

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Michael S. Smith
U.S. Patent No.: 10,649,578 Attorney Docket No. 50095-0164IP1
Issue Date: May 12, 2020
Appl. Serial No.: 16/559,606
Filing Date: September 3, 2019
Title: GESTURE-EQUIPPED TOUCH SCREEN
SYSTEM, METHOD, AND COMPUTER
PROGRAM PRODUCT

SUPPLEMENTAL DECLARATION OF DR. LOREN TERVEEN

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

Dated: August 11, 2025

By: 

Loren Terveen, Ph.D.

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I, Loren Terveen of Minneapolis, MN, declare that:

I. INTRODUCTION

1. I have been retained on behalf of Apple Inc. (“Apple”), as an independent expert consultant in this *inter partes* review (“IPR”) proceeding before the Patent Trial and Appeal Board (“PTAB”) of the United States Patent and Trademark Office (“USPTO”). I understand that the proceeding number of this IPR proceeding is IPR2024-01084.

2. I have been asked by Apple’s counsel (“Counsel”) to consider whether certain references describe or make obvious features recited in claims 1-4, 8-18, 22-30, and 34-39 of U.S. Patent No. 10,649,578 (“the ’578 patent”) (APPLE-1001). My opinions are based on my education, my knowledge and experience in the relevant fields of technology, and my review of the materials considered in preparing this document.

3. I previously submitted a declaration in this proceeding that I signed on June 28, 2024 (“Original Declaration”). I understand that the Original Declaration was marked as APPLE-1003. The Declaration contained my opinions and the bases for them. Since submitting the Original Declaration, I have considered the Declaration of Dr. Vijay Madiseti (“Madiseti Declaration”) (SMITH-2004) as well as the references cited by him, including:

- SMITH-2003: U.S. Pat. App. No. 12/115,992 (Duarte-992)

- SMITH-2006: Deposition of Loren Terveen, Ph.D. (April 25, 2025)
- SMITH-2007: U.S. Prov. Pat. App. No. 61/581,918 ('918 Provisional)
- SMITH-2008: U.S. Pat. App. Pub. No. 2009/0174680 (Anzures)
- SMITH-2009: U.S. Pat. App. Pub. No. 2008/0122796 (Jobs)

4. My opinions from my Original Declaration have not changed.

II. BACKGROUND AND QUALIFICATIONS

5. My background and qualifications are set forth in Section II of the Original Declaration. I incorporate that section in this declaration ("Supplemental Declaration") by reference.

III. INFORMATION CONSIDERED

6. In preparing this Supplemental Declaration, I have considered materials listed in paragraph 18 of my Original Declaration. I have also considered the references listed above as having been cited by Dr. Madisetti. In addition, my opinions are further based on my education, training, experience, and knowledge in the relevant fields.

IV. SUMMARY OF OPINIONS

7. I have been asked to consider whether the claims of the '578 patent are anticipated or obvious over certain prior art references. As explained in the

Original Declaration, and in further detail in this Supplemental Declaration, it is my opinion that claims 1-4, 8-18, 22-30, and 34-39 of the '578 patent are obvious over Shiplacoff and a combination of Shiplacoff and Nan.

V. Reply to Arguments Made By Dr. Madisetti

8. The Original Declaration analyzed how Shiplacoff and the combination of Shiplacoff and Nan render claims 1-4, 8-18, 22-30, and 34-39 of the '578 patent obvious. I incorporate that analysis here by reference. In this Supplemental Declaration, I further address statements from Dr. Madisetti relating to the prior art discussed in the Original Declaration.

A. Ground 1 explained the obviousness of using different gestures to transition from Shiplacoff's full screen mode to either card mode or the launcher screen

9. Dr. Madisetti argues that the Petition “attempts to deviate from the plain language of the claims by mapping touch events detected and evaluated in two different operational contexts.” SMITH-2004, [53], [64]-[73]. More specifically, Dr. Madisetti argues that because the “Petition fails to identify any disclosure or suggestion in Shiplacoff that the ‘tap or flick’ described in ¶¶[0099]-[0102] and [0167] is detected while in ‘full-screen mode’—which is the only display mode the Petition maps to ‘while displaying the user interface’—the Petition’s Ground 1 mapping fails.” SMITH-2004, [73]. This argument misinterprets Ground 1 and is therefore irrelevant.

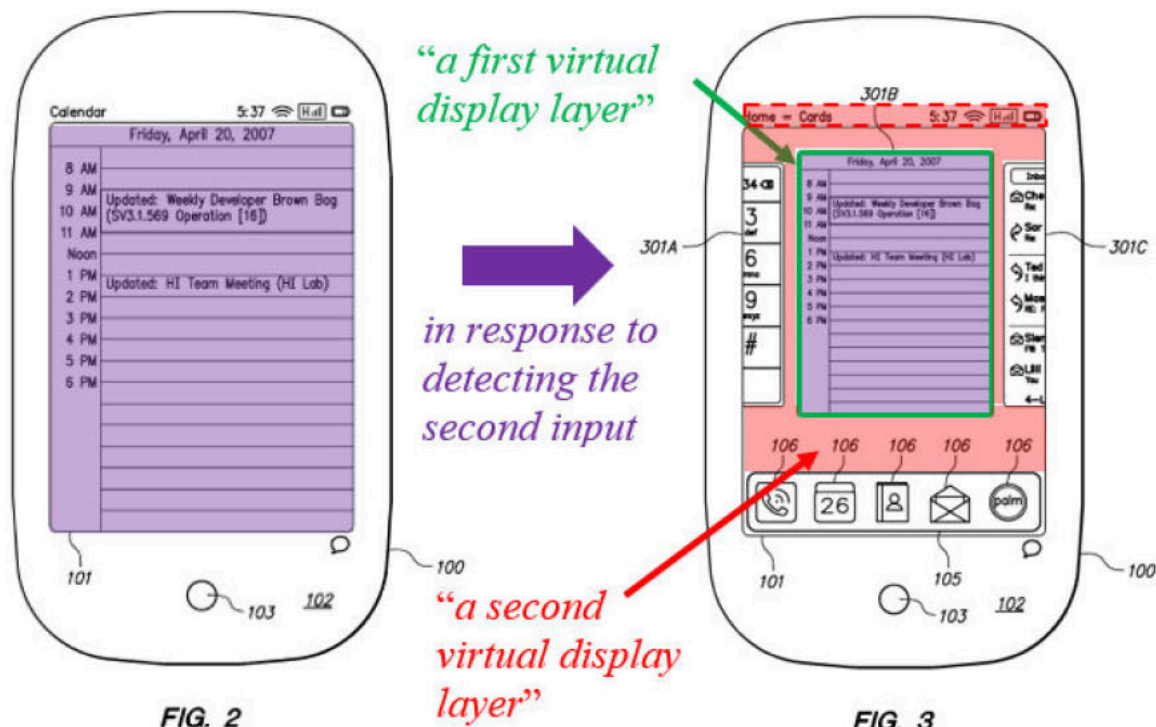
10. My Original Declaration explained that, “[w]hen a gesture different from the swipe up gesture is used, it would also have been obvious to a POSITA that such a gesture would not have the same characteristics and movement parameters as the swipe up gesture so that Shiplacoff’s device can distinguish different gestures.” APPLE-1003, [61]. Further, my Original Declaration concluded that “it would have been obvious to a POSITA that when a different gesture, such as a tap or flick, is used, such a gesture (*‘second input’*) *‘does not meet the one or more criteria that is met when the second input is detected to include the movement parameter that is above the movement threshold,’* and would have [] returned the display, as a matter of design choice, to the launch screen in FIG. 1 that includes the calendar icon (*‘replacing the user interface of the application with the home screen including the icon associated with the application¹’*).” *Id.*

11. That is, my Original Declaration highlights a specific example provided in Shiplacoff in which a “‘swipe up’ gesture beginning in gesture area 102 and extending onto screen 101 . . . switches from full-screen mode to card

¹ Bold and italicized text corresponds to claim language from the ’578 Patent.

Emphasis will be shown in underline throughout this Supplemental Declaration, unless otherwise noted.

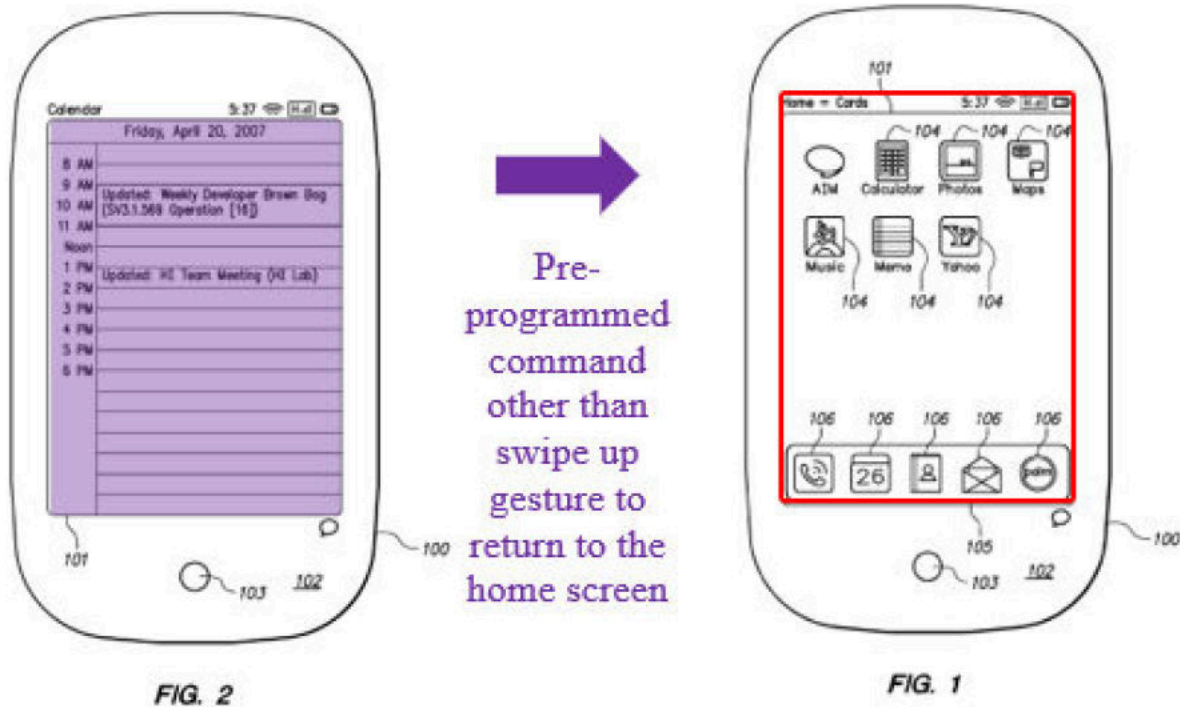
mode.” APPLE-1003, [52]. This is an example of a gesture described by Shiplacoff that meets Element [1i] and Element [1j]. My Original Declaration included a diagram (reproduced below) to show this transition from full screen mode to card mode. APPLE-1003, [55]. There does not appear to be any argument that Shiplacoff’s teaching of a “swipe up” gesture transitioning from full screen mode to card mode meets Elements [1i] and [1j]. See SMITH-2004, [65]-[66] (including the below diagram and only taking issue with the mapping of Element [1k], Elements [1i] and [1j]).



APPLE-1004, FIGS. 2 (left), 3 (right).

12. Shiplacoff does not specifically provide an example of transitioning from full screen mode to the launcher screen, but my Original Declaration noted that “Shiplacoff is not limited to a swipe up gesture, and teaches that other gestures and contacts can also be used.” APPLE-1003, [53] (citing APPLE-1004, [126]-[130]). In those cited paragraphs, Shiplacoff makes clear that “other gestures can be used for mode changes,” and explains that it has left the implementation details open to the designer. APPLE-1004, [0129], [0132] (“[o]ne skilled in the art will recognize that mode changes can take place in response to other types of commands, contexts, and/or environmental factors.”). Thus, with respect to Element [1k], I highlighted other types of gestures that Shiplacoff describes as useful for transitioning to the launcher screen. APPLE-1003, [60]. “In some examples, a card can be dragged or flicked off screen, or a control can be selected to close a display card and, in some cases, return to the launch screen.” *Id.* From the teachings of these alternative gestures, I explained “it would have been obvious, if not understood, to use a different gesture, such as a tap or flick, that does not have the same movement parameters as those of a swipe up gesture (e.g., touch and slide action for a certain displacement amount and upward direction).” APPLE-1003, [61]. As with Element [1j], I included a diagram (reproduced below) with respect to Element [1k] to illustrate the transition from full screen mode to the launcher screen based on such a “different gesture”—a diagram Dr.

Madisetti conspicuously did not acknowledge, much less address, in his declaration. APPLE-1003, [61].



APPLE-1004, FIGS. 2 (left), 1 (right).

13. That the alternative gestures, such as tap and flick, were introduced by Shiplacoff as exemplary gestures when describing a different Shiplacoff use case would not have been understood by a POSITA to detract from the fact that they are indeed also examples of gestures, which were recognized and distinguishable by

Shiplacoff itself². Rather, through Shiplacoff's teaching that these gestures could be recognized and distinguishable, a POSITA naturally would have looked to them as among the "other gestures" contemplated by Shiplacoff that "can be used for mode changes." *See* APPLE-1004, [0124]-[0132]. A POSITA would recognize from Shiplacoff alone (1) disclosure of gesture use to instigate mode changes, (2) disclosure of swipe up as merely an example of a gesture to be used to instigate mode changes, (3) disclosure that "other gestures can be used for mode changes," and (4) disclosure of numerous examples of "other gestures," including tap and flick. *See* APPLE-1003, [52]-[61]. As I concluded in my Original Declaration, it would have been obvious therefore, from the text of Shiplacoff, to use a gesture with a distinct "movement parameter" that is not "above a movement threshold"

² Indeed, Shiplacoff teaches its system is capable of recognizing and distinguishing numerous gestures, including: "tapping;" "double-tap;" "dragging;" "tapping and holding;" "flicking;" "swipe up;" "swipe down;" and "multi-finger gesture such as a pinch." *See, e.g.*, APPLE-1004, [0077], [0084], [0091], [0098], [0100], [0104], [0112], [0113], [0124]-[0129], [0169]. Almost all of these gestures are described as causing multiple possible outcomes depending at least on where they are performed on the screen and the context of what's being displayed at the time the gesture is received. *See id.*

(*e.g.*, a tap or flick) to instigate a change from full screen mode to the launcher screen. APPLE-1003, [61]. Moreover, even discounting Shiplacoff's disclosure of tap and flick as potential alternatives to the use of a swipe up gesture disclosed when describing its display mode use case, the use of a gesture with a different (*e.g.*, lower) movement parameter, such as a tap or flick, would have been "a matter of design choice" to apply that gesture, similar to the "swipe up" gesture, to also transition between display modes.

B. Dr. Madisetti is incorrect that "[n]either Shiplacoff nor Duarte-992 discloses or suggests distinguishing between user inputs based on a movement threshold" and "Shiplacoff teaches away from using its 'flick' input to trigger a switch from 'full-screen mode' to the 'launcher screen'"

14. Dr. Madisetti alleges that "the plain language of the claims requires programming logic to distinguish between two inputs, both of which include movement across the display, based on whether the movement parameter of the input is above or below a movement threshold," and that "Shiplacoff does not disclose or suggest distinguishing between two inputs on that basis." SMITH-2004, [75]-[76]. Shiplacoff directly contradicts these arguments. Further, through its ability to distinguish between many gestures based on various criteria, Shiplacoff—and the Duarte-992 application that it incorporates by reference—teaches how similar types of gestures can result in different outcomes, even when input with respect to the same user interface "mode." As a result, Shiplacoff does

not limit inputs to a single corresponding action or function, as Dr. Madisetti alleges, and therefore does not “teach away” from the combination I described with respect to Ground 1. *See* SMITH-2004, [94] (“POSITA would have understood that Shiplacoff’s ‘flick’ input is already programmed to trigger a different action in ‘full-screen mode’”).

15. Shiplacoff encourages the use of any gestures a POSITA might prefer to implement its device. For example, Shiplacoff describes that “the user can launch additional activities by returning to the launch screen as shown in FIG. 1.” APPLE-1004, [0099]. “In one embodiment, this is performed by performing a gesture or other command.” *Id.* Shiplacoff does not provide any limits on the “gesture or other command.” *See id.* Importantly, Shiplacoff teaches that “other user input actions can cause a switch between the modes, including for example, entering a gesture, typing a key on a keyboard, pressing a button, selecting a menu command, activating an on-screen button or other element, or the like.” APPLE-1004, [0126]. And Shiplacoff ends the section of its description titled “Switching Among Modes” with the invitation that “[o]ne skilled in the art will recognize that mode changes can take place in response to other types of commands, contexts, and/or environmental factors.” APPLE-1004, [0132]. Not once in this section does Shiplacoff criticize, discredit, or otherwise discourage one of skill in the art

from utilizing any type of gesture to change modes. *See* APPLE-1004, [0124]-[0132].

16. As I explained in my deposition, Shiplacoff recognized that the same type of gesture can have different outcomes with respect to the same display mode depending on where, when, and how the gesture is input by the user. SMITH-2006, 40:6-42:14, 44:16-57:17. For example, I explained: “you might have a particular application up, but you might tap on a notification, you might tap on the time to -- you might tap on a weather icon or a battery icon. So maybe most gestures in a given session will be for the activity in full-screen mode, maybe not. It could vary.” SMITH-2006, 40:8-11. Further, I explained:

2	A. Well, I think it sort of depends on what
3	you mean by a gesture.
4	In any given user interface or mode, a
5	gesture should have a single meaning. But
6	gestures can differ in many ways, including, I
7	guess, how much motion there is in the gesture,
8	how long the motion is, how long they're in
9	contact with the screen, the start point, the
10	endpoint.
11	So you could have gestures that share some
12	properties implemented in the same mode, as long
13	as each gesture was distinguishable by users and
14	by the system.

SMITH-2006, 45:2-14.

17. Shiplacoff and Duarte-992 are consistent with my earlier testimony. For example, with respect to the card mode illustrated in FIG. 6E, Shiplacoff teaches that, “[o]nce the telephone application is in the central position in card 301A as shown in FIG. 6E, the user can tap on card 301A...to switch to full-screen mode, as shown in FIG. 6F.” APPLE-1004, [0098]. However, FIG. 6E also shows that quick launch area 105 is also displayed in card mode, “including additional icons 106 for launching commonly used applications and other functions.”

APPLE-1004, FIG. 6E, [0063], [0099]. “[T]he user can also launch additional activities by touching an icon 106 in quick-launch area 105.” APPLE-1004, [0099]. In other words, the same type of input—a tap—will perform two different functions with respect to the display shown in FIG. 6E, depending on where the input is detected. A tap on card 301A displays the telephone application in full screen mode, whereas tapping one of the icons 106 launches the application associated with the tapped icon. APPLE-1004, [0098]-[0099].

18. Similarly, Duarte-992 describes that slight variations in input can change the resulting operation. For example, with respect to the “scrolling” operation on which Dr. Madisetti focuses (*see* SMITH-2004, [94]-[98]), Duarte-992 describes two similar, yet distinct, types of input: a “drag-scroll” gesture and a “flick” gesture. *See* SMITH-2003, [0069]-[0072]. For both the “drag-scroll” and “flick,” the gesture “must start moving immediately upon contact with screen 101.” SMITH-2003, [0069] (“In one embodiment the drag must start moving immediately upon contact with screen 101, in order to be recognized as a scroll”), [0070] (“the flick must start immediately upon contact with screen 101”). The difference between these two gestures is how the user’s finger leaves the surface of screen 101. *Id.* For a “flick,” the “user’s finger must leave the surface of screen 101 before stopping movement,” whereas, for a “drag-scroll,” the user’s finger comes to rest before leaving the surface. *See* SMITH-2003, [0070]. Duarte-992

confirms the distinction by teaching that “[a] drag-scroll may be converted into a flick by lifting the finger before coming to a rest.” *Id.* That Duarte-992 recognizes a “conversion” from one gesture to the other demonstrates that they were recognized as different gestures by the device. And whereas for a drag-scroll the resulting scroll amount is “proportional to the distance moved by the user’s finger,” for a “flick” the scroll amount is “proportional to the speed **and** distance which the user flicked.”³ SMITH-2003, [0069]-[0070].

19. Based on these teachings, a POSITA would have understood or at least found obvious that Shiplacoff’s device would have been able to distinguish between distinct instances of “flick” gestures depending on when, where, and how a given gesture was input by the user. For example, like the “swipe up” gesture described for changing modes, a “flick” gesture started in the gesture area 102 or

³ Notably, these teachings of Duarte-992 contradict Dr. Madisetti’s contention that the only basis upon which Shiplacoff distinguishes inputs that involve movement across the display is by “whether the input does or does not include contact with an off-screen ‘gesture area.’” SMITH-2004, [76]. In fact, Duarte-992 describes the ability to distinguish gestures based on at least speed, distance, and location. *See* SMITH-2003, [0069]-[0070] (basing functionality on speed and distance), [0077]-[0078] (basing functionality on location, speed, and distance).

near an edge of screen 101 would have been distinguishable from a “flick” gesture started well within screen 101 and its display of a particular activity. *See* APPLE-1004, [0127]; *see also id.*, [0064] (describing use of the “touch-sensitive gesture area 102 for entering gesture-based commands”). In fact, Dr. Madisetti acknowledges that Shiplacoff is able to at least distinguish gestures that begin in gesture area 102 and cross over onto screen 101 from those that start on screen 101. SMITH-2004, [78]-[79], [99] (acknowledging that Shiplacoff “discloses that [switching from ‘full-screen mode’ to a different display mode] is triggered by a gesture or command beginning in an off-screen area”). This distinction is simply a matter of degree and demonstrates that when, where, and how a gesture is received can alter the outcome associated with the gesture.

20. Furthermore, Duarte-662 teaches that “[i]n one embodiment a modifier key, such as a shift key, is provided.” SMITH-2003, [0064]. Duarte-662 teaches that “[c]ertain commands performed in touch-sensitive screen 101 can be modified by performing the command while holding down the modifier key, or by pressing the modifier key prior to performing the command.” *Id.* In other words, Duarte-662 provides even further mechanisms by which Shiplacoff’s device may assign different functions to the same “command.” For example, a “flick” received while the modifier key is not depressed might scroll, while a “flick” received while the modifier key is held down might change display mode.

21. Thus, a POSITA would have understood or at least found obvious that Shiplacoff and Duarte-992 provide several mechanisms (*e.g.*, a gesture area, a modifier key, and recognition of the varying characteristics of a gesture, such as location, speed, and distance) by which a device may distinguish between different instances of a given type of input (*e.g.*, a tap or flick) received in a given display mode, and would have assigned functionality consistent with those distinctions.

C. Dr. Madisetti is incorrect that a “tap” does not include movement across the display

22. As I explained in my Original Declaration and above, “it would also have been obvious to a POSITA that such a gesture would not have the same characteristics and movement parameters as the swipe up gesture so that Shiplacoff’s device can distinguish different gestures.” APPLE-1003, [61]. From the teachings of Shiplacoff, I concluded that “it would have been obvious to a POSITA that when a different gesture, such as a tap or flick, is used, such a gesture (*‘second input’*) *‘does not meet the one or more criteria that is met when the second input is detected to include the movement parameter that is above the movement threshold,’* and would have [] returned the display, as a matter of design choice, to the launch screen in FIG. 1 that includes the calendar icon (*‘replacing the user interface of the application with the home screen including the icon associated with the application’*).” *Id.* In other words, it would have been obvious

to a POSITA to use one gesture with one movement parameter (*e.g.*, the “swipe up” gesture described by Shiplacoff) to switch to a first display mode (*e.g.*, Shiplacoff’s card mode) and another gesture with a different movement parameter (*e.g.*, the “tap” or “flick” gesture described by Shiplacoff) to switch to a second, different display mode (*e.g.*, Shiplacoff’s launcher screen mode). *See id.*

23. Setting aside that these arguments and Ground 1 were not limited to just the “tap” and “flick” gestures I used as examples, both the “tap” and “flick” examples nonetheless meet the language of Elements [1i] and [1k]. With respect to the example of a ‘tap’ gesture, Dr. Madisetti argues that “a POSITA would have understood the ‘tap’ input described by Shiplacoff to be touchscreen input that does not include movement across the screen.” SMITH-2004, [102]. The prior art that I cited in my Original Declaration proves this is not true.

24. The Shaffer reference that I highlighted in my Original Declaration describes:

For example, a tap gesture may be effectively defined by a sequence of two, or optionally, three sub-events. First, a touch should be detected, and this will be sub-event 1. For example, the touch sub-event may be a user's finger touching a touch-sensitive surface in a view that includes the event recognizer having state machine 400. Second, an optional measured delay where the touch does not substantially move in any given direction (e.g., any movement of the touch position is less than a predefined threshold, which may be measured as a distance (e.g., 5 mm) or as a number of pixels (e.g., 5 pixels) on the display), and the delay is sufficiently short, would serve as sub-event 2. Finally, termination of the touch (e.g., liftoff of the user's finger from the touch-sensitive surface) will serve as sub-event 3. By coding the event recognizer state machine 400 to transition between states based upon receiving these sub-events, the event recognizer state machine 400 effectively expresses a tap gesture event definition. However,

APPLE-1008, 28:37-62. In other words, according to Shaffer, POSITAs knew what is common sense—a “tap” may include some small amount of movement of a user's finger, so long as the movement is “less than a predefined threshold” and the time to liftoff of the user's finger is “sufficiently short.” *Id.*

25. The Matthews reference that I highlighted in the Original Declaration similarly establishes that POSITAs considered movement, albeit limited amounts of movement, as an attribute of a tap gesture. For example, Matthews offers that, “[i]f the duration of the gesture does not comprise a distance of uninterrupted movement above a predefined distance or does not meet a predefined threshold time period, the gesture is considered a tap-type operation....” APPLE-1010, 10:65-11:7; *see also id.*, APPLE-1010, 3:38-46. Matthews clarifies further by

pointing out that it is the amount of movement or time that distinguishes taps from other types of gestures, not the mere presence of movement or time. APPLE-1010; 11:7 (“Otherwise, the gesture is considered a drag operation.”). In other words, movement of a user’s input may be detected below the threshold distance (*e.g.*, a *de minimis* amount of movement) and the input will still be interpreted as a “tap-type operation.” *See* APPLE-1010, 10:65-11:7.

26. With respect to independent claim 27, my Original Declaration explained that “a POSITA would have understood that some of the differences between a flick up gesture and tap gesture, on the one hand, and a swipe up gesture, on the other are the speed and movement of the gestures.” APPLE-1003, [80]. “Thus, while the gestures may have an initial point of user input contact and a final point of input contact, the difference in the gestures include the time duration of the touch (which then determines the speed), the length of the movement after the initial touch, and the directionality of the movement after the initial touch.” *Id.* In support, my Original Declaration cited to Shaffer and Matthews. *Id.*

27. Dr. Madisetti did not address these explanations in his declaration, nor did he address the teachings of the Shaffer and Matthews references. A POSITA reading Shiplicoff and seeing its express reference to “tap” would have understood and found obvious from Shiplicoff to transition among Shiplacoff’s display modes

based on gestures that include “movement across the display screen in a direction,” and that the “tap” has a “movement parameter” that is not “above a movement threshold.” More broadly, as I explained in my Original Declaration, “it would have been obvious to a POSITA that when a different pre-programmed gesture, such as a tap or flick, is used, such a gesture (“second input”) *“does not meet the one or more criteria that is met when the second input is detected to include the movement parameter that is above the movement threshold,”* and would have returned the display, as a matter of design choice, to the launch screen in FIG. 1 that includes the calendar icon (*“replacing the user interface of the application with the home screen including the icon associated with the application”*).” APPLE-1003, [61] (highlighting added to emphasize the relevant points made in my Original Declaration).

D. Ground 2 explains how Nan’s distinction between edge gestures were used to determine between which of multiple user interfaces to transition

28. Dr. Madisetti argues that “[t]he Petition’s Ground 2 relies on a proposed modification to Shiplacoff’s device such that the device utilizes Nan’s ‘edge gesture.’” SMITH-2004, [103]. However, my Original Declaration was never limited to any one edge gesture. Rather, my Original Declaration explained that “[a] POSITA would have been motivated, would have found obvious, and would have predictably and reasonably expected success in beneficially applying

the teachings of Nan to Shiplacoff such that Shiplacoff's system can implement gestures such as Nan's edge gestures." APPLE-1003, [34]. "For example, Shiplacoff's system would have been modified to incorporate software, code, and/or related programming to recognize certain gestures, e.g., an edge gesture with a certain length, speed, hold time, or a number of inputs, to execute a change from the full-screen mode to the card mode." APPLE-1003, [36]. "Nan's gesture handler would have been incorporated into Shiplacoff's system to realize the [] benefits [described in Nan]." APPLE-1003, [36]. In other words, the combination of Shiplacoff and Nan that I explained in my Original Declaration was premised on incorporation of "Nan's gesture handler" and the distinction of different gestures based on, for example, "length, speed, hold time, or a number of inputs." *Id.*

29. My Original Declaration addressed how this obvious combination of Shiplacoff and Nan met all three of Elements [1i], [1j], and [1k]. APPLE-1003, [87]-[88]. In explaining this mapping, my Original Declaration cited to Nan's FIG. 8 and its supporting text. APPLE-1003, [88] (citing APPLE-1005, FIG. 8, 7:9-55). In this section, Nan teaches that "FIG. 8 depicts a method 800 for enabling edge gestures including determining an interface to present based on some factor of the gesture." APPLE-1005, 7:9-11. In other words, the entire point of FIG. 8 is to select between multiple possible interfaces to display based on variations in "one or more factors" of the edge gestures. APPLE-1005, 7:30-44. Nan teaches that,

“[i]n some cases, two or more factors of a gesture determine which interface to present such as a drag-and-hold gesture having a drag length and hold time or a drag-and-drop gesture having a drag length and drop position.” APPLE-1005, 7:34-38.

30. In describing FIG 8, Nan provides a helpful example of transitioning between different user interfaces based on recognizing the differences between edge gesture criteria. APPLE-1005, 7:30-46. Specifically, Nan teaches that “block 804 may determine to present...an application-selection interface in response to a relatively short single-finger gesture, or a system-control interface permitting selection to shut down computing device 102 in response to relatively long single-finger gesture, for example.” APPLE-1005, 7:38-44. In other words, the very example provided in Nan is one in which the device is choosing to which of two different interfaces the display should be transitioned based on whether a single-finger gesture is above or below a threshold (*i.e.*, whether the gesture is “relatively short” or “relatively long”). *See id.*

31. Limitation [1j] of the '578 Patent recites displaying one interface “in accordance with a determination that the second input meets one or more criteria that is met when the second input is detected to include a movement parameter that is above a movement threshold,” and limitation [1k] recites displaying a different interface “in accordance with a determination that the second input does not meet

the one or more criteria that is met when the second input is detected to include the movement parameter that is above the movement threshold.” APPLE-1001, 96:13-

32. In other words, the differentiating determination in both limitations is the same: whether “the second input is detected to include a movement parameter that is above a movement threshold.”⁴ *See id.*; APPLE-1003, [87] (where I noted that this determination is relevant to both Elements [1j] and [1k]). This is why my Original Declaration explained that “SNC’s system would have determined that an edge gesture occurred when the detected user input movement is above the movement threshold associated with one or more of the length, speed, and number of inputs of the edge gesture.” APPLE-1003, [88]. That is, the system resulting from the combination of Shiplacoff and Nan would have used a movement threshold associated with one or more of the length, speed, and number of inputs of the edge gesture to distinguish between edge gestures and determine to which user interface a transition should be made.

⁴ Limitations [15f] and [27e] recite similar limitations as [1j], and limitations [15g] and [27f] recite similar limitations as [1k]. The arguments here are thus similarly applicable limitations [15f], [15g], [27e], and [27f]. *See* POR, 57-60 (treating the related limitations of claims 1, 15, and 27 as a group).

32. In the SNC system I described in my Original Declaration, when it is determined that an edge gesture “is above the movement threshold associated with one or more of the length, speed, and number of inputs of the edge gesture”—akin to the “relatively long single-finger gesture” example described by Nan—the interface would change from the full-screen mode to the card mode. *See* APPLE-1003, [87]-[88]. And as I had earlier described, when the gesture did not meet these criteria—akin to the “relatively short single-finger gesture” example described by Nan—the interface would change from the full-screen mode to the launcher screen. *See* APPLE-1003, [61] (“it would have been obvious to a POSITA that when a different pre-programmed gesture, such as a tap or flick, is used, such a gesture...would have returned the display, as a matter of design choice, to the launch screen in FIG. 1 that includes the calendar icon”).

33. In other words, at least one attribute of the obvious combination of Shiplacoff and Nan, would have been that, consistent with the teachings of Nan, “a ‘gesture handler 128 may determine the length of the gesture, speed, or a number of inputs (e.g., fingers),’ and a corresponding user interface may be determined.” APPLE-1003, [32], [34] (“A POSITA would have been motivated, would have found obvious, and would have predictably and reasonably expected success in beneficially applying the teachings of Nan to Shiplacoff such that Shiplacoff’s system can implement gestures such as Nan’s edge gestures”), [36] (“For example,

Shiplacoff's system would have been modified to incorporate software, code, and/or related programming to recognize certain gestures, e.g., an edge gesture with a certain length, speed, hold time, or a number of inputs, to execute a change from the full-screen mode to the card mode"). Because a POSITA would have found it obvious that "Nan's gesture handler would have been incorporated into Shiplacoff's system" as part of the combination (APPLE-1003, [36]), the SNC system would have included programming to determine to which of two different user interfaces to transition based on whether a movement parameter of the gesture (e.g., a certain length, speed, hold time, or a number of inputs) was above or below a movement threshold, as recited in Elements [1j] and [1k].

E. Nan's edge gestures complement Shiplacoff's gesture area and associated gestures

34. Dr. Madisetti alleges that "Duarte-992—which Shiplacoff incorporates by reference—teaches away from using gestures such as Nan's 'edge gesture.'" SMITH-2004, [107]. This argument assumes that a POSITA would have simply added Nan's edge region and edge gestures to Shiplacoff's device in addition to Shiplacoff's gesture area 102. However, this is not the combination I explained in my Original Declaration, nor the logical conclusion from Shiplacoff's and Nan's teachings.

35. Shiplacoff describes that, “[i]n one embodiment, device 100 also includes a touch-sensitive gesture area 102 for entering gesture-based commands....” APPLE-1004, [0064]. In other words, only some embodiments of Shiplacoff’s gesture area 102 include a touch-sensitive gesture area 102. *See id.* Shiplacoff is clear that “[t]he present invention can be implemented, according to various embodiments, in any type of device having a touch-sensitive screen, and is not limited to devices having the listed functionality.” APPLE-1004, [0066]; *see also id.*, [0177].

36. Accordingly, gesture area 102 is not a required part of Shiplacoff’s device 100, nor is it necessary for switching between display modes. As I described above, Shiplacoff teaches “the user can switch among the various modes by performing a gesture.” APPLE-1004, [0127]. While Shiplacoff describes examples of gestures “beginning in gesture area 102 and extending onto screen 101” for switching between display modes, Shiplacoff goes on to clarify that “other gestures can be used for mode changes” and that “[o]ne skilled in the art will recognize that mode changes can take place in response to other types of commands, contexts, and/or environmental factors.” APPLE-1004, [0127]-[0132]. Because the relevant teachings of Shiplacoff are able to be implemented without a gesture area 102, there need not be a gesture area to render inoperable.

37. Rather, as I explained in my Original Declaration, “[a] POSITA would have implemented Nan’s teachings into Shiplacoff’s system through programming efforts well-within the knowledge and capabilities of a POSITA,” and “[a]s part of this programming, Nan’s gesture handler would have been incorporated into Shiplacoff’s system to realize the above-noted benefits.” APPLE-1003, [36]. That is, Nan’s gesture handler provides the teachings necessary to achieve the functionalities attributed to the combination of Shiplacoff and Nan.

38. Furthermore, even if the combination of Shiplacoff and Nan were to include gesture area 102, the teachings with respect to Nan’s edge and associated edge gestures would complement, not conflict with, Shiplacoff’s teachings. As Dr. Madisetti acknowledges, “Nan teaches that an ‘edge’ can be located beyond the display limit of the touchscreen ‘when an input mechanism is able to receive a gesture portion beyond the display or screen.’” SMITH-2004, [105] (citing EX1005, 4:35-47). Based on this teaching of Nan, a POSITA would have recognized that Shiplacoff’s gesture area 102 and this embodiment of Nan’s edge would be the same area of the device (i.e., the area near and just outside of the edge of the display), and thus Nan’s teachings regarding how to differentiate gestures from this common region of the device at the edge of the display are complementary to Shiplacoff’s teachings regarding gestures that begin in gesture

area 102. *Compare* APPLE-1004, [0066] (describing the capability of the gesture area 102 to “detect[] a location of contact and/or user motion proximate to the surface”), [0127] (“a ‘swipe up’ gesture beginning in gesture area 102 and extending onto screen 101”) *to* APPLE-1005, 4:16-52 (“In some cases, the gesture is received off of or proximate to a physical edge of the display (e.g., as a finger or stylus encounters the edge of the display) by a touch digitizer, a capacitive touch screen, or a capacitive sensor, just to name a few”), 5:28-44 (“Gesture handler 128, for example, can determine the later point of the gesture based on the later point being received a preset distance from the edge or the start point, such as past edge limit 410 for edge 402 or twenty pixels from start point 418”). In other words, the purpose of Shiplacoff’s gesture area 102 is very similar to, if not the same as, Nan’s “edge” and therefore Nan’s teachings regarding distinguishing between “edge gestures” are equally useful in the context of Shiplacoff’s gesture area 102 as they are in the context of Nan’s “edge.” *Id.* Given these clear similarities, a POSITA would have been drawn to, not away from, teachings related to Nan’s edge gestures when considering how to implement Shiplacoff’s gesture area 102.

F. Dr. Madisetti’s arguments regarding the dependent claims are wrong for the same reasons as his arguments with respect to the dependent claims

39. Dr. Madisetti alleges that he finds “nothing in the Petition that explains how Shiplacoff’s ‘tap or flick’ input satisfies the additional requirements

of Dependent Claims 2, 16, and 28.” SMITH-2004, [109]. Dr. Madisetti goes on to allege that “[t]he Petition’s mapping with respect to Dependent Claims 3, 17, and 29 are similarly deficient.” SMITH-2004, [111]. However, in both Grounds 1 and 2, it is because the “swipe up” gesture meets dependent claims 2, 3, 16, 17, 28, and 29 that the “different gesture” that I described with respect to Element [1k] does as well.

40. As I noted above, my Original Declaration explained that “it would have been obvious, if not understood, to use a different gesture, such as a tap or flick, that does not have the same movement parameters as those of a swipe up gesture (e.g., touch and slide action for a certain displacement amount and upward direction).” APPLE-1003, [61]. And with respect to independent claim 27, I explained how the different gesture would further be differentiated by a duration parameter and duration threshold. APPLE-1003, [79]-[82]. In other words, it is the “movement parameter” of the different gesture (and the “duration parameter,” in the case of independent claim 27) that would be different from the “swipe up,” not the aspects at issue in dependent claims 2, 3, 16, 17, 28, and 29.

41. This is even more clearly the case in Ground 2 and the combination with Nan. The edge gestures that Nan describes for transitioning between different user interfaces all start at or near the edge of the display and are differentiated based on any one or more of “the length of the gesture, speed, or a number of

inputs (e.g., fingers).” *See* APPLE-1005, 7:17-19 (“Block 802 determines that a gesture made over a user interface has a start point at an edge of the user interface and a later point not within the edge”), 7:30-46 (“Block 804 determines which interface to present based on one or more factors of the gesture,” and “[t]o do so gesture handler 128 may determine the length of the gesture, speed, or a number of inputs (e.g., fingers)”); APPLE-1003, [34] (my explanation that a “POSITA would have been motivated, would have found obvious, and would have predictably and reasonably expected success in beneficially applying the teachings of Nan to Shiplacoff such that Shiplacoff’s system can implement gestures such as Nan’s edge gestures”), [36] (my explanation that “Nan’s gesture handler would have been incorporated into Shiplacoff’s system to realize the above-noted benefits”). That is, neither the starting point nor direction need necessarily change to differentiate two gestures (*e.g.*, a “swipe up” on the one hand and a “flick” on the other) for purposes of determining to which mode the display should be switched.

42. Accordingly, each of Grounds 1 and 2 address how “the second input by the second contact [] includes movement that starts at an edge of the display” and “includes a vertical direction,” because they explain how the “swipe up” gesture meets these limitations, and both Grounds explain the obviousness of changing the “movement parameters” and “duration parameters” of the “different gesture” that transitions from full screen mode to the launcher screen without

changing other aspects of the “swipe up” gesture, such as those that meet the above-noted limitations of dependent claims 2, 3, 16, 17, 28, and 29. *See* APPLE-1003, [61]-[63], [77], [86], [89], [91], [95].