** gesture — i.e., step 211 of Kim is not a continuation of the same gesture that activates the zoom mode.

86. Finally, Petitioner points to an unnamed third different gesture that occurs before the device enters the zoom mode to meet Limitation [1.i]. Because this third gesture can only happen before Kim’s mobile device enters the zoom mode (during which the first and second identified gestures occur), the duration of this third gesture necessarily ends before either of the first (“long press” or “hold event”) or second (“double tap”) gestures can begin.

3. Petitioner’s mapping of Limitations [1.g] and [1.i] does not result in performance of a “scaling” and performance of “another operation”

a) Ground 1 (Kim)

87. As previously discussed, Petitioner maps the “scaling” of Limitation [1.g] to Kim’s “continuous zoom-in action depending on a hold event.” Then for the “first magnitude threshold” of Limitation [1.g], Petitioner identifies Kim’s “threshold value associated with a hold event.” Pet., 21; EX1003, ¶56. Petitioner then concludes that Kim performs a continuous zoom-in or zoom-out function (the “scaling”) in response to the duration of the hold event (the “**the** gesture” limitation) surpassing the threshold associated with the hold event (the “first magnitude threshold”). But, Petitioner’s mapping once again is not on point.

88. For the “another operation” of Limitation [1.i], Petitioner maps Kim’s “‘perform other action’ (e.g., display[ing] requested menu)” in response to a user gesture or “interrupt [that] is not a request for the activation of the zoom mode.” Pet., 24-26; EX1003, ¶¶62-64. Petitioner then maps the “second magnitude threshold” of Limitation [1.i] to Kim’s “minimum threshold to be deemed an intentional touch.” Pet., 24; EX1003, ¶62. Petitioner then asserts that Kim displays a menu (the “another operation”) in response to the duration of an interrupt (the “**the** gesture” limitation) surpassing the threshold associated with an intentional touch (the “second magnitude threshold”).

89. But, Kim’s “continuous zooming” and “displaying a menu” functions cannot both occur “when” the preconditions recited in each of Limitations [1.g] and [1.i] are met by a single continuous gesture. The alleged gesture mapped to “the gesture” in Limitation [1.i] occurs **before** the device enters zoom mode. And Kim’s zoom mode is a necessary predicate to the continuous zooming function mapped to “the gesture” of Limitation [1.g]. Thus, even assuming “the gesture” of Limitation [1.g] can be a different gesture than “the gesture” mapped to Limitation [1.i], Petitioner’s mapping does not show a device that performs both a scaling and another operation when the respective preconditions in each of Limitations [1.g] and [1.i] are met by a single continuous gesture.

90. Claim 1 includes a processor executing instructions that detect a single gesture and, first, evaluates whether the duration of that gesture is less than a first magnitude threshold and, when it is not, perform both a scaling and another function “when” the preconditions recited in Limitations [1.g] and [1.i] are respectively met. Petitioner has not shown that Kim’s device includes logic executing these functions in response to a single continuous gesture.

b) Ground 2 (Kim-Bowens)

91. Petitioner’s mapping for Limitation [1.g] is the same for Grounds 1 and 2. For Ground 2 of Limitation [1.i]), Petitioner identifies “perform[ing] another operation (activating the hyperlink)” when “the ‘timeout/tap’ transition from

SecondTapPending to Idle” is reached. Pet., 67-68; EX1003, ¶195. Thus, for Ground 2, Petitioner maps the “another [operation]/[function]” to “activating the hyperlink” and maps the “second magnitude threshold” to exceeding a “timeout/tap” threshold measured from the release of a first tap waiting to see if a second tap occurs. Pet., 67-68; EX1003, ¶195.

92. But, Kim’s “continuous zoom-in or zoom-out” and Bowens’ “activating the hyperlink” cannot both occur “when” the preconditions recited in each of Limitations [1.g] and [1.i] are met. The Petition does not explain when or where this functionality would be present in the “Kim-Bowens-Device.” Pet., 53-62; EX1003, ¶¶167-182. But Kim explains that the gestures recognized during “zoom mode” are “move,” “hold,” and “double-tap,” and “[i]f the input event corresponds to none of them, the mobile device disregards the received input event.” EX1004, [0064]. Thus, a “tap” user input that causes activating a hyperlink could only occur when Kim’s mobile device is not in the zoom mode. EX1004, [0064].

93. Thus, under both Grounds 1 and 2, Claims 1, 32, 34 and 64 include a processor executing instructions that detect a single gesture and, first, evaluates whether the duration of that gesture is less than a first magnitude threshold and, when it is not, perform both a scaling and another function “when” the preconditions recited in Limitations [1.g] [1.i] and the corresponding limitations in Claims 32, 34

and 64 are respectively met. Petitioner has not shown that Kim's device includes logic executing these functions in response to a single continuous gesture.

C. These “Gesture” and “Duration” Defects Are Present in All Grounds of All of Claims 1, 32, 34 and 64

94. The defects in Petitioner's mappings detailed in connection with Ground 1A for Claim 1 are also present in Ground 2A for Claim 1. Pet., 62 (for Limitation [1.e], referencing Ground 1A Limitation [1.e] and adding that Bowens teaches “different gesture inputs, such as a tap, a press, and a long press”), 64-66 (for Limitation [1.g], also identifying a “long press” as the gesture for a continuous zoom-in function when Kim's device is in its zoom mode), 62-64 (for Limitation [1.f], also identifying a “double tap” as the gesture to return to normal zoom state *after* completion of Kim's “long press” and corresponding continuous zoom-in function), 67-68 (for Limitation [1.i], identifying a “tap” gesture, again, prior to Kim's device entering its zoom mode); EX1003, ¶¶189-192, 195.

95. These defects in Petitioner's mappings are also present for:

- **Claim 32** in Grounds 1A and 2A. Pet., 38 (for Ground 1A Limitation [32.e], referencing Ground 1A Limitation [1.e]), 39 (for Ground 1A Limitation [32.f], referencing Ground 1A Limitation [1.f]), 39-40 (for Ground 1A Limitation [32.g], referencing Ground 1A Limitation [1.g]), 41 (for Ground 1A Limitation [32.i], referencing Ground 1A Limitation [1.i]), 75-76 (for Ground 2A Limitation [32.e], referencing

Ground 1A Limitation [32.e]), 76-77 (for Ground 2A Limitation [32.f], referencing Ground 2A Limitation [1.f]), 77-78 (for Ground 2A Limitation [32.g], referencing Ground 2A Limitation [1.g]), 78-79 (for Ground 2A Limitation [32.i], referencing Ground 2A Limitation [1.i]); EX1003, ¶¶102-105, 107, 216-218, 220;

- **Claim 34** in Grounds 1B and 2B. Pet., 43 (for Ground 1B Limitations [34.b]-[34.j], referencing Ground 1A Limitations [1.a]-[1.i]), 80 (for Ground 2B Limitations [34.b]-[34.j], referencing Ground 2A Limitations [1.a]-[1.i]); EX1003, ¶¶114-122, 224-232; and
- **Claim 64** in Grounds 1B and 2B. Pet., 44 (for Ground 1B Limitations [64.e]-[64.j], referencing Ground 1A Limitations [32.d]-[32.i]), 80 (for Ground 2B Limitations [64.e]-[64.j], referencing Ground 2A Limitations [32.d]-[32.i]); EX1003, 70, ¶¶248-253.

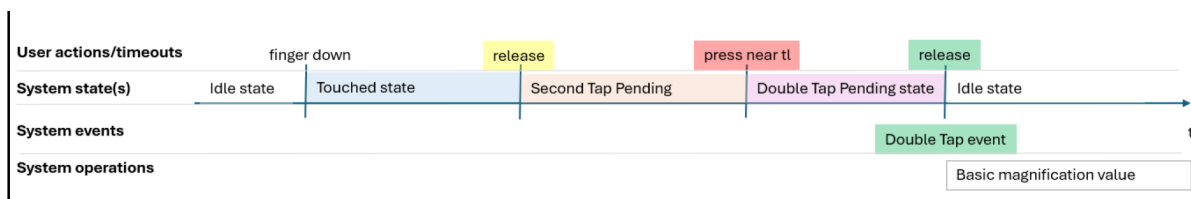
XI. CLAIMS 1, 32, 34 AND 64: “AN OPERATION/FUNCTION” AND “ANOTHER OPERATION/FUNCTION”

A. The Petition Does Not Demonstrate that Performance of the Mapped “Operation/Function” Occurs “When”/“Based On”/“In Response To” “a Duration of the Gesture” “is Less Than A First Magnitude Threshold”

96. Claims 1, 32, 34 and 64 each recite “perform[ing] an [operation]/[function]” “[when]/[based on]/[in response to]” “a magnitude of a

duration of the gesture being detected on the touch screen ... is less than a first magnitude threshold.” Limitation [1.f], [32.f], [34.g], [64.g]. Petitioner maps “returning to an initial state with a basic display size after a zoom-in or zoom-out action” to the claimed “perform[ing] an operation.” Pet., 20; EX1003, ¶¶54-55. Petitioner asserts that the two taps of the “double tap event” “collectively have a duration shorter than a threshold duration associated with a more persistent gesture (e.g., a hold).” Pet., 20; EX1003, ¶54. Petitioner thus determines “*the* gesture” in its mapping to be “a double tap” and the “first threshold” as “a threshold duration associated with a more persistent gesture (e.g., a hold).” Pet., 20; EX1003, ¶54. Having done so, Petitioner’s own explanation confirms that neither Kim nor Kim-Bowens detect a “double tap” gesture based on the duration *of that double-tap gesture* being less than a “hold” threshold.

97. As explained above, Bowens discloses determining that a double-tap occurred by passing through a number of states, each associated with a different threshold and analysis. EX1007, [0080]–[0082]; EX1007, FIG. 1. Indeed, Petitioner’s own illustration confirms that recognizing a “double tap event” requires passing, in order, through three states:



Pet., 64; EX1003, ¶190.

98. Petitioner asserts that this sequence is sufficient to meet the claim language because “the release must occur before the ‘timeout/ tap, press’ transition from the Double Tap Pending state to the Pressed state.” Pet., 63; EX1003, ¶190. But, by its own words, this is a measure of the time (duration) spent in the “Double Tap Pending state,” not the duration *of the double-tap gesture*, which began on the “finger down” when exiting the “Idle state” several states earlier. Plainly, this mapping does not meet the claim language.

99. Indeed, Petitioner acknowledges that to make this argument it is re-defining the gesture: “*The duration of each of the taps* of the double tap gesture is ‘a duration of the gesture.’” Pet., 63; EX1003, ¶190. But, as discussed previously, “the duration of a tap” is not “the duration *of the gesture*”—it is, at best, the duration of a component of the gesture. Petitioner asserts that a “POSITA would have understood that gesture recognition encompasses identification of multiple components of touch data.” Pet., 63; EX1003, ¶190. But, even if one were to accept this assertion as true, the plain language of the claim “duration *of the gesture*” cannot be replaced with “duration *of a component of the gesture*.”

100. The Challenged Claims differentiate among “**the gesture**” and “**a component of the gesture**.” For example, Claim 32, in portions of the claim not at issue here, refers to “a first component of the gesture,” “a second component of the

gesture,” and “a third component of the gesture.” But, it also separately refers to “*the* duration of *the* gesture” — which is the element in dispute. Limitations [32.f], [32.g], [32.i]. Petitioner cannot ignore this language in the claim and then treat the terms “**the gesture**” and “**a component of the gesture**” identically in its invalidity mapping.

B. The Petition Does Not Demonstrate That Performance of the Mapped “Another Operation/Function” Occurs “When”/“Based On”/“In Response To” “the Duration of the Gesture Being Detected” “is Greater Than a Second Magnitude Threshold”

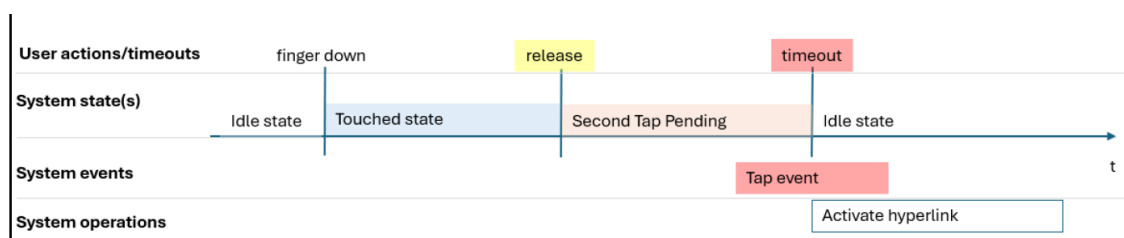
101. Claims 1, 32, 34 and 64 each recite “perform[ing] another [operation]/[function]” “[when]/[based on]/[in response to]” “the magnitude of the duration of the gesture being detected on the touch screen ... is greater than a second magnitude threshold.” Limitation [1.i], [32.i], [34.g], [64.g]. As an initial matter, despite describing Bowens as merely adding implementation details to Kim, Petitioner provides different mappings of this element for Grounds 1 (Kim) and 2 (Kim-Bowens).

102. For Ground 1, Petitioner maps the claimed “perform[ing] another [operation] / [function]” to “‘perform[ing] other action’ (e.g., display[ing] requested menu)” “when the magnitude of the duration of the gesture is greater than a second magnitude threshold—specifically, a minimum threshold to be deemed an intentional touch.” Pet., 24-26; EX1003, ¶¶62-64. Thus, for Ground 1, Petitioner maps the “another [operation]/[function]” to an unspecified group of functions

including “display[ing] the requested menu” and maps the “second magnitude threshold” to “a minimum threshold to be deemed an intentional touch.” Pet., 24-26; EX1003, ¶¶62-64.

103. For Ground 2, Petitioner identifies “perform[ing] another operation (activating the hyperlink)” when “the ‘timeout/tap’ transition from SecondTapPending to Idle” is reached. Pet., 67-68; EX1003, ¶195. Thus, for Ground 2, Petitioner maps the “another [operation]/[function]” to “activating the hyperlink” and maps the “second magnitude threshold” to exceeding a “timeout/tap” threshold measured from the release of a first tap waiting to see if a second tap occurs. Pet., 67-68; EX1003, ¶195. Neither mapping meets the plain language of the claims.

104. Furthermore, there is no suggestion in either Kim or Bowens that the “*first* magnitude threshold” (which Petitioner maps to Bowens’ Timeout/Press) should be interpreted as the *second* threshold encountered when measuring duration. Likewise, there is no suggestion that the “*second* magnitude threshold” (which Petitioner maps to Bowens’ Timeout/Tap) should be interpreted as the *first* threshold encountered. Instead, Petitioner’s own charts confirm that the plain and ordinary meaning of “first” threshold is the threshold encountered first and that the “second” threshold is the one encountered second:



Pet., 68; EX1003, ¶195. As discussed above, Bowens explains that the Timeout/Tap transition (which Petitioner maps to the claimed “second magnitude threshold”) illustrated in the above figure must occur in Bowens *before* the Timeout/Press.

1. Petitioner’s Ground 1 Mapping

105. The Petition asserts: “a POSITA would have understood that, for the detected interrupt (step 203) to be sufficient to cause the mobile device to ‘perform other action’ (step 207), a magnitude greater than a minimum threshold value (e.g., the minimum threshold of an intentional user input) is relied upon, or rendered obvious, by Kim.” Pet., 25-26; EX1003, ¶64. Setting aside that “perform other action” does not identify any specific action or any specific user gesture and that Kim does not reference or suggest utilizing a “minimum threshold of an intentional user input,”⁶ Petitioner’s mapping does not meet the claim.

⁶ Petitioner asserts that use of a “minimum threshold” “would have [been] understood” “[b]ased on Kim’s disclosure of ‘disregarding’ a received input.” Pet., 25-26; EX1003, ¶64. But, Kim discloses disregarding a received input event not because the gesture fails to meet a minimum threshold, but because: (a) the device is in “zoom mode” (not “selected mode” where “interrupts” occur) and (b) “the input event corresponds to none of” “a move event,” “a hold event,” or “a double tap

106. Kim’s reference to “perform some action” discloses an alternative path from entering zoom mode that encompasses any other action. EX1004, [0043]-[0044], [0048]-[0050]. Thus, the reference “perform some action” provides no mapping of “another [operation]/[function]” because no specific action has been identified. Even if this reference is narrowed to the only specific action the Petition identifies—“e.g., display requested menu”—Kim does not associate that action with *any* user gesture. EX1004, [0050]. Rather, Kim states only: “if an interrupt is a request for a specific menu, the mobile device displays the requested menu.” EX1004, [0050]; EX1004, [0045] (same).

107. Petitioner asserts that “an interrupt would be caused by a gesture that is longer in duration than the second threshold” of “the minimum threshold of an intentional user input.” Pet., 26; EX1003, ¶64. That is, with reference to FIG. 2A, Petitioner asserts that a duration exceeding the mapped threshold causes *step 203 “Detect Interrupt.”* Pet., 26; EX1003, ¶64; EX1004, FIG. 2A. But Petitioner does not map the claimed “another [operation]/[function]” to step 203; it maps it to *step 207 “performs other action” (e.g., display requested menu).*” And, Kim is clear that

event.” EX1004, [0053]. Thus, recognizing user gesture, but disregarding it because it has no assigned function, does not suggest adding a “minimum threshold” to Kim.

steps 203 and 207 do not occur simultaneously nor when/based on/in response to the same event. Rather, “[a]fter detecting an interrupt, the mobile device” further analyzes the user gesture, determining “whether an interrupt is a request for activating the zoom mode (step 205)” and, if not, whether it is a request for some other action (step 207). EX1004, [0049]-[0050].

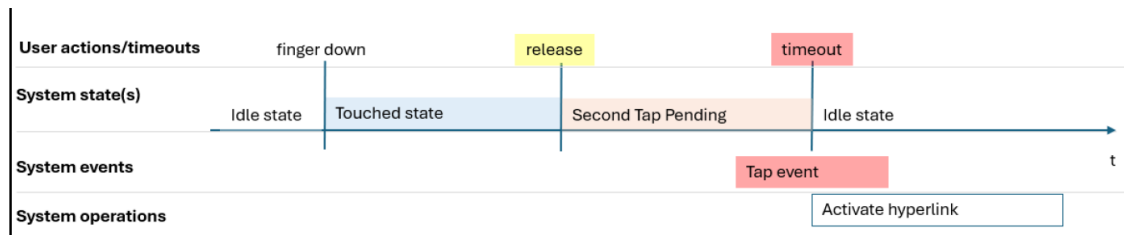
108. The claims require not just determining that “the magnitude of the duration of the gesture being detected on the touch screen ... is greater than a second magnitude threshold,” but “[when]/[based on]/[in response to]” that determination “perform[ing] another [operation]/[function].” Limitation [1.i], [32.i], [34.g], [64.g]. Here, Petitioner alleges only that Kim’s mobile device simply determines there has been an interrupt “[when]/[based on]/[in response to]” a determination that “a minimum threshold of an intentional user input” has been met. Pet., 24-26; EX1003, ¶¶62-64. Petitioner alleges only exceeding that threshold is required to detect an “interrupt.” Pet., 24-26; EX1003, ¶¶62-64. This does not meet the claims.

2. *Petitioner’s Ground 2 Mapping*

109. For Ground 2, Petitioner maps the “another [operation]/[function]” to “activating the hyperlink” based on “the gesture” being “identified as a tap” and maps the “second magnitude threshold” to exceeding a “timeout/tap” threshold measured from the release of a first tap waiting to see if a second tap occurs. Pet., 67-68; EX1003, ¶195. Having established *the* gesture as “a tap gesture,” Petitioner’s

own explanation confirms the duration and threshold it identifies is not the duration *of that tap gesture*.

110. As explained above, Bowens discloses determining that a single tap gesture is detected by, first, detecting a finger down and then a “release” and then waiting in a “second tap pending state” to determine if a second tap occurs (which would rule out a single tap event). EX1007, [0080]–[0082]; EX1007, FIG. 1. The Petition’s own illustration shows this sequence:



Pet., 68; EX1003, ¶195.

111. Having established “*the* gesture” as a “tap gesture,” Petitioner must, then, demonstrate that the system takes action based on “the magnitude of *the* duration of *the*” tap gesture being “greater than a second magnitude threshold.” Limitation [1.i]. Petitioner does not do so.

112. Petitioner confirms that the “tap gesture” “*ceased* at the time labeled ‘release,’ highlighted yellow” in the figure above. Pet., 67-68; EX1003, ¶195. Yet, Petitioner then focuses on a period of time *beginning after the tap gesture has ceased* labeled “Second Tap Pending.” Pet., 67-68; EX1003, ¶195. Petitioner points to the duration *beginning* at “release” when *the* tap gesture has ceased and

continuing until exceeding “a second magnitude (the “timeout/tap” transition from SecondTapPending to Idle).” Pet., 67-68; EX1003, ¶195. This period is, by Petitioner’s own admission, not *the* duration of *the* tap gesture as the claim language requires, but rather a duration of a period that begins after the tap gesture ends. This does not meet the plain language of the claims. Pet., 67-68; EX1003, ¶195.

C. The “Second Magnitude Threshold” is Greater Than the “First Magnitude Threshold”

113. In addition to the problems with Petitioner’s mappings of the “first magnitude threshold” and “second magnitude threshold,” Petitioner’s mapping of these thresholds is inconsistent with the plain meaning of the claims.

114. For Ground 1, Petitioner maps Kim’s “threshold value associated with a longer-lasting (i.e., hold) event” to the “first magnitude threshold” of Limitation [1.f and 1.g]. Pet., 20, 21; EX1003, ¶¶54, 56. For the “second magnitude threshold” of Limitation [1.i], Petitioner maps Kim’s “minimum threshold to be deemed an intentional touch.” Pet., 24–26; EX1003, ¶¶62–64. According to Petitioner, then Kim’s “minimum threshold to be deemed an intentional touch” *is less than* Kim’s “hold event threshold.” Petitioner acknowledges as much in that Kim’s “user gesture” mapped to “the gesture” of Limitation [1.i] is asserted to be “a gesture that is *longer in duration than the second threshold ... [and] shorter than the duration necessary for a long press.*” Pet., 26; EX1003, ¶64.

115. For Ground 2, Petitioner maps Bowens' "timeout for the transition from Touched to Pressed" (i.e., the "timeout/press" transition from Bowens' Fig. 1) to the "first magnitude threshold" of Limitation [1.f and 1.g] Pet., 62, 66; EX1003, ¶¶190-92. For the "second magnitude threshold" of Limitation [1.i], Petitioner maps Bowens' ""timeout / tap' transition from SecondTapPending to Idle" to Limitation [1.i]'s "second magnitude threshold." Pet., 67-68; EX1003, ¶195. Again, Petitioner's mapping results in the second magnitude threshold being less than the first magnitude threshold.

116. Limitation [1.f] recites "perform *an* operation" "when a magnitude of a duration of the gesture ... is less than a first magnitude threshold." And Limitation [1.i] recites "perform *another* operation" "when the magnitude of the duration of the gesture ... is greater than a second magnitude threshold." In other words, Claim 1 sets forth a duration of the gesture for which "an" operation is performed and a *different* duration of the gesture for which "another" operation is performed.

117. But under Petitioner's construction where the second magnitude threshold is less than the first magnitude threshold, the claim would allow for a duration of the gesture for which the apparatus would perform *both* "an" operation *and* "another" operation in response to *the same duration of the gesture*. Specifically, the apparatus would perform "an" operation because the duration of the gesture is less than the first magnitude threshold and perform "another" operation because the

duration of the gesture is greater than the second magnitude threshold (which, according to Petitioner, is less than the first magnitude threshold). Such a construction is illogical.

118. Moreover, dependent claims of the '114 Patent confirm the understanding that in Claim 1 the second magnitude threshold is greater than the first magnitude threshold. Claim 8, which depends from claim 1, supports that the most logical reading of the claim is that the “second magnitude threshold” of Limitation [1.i] is greater than the “first magnitude threshold” of Limitations [1.f and 1.g]:

The apparatus of claim 1, wherein the apparatus is configured such that the scaling is reverted ... when the magnitude of the duration of the gesture is detected ... **to be greater than the first magnitude threshold, but is detected to remain less than the second magnitude threshold.**

EX1001, 98:1-8 . This reference to “remain” underscores that “the second magnitude threshold” and “the first magnitude threshold” of Claim 8 maintain the same relationship to each other that they have in Claim 1. This understanding is also consistent with the plain meaning of the claim term “remain.” EX2011 (“remain” means “to continue unchanged”); EX2012 (“remain” means “continue to possess a particular quality”).

119. Accordingly, for both Grounds 1 and 2, that Petitioner does not map the cited art in accordance with “the duration of the gesture” that meets the plain language of Limitation [1.i].

XII. CLAIMS 30 AND 62 (GROUNDS 1C, 1D, 2C AND 2D): NO APPROPRIATE BASIS TO ADD HAPTIC FEEDBACK TO KIM'S DOUBLE TAP GESTURE

120. Claim 30 recites “after at least a portion of the scale operation, vibrate the apparatus and perform an action.” Limitation [30.i]. Claim 62 recites “subsequent to the performance of the scale operation, vibrating the apparatus and performing an action.” Limitation [62.j]. Petitioner maps “the scale operation” to Kim’s “continuous zoom-out function” responsive to a “press and hold” gesture. Pet., 50 (for Limitation [30.h], referring to mapping of Limitation [32.h]), 40 (for Limitation [32.h], referring to mapping of Limitation [1.h]), 23-24; EX1003, ¶¶60-61. Petitioner then maps “performing an action” to “display[ing] data with a given basic magnification” (*i.e.*, returning to default zoom level) responsive to a subsequent “double tap” user input after the conclusion of “the scale operation.” Pet., 50; EX1003, ¶150. Petitioner does *not* assert that Kim discloses vibrating the apparatus upon recognition of a double tap user input or at any other time. Pet., 50; EX1003, ¶150; EX1003, ¶254 (“Kim does not teach that any tactile feedback is provided to a user.”); EX2013, 124:9-12 (“[n]o direct reference to [tactile feedback]”). Rather, Petitioner asserts it would have been obvious for a POSITA to add haptic feedback, as taught by Burrough, upon recognition of the double tap user input. Pet., 50 (Ground 1), 82-83 (Ground 2); EX1003, ¶¶151, 268-269. But even

accepting this proposition, adding Burrough's haptic feedback to Kim would not result in adding haptic feedback upon recognition of a double tap user input.

121. Petitioner asserts that "Burrough teaches providing haptic feedback in response to user input, including zooming operations" (Pet., 46; EX1003, ¶136), but this is an overgeneralization of Burrough's disclosure. In the section Petitioner cites, Burrough discloses detecting a "zoom gesture" and providing haptic feedback *during* an ongoing "zoom gesture," EX1007, [0079]-[0081]. "If the distance between the two fingers increases (spread[s] apart)," "a zoom in signal is generated." EX1007, [0080]. "The zoom-in signal, in turn, causes the haptic device associated with the two fingers to provide a zoom-in haptic signal," which "can be, for example, faster (or slower) or more intense (or less intense) vibration as the distance between the two fingers increase[s]." EX1007, [0080]. Additionally, "the vibro-tactile response for the two fingers can be different due to the varying pressure applied by each finger." EX1007, [0079].

122. Kim's double-tap user input gesture, however, does not involve an ongoing zoom operation, much less ongoing changing movement or ongoing changing pressure. EX1004, [0079]-[0081]. Rather, upon detection of the double-tap, Kim instantaneously returns to the "basic magnification" level (which itself provides visual feedback to the user). There is no ongoing zoom operation upon Kim's double tap. EX1004, [0106]. Thus, even if a POSITA were motivated to apply

Burrough's disclosure to Kim, Burrough's teachings would at most suggest adding haptic feedback *during* a continuous zoom-in or continuous zoom-out operation, not upon recognition of a double-tap user input gesture.

123. Dr. Cockburn opines that Kim's reference to a "smart phone" or "personal digital assistant" indirectly discloses haptic feedback. EX2012, 124:2-5. Taking that assertion as true, it does not follow that a POSITA reading Kim would be motivated to add Burrough's disclosure of a multi-touch detection algorithm to a device capable of handling only single-finger touch inputs, as Kim discloses. For example, Kim describes a zooming operation through a "pinch zoom technique." EX1004, [0008]. A pinch zoom technique, as Kim describes, is a multi-touch zooming technique that "may not be applicable to a mobile device having a normal touch screen incapable of handling a multi-touch input." EX1004, [0008]. In the next paragraph, Kim explains that, "[a]ccordingly, the present invention provides a mobile device and related method which allows a simpler and more convenient zooming function." EX1004, [0009]. A POSITA would therefore understand Kim's zooming method as directed toward a device capable of handling only single-finger touch inputs. In addition, the particular gestures Kim discloses for implementing its zoom process are single-finger inputs. For example, Kim explains that "a gesture includes a long press event for activating a zoom mode," "a move event for a zoom-in or zoom-out action in a zoom mode," and "a double tap event for returning to an

initial state with a basic display size after a zoom-in or zoom-out action in a zoom mode.” EX1004, [0031]. A POSITA would not understand Kim’s “long press event,” “move event,” or “double tap event” as multi-touch gestures. Nor would a POSITA understand Kim’s specific embodiments, such as the process described with reference to Figure 7, as relying on a device capable of multi-touch input.

124. Further, there is no suggestion in Kim to combine a multi-touch detection algorithm as Burrough teaches with “a normal touch screen incapable of handling multi-touch input,” as Kim discloses. EX1004, [0008]. “[A] pinch zoom technique ... , however, [is] based on a multi-touch input by means of two finger interactions. Therefore, this technique may not be applicable to a mobile device having a normal touch screen incapable of handling a multi-touch input.” EX1004, [0008]. Kim teaches “a mobile device and related method which allows a simpler and more convenient zooming function.” EX1004, [0009]. Such a simpler and more convenient zooming function, as taught by Kim, is not directed to a device capable of handling multi-touch input. EX2013, 126:21-127:1 (“The specific disclosures of [Kim’s] embodiments do not rely on multi-touch sensing capabilities.”). Thus, a POSITA — recognizing that Burrough teaches vibration during an ongoing zoom operation in response to a multi-touch input — would read Kim as teaching away from implementing a multi-touch detection algorithm as Burrough describes.

XIII. CONCLUSION

125. All statements made herein of my own knowledge are true, all statements made herein on information and belief are believed to be true, and these statements were made with the knowledge that willful false statement and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001.

Dated: April 28, 2025

Respectfully submitted,



Dr. Vijay Madiseti