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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MASIMO CORPORATION,
Petitioner

v.

APPLE INC.,
Patent Owner

Case No. IPR2023-00664
Patent No. 11,106,352

SECOND DECLARATION OF CRAIG S. ROSENBERG, PH.D.

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I. INTRODUCTION

1. I, Craig S. Rosenberg, Ph.D., am making this declaration at the request of Masimo Corporation (“Petitioner”). I understand that this declaration will be submitted as Exhibit 1054 in support of Petitioner’s Opposition to Patent Owner’s Contingent Motion to Amend.

2. I am being compensated for my work in this matter at my standard hourly rate for consulting services. My compensation in no way depends on the outcome of this proceeding.

3. The opinions set forth in this declaration are my independent opinions, formed after conducting significant analysis, over several days, related to whether Patent Owner’s proposed substitute claims of the ’352 patent would have been obvious in view of the prior art discussed in this declaration.

4. In conducting the analysis and forming the opinions set forth in this declaration, I considered, in addition to my knowledge and expertise in the relevant field, at least the following written materials:

- Petition for Inter Partes Review of the ’352 patent (Paper 1)
- Decision Granting Institution of Inter Partes Review (Paper 8)
- Patent Owner’s Contingent Motion to Amend (Paper 14)
- Dascola (EX1051);
- Zanella (EX1052);

- Spivey (EX1053);
- Charlton (EX1055);
- '352 patent (EX1001);
- File history of the '352 patent (EX1002);
- Declaration of Craig Rosenberg, Ph.D. (EX1003)
- Chae (EX1005);
- Narendra (EX1006);
- Android 4.2 lock screen widgets (“Android”) (EX1007);
- Shuttleworth (EX1008);
- de Sa (EX1009);
- Hong (EX1010);
- Karunamuni (EX1011);
- Norman (EX1012);
- Nielsen 1 (EX1013);
- Nielsen 2 (EX1014);
- U.S. Patent No. 10,466,889 (EX1018);
- Bandyopadhyay (EX1019);
- The content, including the video and metadata, located at
https://www.youtube.com/watch?v=ZpN8Wyu_z6Y;

- The content, including the archived video and metadata, located at https://web.archive.org/web/20121119160047/https://www.youtube.com/watch?v=ZpN8Wyu_z6Y;
- Any other document referenced herein.

5. I understand that Petitioner will cite and rely on significant portions of my testimony and analysis set forth in this declaration in support of its Opposition to Patent Owner's Contingent Motion to Amend. I have not been provided or reviewed the Opposition or any drafts of the Opposition, and, thus, the Opposition or drafts of the Opposition have not influenced my testimony or analysis set forth in this declaration.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

6. My experience and qualifications were summarized in my first declaration submitted in this IPR (EX1003). A detailed record of my professional qualifications, including a list of publications, awards, research grants, and professional activities, is set forth in my curriculum vitae. A list of my previous testimony by deposition and at trial is also included in my curriculum vitae. Exhibit 1004 is a true and correct copy of my curriculum vitae.

III. APPLICABLE LEGAL PRINCIPLES

7. I have been asked to provide my opinion as to whether the substitute claims of the '352 patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention, in view of the prior art.

8. I am not an expert in patent law. Therefore, the attorneys from Knobbe, Martens, Olson & Bear, LLP have provided me with guidance as to the applicable patent law in this matter. The paragraphs below express my understanding of how I must apply current principles related to patent validity to my analysis.

A. Claim Construction

9. I have been informed the first step of a validity analysis is to construe the claims. I have been informed that the Patent Trial and Appeal Board construes the claims by giving the claim terms their ordinary and customary meaning, as they would have been understood by a person of ordinary skill in the art (“POSITA”) at the time of the invention in view of the intrinsic record (patent specification and file history). For the purposes of this review, and to the extent necessary, I have interpreted each claim term in accordance with its plain and ordinary meaning as it would have been understood by a POSITA at the time of the invention, in view of the intrinsic record.

10. It is my understanding that an inventor may expressly define certain terms used in a patent, and therefore may give a term a meaning that differs from the

term’s plain and ordinary meaning. However, I do not believe that the inventors defined any claim terms whose construction is necessary for my analysis in a manner inconsistent with their plain and ordinary meanings in view of the intrinsic record.

11. I have been informed that, under 35 U.S.C. § 112(f), claim limitations written in “means-plus-function” format must be construed as follows: (1) the function specified in the claim, and the structure corresponding to the claimed function, must be identified, (2) to be corresponding structure, the specification must clearly link the structure with performance of the claimed function and the structure must actually be able to perform the claimed function, and (3) once corresponding structure is identified, the claim limitation is construed to cover the corresponding structure and equivalent structures. However, I do not believe that any claim terms whose construction is necessary for my analysis is written in “means-plus-function” format.

B. Perspective of a person of ordinary skill in the art at the time of the claimed invention

12. I have been informed that claim construction and patent validity is generally analyzed from the perspective of a hypothetical person of ordinary skill in the art of the invention (“POSITA”) as of the effective filing date. I have assumed for purposes of my analysis that the effective filing date, also referred to herein as the “relevant time,” is May 16, 2017.

13. I have performed my analyses, and expressed my opinions, from the perspective of the POSITA (as further described below) at the relevant time.

C. Prior-Art Status of References

14. I understand that the patent statute defines the requirements for a reference to be considered prior art to the '352 patent. However, while I understand the references I have analyzed were published before May 16, 2017, I have not been asked to assess their prior-art status. Rather, I have assumed, for purposes of my analysis, that the references are prior art to the '352 patent.

D. Obviousness

15. I have been informed that a claim is “obvious” if the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a POSITA. I also have been informed that an obviousness analysis takes into account the scope and content of the prior art, the differences between the claimed subject matter and the prior art, the level of ordinary skill in the art at the time of the invention, and any secondary considerations of non-obviousness for which evidence has been introduced.

16. I have been informed that, in determining the scope and content of the prior art, a reference is considered appropriate prior art if it falls within the field of the inventor’s endeavor. In addition, a reference is appropriate prior art if it is reasonably pertinent to a particular problem with which the inventor was involved.

A reference is reasonably pertinent if it logically would have commended itself to an inventor's attention in considering his or her problem. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis.

17. I have been informed that to assess the differences between prior art and the claimed subject matter, the law requires the claimed invention to be considered as a whole. This "as a whole" assessment requires showing that a POSITA at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the elements from the prior art and combined them in the claimed manner.

18. I have been informed that something is "inherent in," and therefore taught by, the prior art, if it necessarily flows from the explicit disclosure of the prior art. I understand that the fact that a certain result or characteristic *may* be present in the prior art is not sufficient to establish inherency. However, if the result or characteristic is necessarily present based upon the explicit disclosure in the prior art, it is inherent in the prior art and is therefore disclosed.

19. I have been informed that the law recognizes several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include: combining prior art elements according to known methods to yield predictable results; simple substitution of one

known element for another to obtain predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known device (method or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

20. I have been informed that the “secondary considerations of non-obviousness” that must be considered if evidence of those considerations is introduced include whether there was (i) a long-felt need in the industry; (ii) any unexpected results; (iii) skepticism of others toward the invention; (iv) a teaching away from the invention; (v) commercial success; (vi) praise by others for the invention; and (vii) copying of the invention by other companies. I am not aware of any evidence of such secondary considerations that would suggest that the claims of the ’352 patent would have been non-obvious.

E. Patent-Eligible Subject Matter

21. I am informed that under 35 U.S.C. § 101, certain types of subject matter are ineligible for patent protection, including natural laws and abstract ideas (such as mathematical formulas and human mental steps). I understand that patent claims directed to such ineligible subject matter, without more, are unpatentable.

22. I understand that a two-step inquiry is used to determine whether patent claims are invalid on this ground. The first step is to determine whether the patent claim is “directed to” ineligible subject matter, such as an abstract idea. If so, the inquiry continues to step two. Otherwise, the inquiry ends and the patent claim is not invalid on this ground. The second step is to determine whether the claim recites an “inventive concept,” i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.

23. I understand that a patent claim is directed to an abstract idea at step one if that abstract idea is the “focus” of the claimed invention. When determining what a claim is focused on, I understand that one may consult the patent specification, which often explains what aspects of an invention the inventors regarded as different from what was previously known in the field.

24. At step two, I understand that an element or combination of elements supplies an inventive concept if it solves a problem arising from a specific technology, in a manner that is tied to that specific technology. I understand that claim elements fail to supply an inventive concept if they recite merely well-understood, routine, conventional technology or implement an abstract idea using generic computer components. Conventional, routine, and well-known elements do not themselves convey an inventive concept. And appending conventional elements,

specified at a high level of generality, is not enough. Rather, claims must require something other than conventional computer components operating according to their ordinary function. Likewise, a mere conventional ordering of steps or elements reciting only conventional technology does not convey eligibility, nor does an abstract idea become non-abstract by limiting it to a particular field or technological environment. But a claimed invention may be patent eligible if it offers a solution that is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.

25. I further understand that step two of the analysis requires consideration of the elements of each claim both individually and as an ordered combination. I understand that the inventive concept must be an element or combination of elements that is sufficient to ensure that the patent in practice amounts to something significantly more than the abstract idea itself, such that these additional elements or combination of elements transform the nature of the claim to be patent eligible. I further understand that an ordered combination of conventional and well-known elements may create an inventive concept only if it claims a specific, unconventional technological solution to a technological problem. I understand that the mere recitation of concrete, tangible components is insufficient; they must involve more than performance of conventional, well understood, and routine activities. I also understand that limiting the application of an abstract idea to a particular field of use

or technological environment, or adding token post-solution components, does not render an abstract idea patentable. Thus, merely reducing an abstract concept to a particular technical platform is insufficient to provide the inventive concept needed for patent eligibility.

IV. BACKGROUND OF THE '352 PATENT

A. Technical Field and Level of Ordinary Skill in the Art

26. The '352 patent relates to a touchscreen user interface that uses gestures to navigate between different screens on a smartphone or similar electronic device. The '352 patent states that its technical field “relates generally to electronic devices with touch-sensitive surfaces, including but not limited to electronic devices with touch-sensitive surfaces that include user interfaces for displaying notifications.” EX1001 at 1:16-19. The claims of the '352 patent also recite user-interface functions for touchscreen devices. However, the claims of the '352 patent are not directed specifically to user interfaces for displaying notifications, but instead relate to user interfaces for navigating among different user-interface screens of touchscreen devices. *See, e.g., id.*, claims 1-24. The specification also describes user interfaces for navigating among different user-interface screens of touchscreen devices. Accordingly, based on the specification and claims of the '352 patent, in my view the art of the invention is user interfaces for navigating among different user-interface screens of touchscreen devices.

27. Based on my education and experience within the art of the invention at the relevant time, a POSITA of the '352 patent would have had at least a bachelor's degree in a discipline related to human-computer interaction, such as Human Factors, Computer Science, Computer Engineering, or an equivalent discipline, and at least two years of experience working with touchscreen user interfaces. More education could substitute for less work experience, and vice-versa.

B. The Alleged Invention

28. The claims of the '352 patent recite navigating between a wake screen, a home screen, a widget screen, and a control panel screen using the familiar swipe gestures that have long been commonly used in touchscreen user interfaces. In my view, the claims do not recite new functionality for wake screens, home screens, widget screens, and control panel screens. A POSITA would have understood that smartphones and other touchscreen devices had wake screens, home screens, widget screens, and control panel screens like those described in the '352 patent years before the '352 patent. Accordingly, in my view, the patentability of the claims rests on claiming a particular navigation path (i.e., movement from one user-interface screen (e.g., Screen A) to another (e.g., Screen B)) in response to a swipe gesture in a particular direction (e.g., a left-to-right swipe). For example, claim 1 recites navigating from a wake screen to a home screen when the user swipes in one direction and navigating from the wake screen to a widget screen when the user

swipes in a different direction. The other claims recite similar navigational paths from one screen to another in response to a swipe gesture.

C. The Substitute Claims

29. The Substitute Claims amend some of the original claims by adding conventional electronic components. They specify that the navigational paths specified in the original claims are implemented in a wearable electronic watch comprising, for example, radio frequency and audio circuitry, different types of sensors, and input/output devices.

V. PRIOR ART BACKGROUND AND SUMMARY

30. I provided a summary of certain relevant prior art references in my first declaration in paragraphs 56-61. Below is a summary of additional prior art references that disclose the amended limitations of the Substitute Claims.

A. Dascola

31. U.S. Patent Application Publication No. US 2017/0046024 A1 (Exhibit 1051 or “Dascola”) was filed by Apple in 2016 and published on February 16, 2017. Dascola discloses an electronic device with a touch-sensitive surface that detects inputs for manipulating user interfaces, including wake screen, home screen, and widget screen user interfaces. Dascola also discloses that the device may include various hardware components, such as optical sensors, tactile output generators, radio frequency circuitry, and audio circuitry:

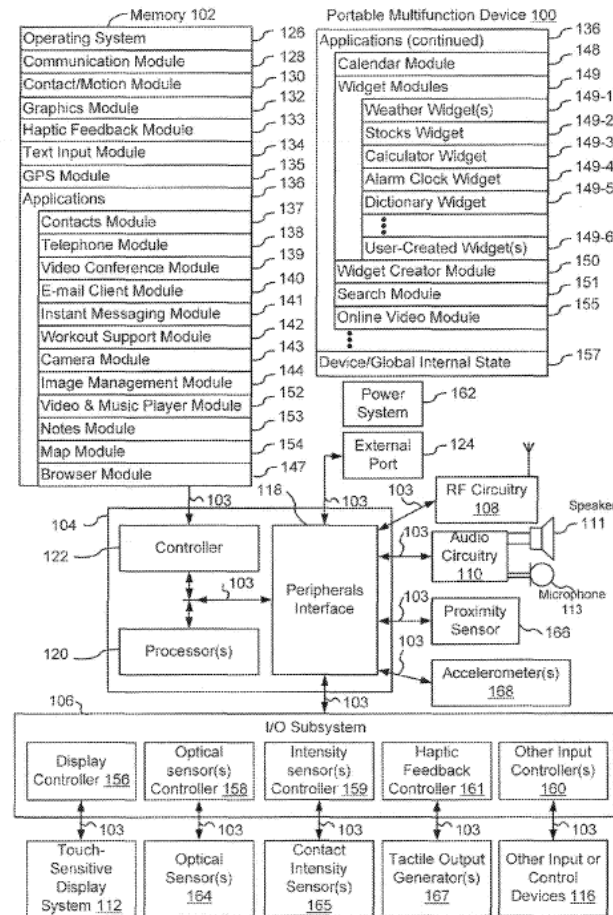


Figure 1A

32. Notably, Dascola includes numerous figures and passages that are identical to figures and passages in the '352 patent. For example, at least Figures 1A-B, 2, 3, and 4A-E in Dascola are identical to the corresponding figures in the '352 patent.

B. Zanella

33. International Patent Application Publication No. WO 2013/045983 A1 (Exhibit 1052 or “Zanella”) was filed by I’M Spa in 2012 and published in 2013. Zanella discloses an electronic wrist device with a touchscreen, as well as various gestural inputs detected by the device:

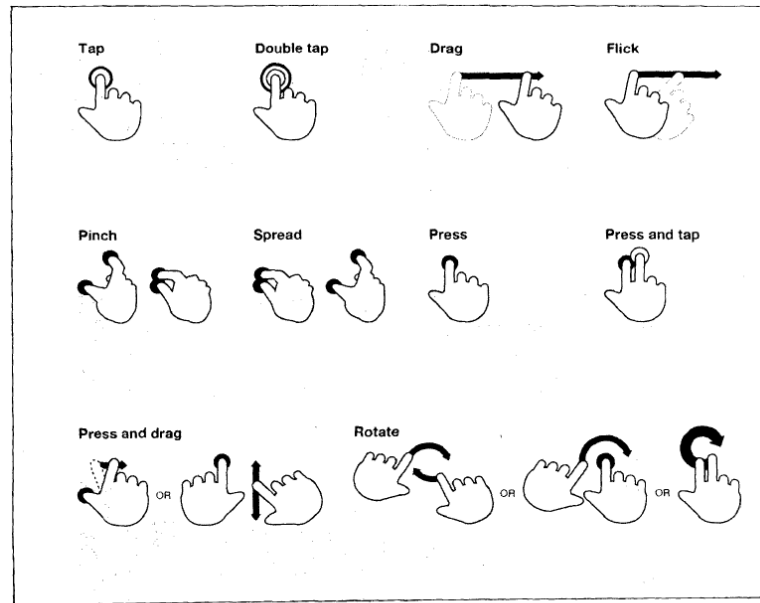


Fig. 10

34. Zanella also discloses transitioning the device into various “modalities” based on a threshold duration. Zanella, ¶ 34. For example, Zanella explains that the device may enter a “second modality with turned-off display” when “the time provided for passage from the modality of full function is expired.” *Id.*

C. Principles of User-Interface Design

35. In addition to the prior art references summarized above, a POSITA would have understood basic principles of user-interface design that were well known before the effective filing date of the '352 patent. One such principle is that a user interface should be consistent with a good *mental model* (also known as a *conceptual model*) that tracks users’ understanding of how they think the user interface should work and, thus, helps users anticipate the effects of their interactions with the user interface and the resultant outcomes of those interactions.

36. When using software, people develop mental models largely based on their past experiences gained from using similar software or similar user interfaces. These mental models help inform users how they think the software should work and what is expected from the software and the users as they operate it. These mental models aid users in determining what inputs they should provide to the system in order to accomplish their specific goals.

37. Dr. Donald Norman, whom I know to be one of the most respected researchers in the field of user interface design and human-computer interaction, described mental models (also called conceptual models) in his book, *The Design of Everyday Things*, published in 1988 by Doubleday Publishing Group (Exhibit 1012 or “Norman”). Dr. Norman explained:

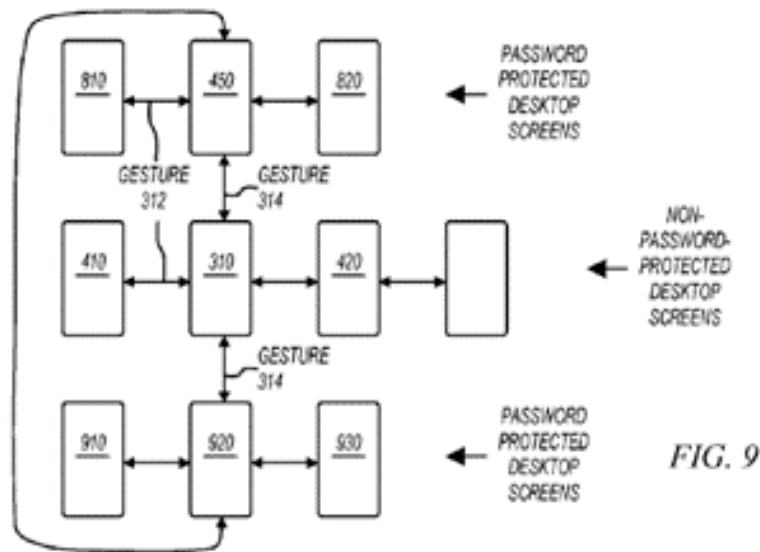
A good conceptual model allows us to predict the effects of our actions. Without a good model we operate by rote, blindly; we do operations as we were told to do them; we can’t fully appreciate why, what effects to expect, or what to do if things go wrong. As long as things work properly, we can manage. When things go wrong, however, or when we come upon a novel situation, then we need a deeper understanding, a good model. For everyday things, conceptual models need not be very complex.... There is no need to understand the underlying physics or chemistry of each device we own, simply the relationship between the controls and the outcomes. (pp13-14)

* * *

[C]onceptual models ... are part of an important concept in design: *mental models*, the models people have of themselves, others, the environment, and the things with which they interact. People form mental models through experience, training, and instruction. The mental model of a device is formed largely by interpreting its perceived actions and its visible structure. I call the visible part of the device the *system image*.... When the system image is incoherent or inappropriate ... then the user cannot easily use the device. If it is incomplete or contradictory, there will be trouble.

EX1012 at 13, 14, 17.

38. Narendra provides a good example of a user-interface design that uses a good mental model consistent with how most users understand navigating among different screens of a user interface. Narendra discloses a smartphone user interface that allows a user to navigate among a large collection of screens but can view just one screen at a time. Figure 9 of Narendra illustrates the large collection of screens the user can navigate among.



EX1006, Fig. 9. Figure 9 also shows that the user can navigate among the screens by using directional swipe gestures to move horizontally from one screen to another by swiping left or right or to move vertically by swiping up or down.

39. Narendra’s navigational system of using four directional swipe gestures (up, down, left, right) would make sense to users because it is consistent with a familiar mental model in which users think of the current screen as one part of a larger “map” in which additional screens are located to the left, right, up, or down. In this mental model, it makes sense to users to swipe left, right, up, or down to pan the display to the screen located to the left, right, up, or down of the current screen. Users would be familiar with this user-interface paradigm from using mobile operating systems (*e.g.*, Android and iOS) that support horizontally moving between screens as well as moving back and forth using digital map software that supports panning to view territory to the North, South, East, and West.

40. Narendra’s navigational system makes particular sense for a user interface that supports moving between a large number of screens, such as the ten screens shown in Narendra Figure 9. If Narendra were designed to have a unique directional swipe gesture for each of the ten screens of Figure 9, the user would have to memorize ten different directional swipe gestures, one for each screen. Narendra’s design, on the other hand, allows the user to use just four directional swipe gestures (up, down, left, and right) to easily navigate between all screens.

41. Consistency is another basic principle of good user-interface design that was well known before the effective filing date of the ’352 patent. Dr. Jakob Nielsen is another researcher whom I know to be highly respected in the field of user interface design and human-computer interaction. Exhibits 1013 and 1014 are true and correct copies of publications of Dr. Nielsen. Dr. Nielsen has explained the importance of consistency in user-interface design as follows:

Since the dawn of time (1984), we have known that consistency is one of the strongest contributors to usability. The Macintosh was based on a detailed book of Apple Human Interface Guidelines that were followed by almost all applications. One of the main benefits of the Mac (and later Windows) over earlier systems was the resulting consistency that made it possible for users to use software right out of the box. For example, people knew that you could move stuff around by a sequence of (1) select-object, (2) Cut-command, (3) scroll-to-new-location, (4) click-on-insertion-spot, (5) Paste-command. Always the same sequence. And the Cut and Paste commands were always in the

Edit menu and were always abbreviated Command-X and Command-V. No real reason people should associate the letter V with insertion or pasting, but since it was always the *same*, it worked.

EX1013. Dr. Nielsen has also listed “consistency” as one among ten usability heuristics, explaining: “Users should not have to wonder whether different words, situations, or actions mean the same thing.” EX1014.

42. One way to promote consistency, as illustrated by Narendra’s navigational system, is to have four directional swipe gestures, each of which always results in navigating in a particular direction from one screen to another. Specifically, (1) swiping left always navigates from the current screen to the screen to the left of the current screen, (2) swiping right always navigates from the current screen to the screen to the right of the current screen, (3) swiping up always navigates from the current screen to the screen above the current screen, and (4) swiping down always navigates from the current screen to the screen below the current screen.

43. Another way to promote consistency, for which Shuttleworth provides an example, is to have unique directional swipe gesture that always navigates to the home screen regardless of which screen is the current screen. A POSITA would have understood that this approach would have been easy to implement in combination with Narendra’s approach, such that a user can always navigate to the home screen using a single unique directional swipe gesture while using Narendra’s four directional swipe gestures to navigate between a spatial arrangement of

numerous screens, as described above. A POSITA would have understood that such a combination would provide the advantages of both systems, allowing the user to easily navigate among a large number of screens without memorizing a unique directional swipe gesture for every screen while also easily navigating to the home screen from anywhere using a single unique directional swipe gesture.

D. A POSITA would have been motivated to combine, and would reasonably have expected success in combining, any two or more of Chae, Narendra, Android, Shuttleworth, Hong, Karunamuni, Dascola, and Zanella.

44. Chae, Narendra, Android, Shuttleworth, Hong, Karunamuni, Dascola, and Zanella are all in the same field of touchscreen user interfaces for mobile electronic devices. Further, each of these prior-art references discloses one or more user-interface features that would enhance the ease- of-use and user-friendliness of a touchscreen user interface for a mobile electronic device. A POSITA would have understood that the advantages of the disclosed features are compatible with and additive of each other, such that providing a combination of the disclosed features in a single smartphone user interface would further enhance ease-of-use and user-friendliness beyond providing just one of the disclosed features. Moreover, each of these features would have been easy to implement in software without needing to overcome any technical barrier or to make any changes to the hardware configuration of any smartphone. Therefore, a POSITA would have reasonably expected success in combining the features to achieve the additive advantages of the

combined features. A POSITA would have understood such a combination to be a simple combination of familiar user-interface features to perform their established functions to achieve the predictable result of additional ease-of-use and user-friendliness.

45. A POSITA would have been motivated to implement user-friendly user interface features into different available hardware platforms. Different users prefer different types of hardware platforms, such as touchscreen tablets, phones, and watches. Thus, implementing features into different types of hardware would make the features accessible to more users. Moreover, a POSITA would have an interest in maintaining continuity of user interface features across multiple different hardware platforms so that users would not have to learn to interact with a completely different interface when switching between different hardware platforms.

46. The general motivation to combine discussed above is applicable to all grounds of unpatentability set forth below. In addition to this general motivation to combine, a POSITA would also have been motivated to combine the prior art for specific reasons set forth in my analysis below.

VI. GROUND FOR UNPATENTABILITY

A. Ground 2: Substitute Claims 25-27, 30-32, and 35-37 would have been obvious in view of Chae, Narendra, Shuttleworth, and Dascola.

47. In my first declaration, I explained how claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, and Shuttleworth. EX1003, ¶¶128-143. Substitute Claims 25-27, 30-32, and 35-37 amend claims 3-5, 11-13, and 19-22, respectively.

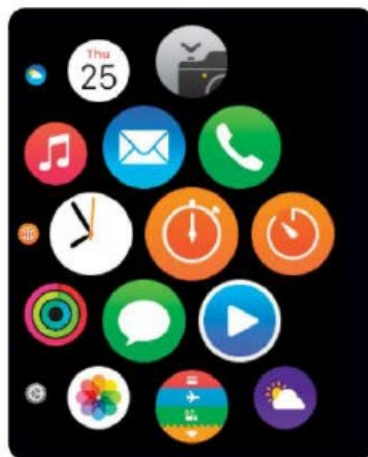
48. Dascola discloses each of the amended limitations of Substitute Claims 25-27, 30-32, and 35-37. Thus, if any of claims 3-5, 11-13, and 19-22 are found unpatentable in view of Chae, Narendra, and Shuttleworth, then the corresponding Substitute Claims are likewise unpatentable in view of Chae, Narendra, Shuttleworth, and Dascola.

49. Chae, Narendra, and Shuttleworth all teach user interface navigation methods recited in the original claims. Dascola teaches that methods for user interfaces may be implemented in various types of hardware devices, such as smartwatches with radio frequency circuitry, tactile output generator(s), and different types of sensors. A POSITA would have understood that the user interface techniques taught in Chae, Narendra, and Shuttleworth are applicable to the devices disclosed in Dascola.

50. A POSITA would further have understood that smartphones and smartwatches are substantially similar devices with respect to user interface

navigational methods. For example, a POSITA would have understood that both a smartphone and smartwatch could have the same types of user interface screens, such as a wake screen, home screen, widget screen, and control panel, and that a user could navigate between these screens using directional inputs.

51. The primary difference between such devices would be the size of the screen. However, a POSITA would have understood how to implement the user interface techniques taught in Chae, Narendra, and Shuttleworth to a smaller device such as a smartwatch. Smartwatches existed long before the '352 patent; as such, a POSITA would have been aware of ways to implement smartphone functionality into a smartwatch, such as by making icons more compact. For example, the original Apple Watch released in 2015 included a home screen with many compact widgets and application icons.



1 Open the **Stopwatch** app by tapping its icon on your Apple Watch's Home screen.

EX1053 at 77. Users could also interact with the Apple Watch using gestural inputs on the display.



The Display

You can navigate your Apple Watch interface with the simple touch of a finger by swiping, touching and dragging, tapping, and pressing the display.

- **Swipe** up, down, left, and right to move around on your Apple Watch's display screen.
- **Touch and drag** items to move them around.
- **Tap** icons and menu items to select them or to move down deeper into options and settings.

Id. at 23. Thus, a POSITA would not have encountered significant technical obstacles in implementing known user-interface screens and navigational methods on a smartwatch screen.

52. Thus, applying the user interface techniques taught in Chae, Narendra, and Shuttleworth to the smartwatch disclosed in Dascola would simply require substituting one known element (a smartphone) for another (a smartwatch). Accordingly, the combination would yield predictable results. Moreover, applying the user interface techniques to a smartwatch would not prove significantly more challenging than applying those techniques to a different type of electronic device, such as a smartphone.

1. Substitute Claim 25

53. Substitute Claim 25 amends claim 3 by adding the limitation: “wherein the computer system is a wearable electronic watch.” Dascola discloses that “[i]n some embodiments, the device is a personal electronic device (e.g., *a wearable electronic device, such as a watch*).” EX1051, ¶ 8 (emphasis added).

2. Substitute Claim 26

54. Substitute Claim 26 amends claim 4 by adding the limitation: “generating, by the wearable electronic watch, one or more tactile outputs in response to an occurrence of an event of interest.” Dascola discloses that “tactile output generator(s) 167 [] produce tactile outputs . . . in response to user interactions with device 100.” EX1051 ¶123. A POSITA would have understood that a user interaction with the device is an “event of interest” that causes generation of a tactile output.

3. Substitute Claim 27

55. Substitute Claim 27 amends claim 5 by adding the following limitations: “calibrating one or more sensors of the wearable electronic watch that are configured to monitor a workout; receiving workout sensor data from the one or more sensors; storing workout data indicative of the workout sensor data; displaying the workout data indicative of the workout sensor data; transmitting, by the wearable electronic watch, the workout data indicative of the workout sensor data.”

56. Dascola discloses that the device may include a “workout support module.” EX1051, ¶ 150. The “workout support module 142 includes executable instructions to create workouts (e.g., with time, distance, and/or calorie burning goals); *communicate with workout sensors (in sports devices and smart watches)*; *receive workout sensor data*; *calibrate sensors used to monitor a workout*; select and play music for a workout; and *display, store and transmit workout data.*” *Id.* This is identical to the disclosure cited by Patent Owner as providing support for the added limitations of Substitute claim 27. *Compare id. with* EX2001, ¶ 103.

57. Thus, Dascola discloses the added limitations of Substitute Claim 27.

4. Substitute Claim 30

58. Substitute Claim 30 amends claim 11 by adding multiple limitations.

Below I explain how Dascola discloses each of the added limitations.

- a. **“wherein the computer system comprises: a watch comprising the one or more processors, the display generation component, the one or more input devices, radio frequency circuitry, and one or more sensors.”**

59. Dascola discloses this added limitation. For example, Fig. 1A illustrates “a portable multifunction device with a touch-sensitive display in accordance with some embodiments.”

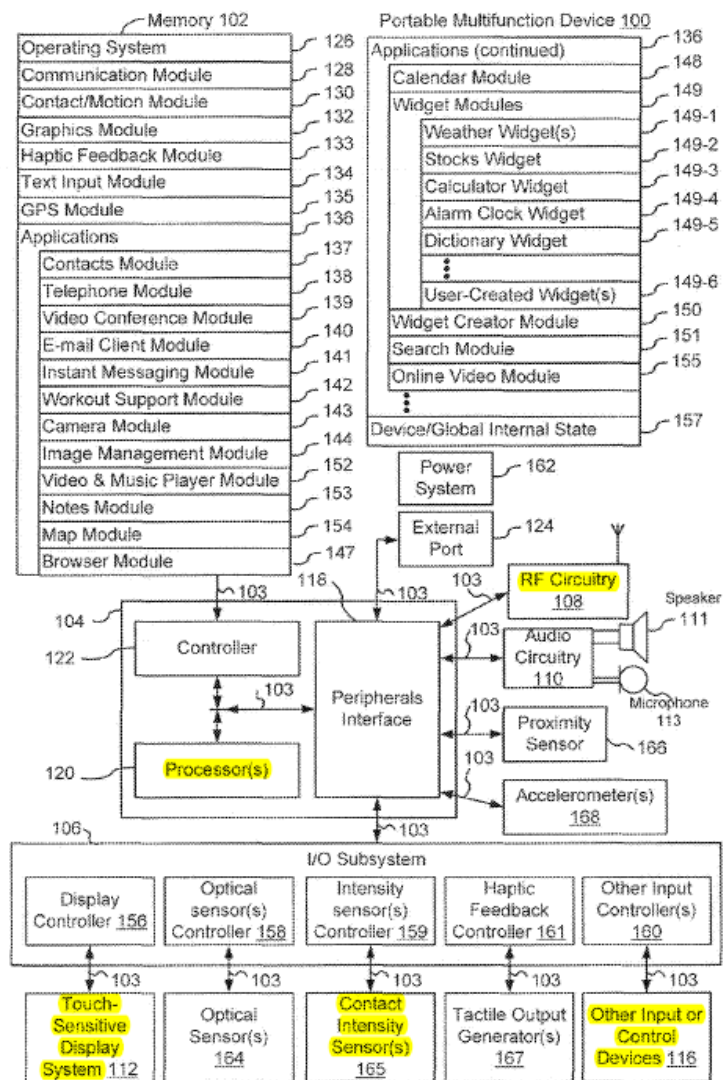


Figure 1A

EX1051, Fig. 1A (annotated).

60. As shown in Fig. 1A above, the device includes processors, a touch-sensitive display system (which a POSITA would have understood is a display generation component), input devices, radio frequency (or “RF”) circuitry, and contact intensity sensors. Further, as explained above, Dascola discloses embodiments in which the device is a watch.

- b. “the display generation component is configured to display a plurality of graphical user interfaces including the home screen user interface and the widget screen user interface”**

61. This limitation is duplicative of features recited in the original claims. The independent claims all recite a “display generation component” and require displaying a “home screen user interface,” and a “widget screen user interface.” A POSITA would have understood that such interfaces would be displayed by the display generation component.

62. Moreover, Dascola discloses that “the device has a touch-sensitive display (also known as a ‘touch screen’ or ‘touch screen display’)” and that “the device has a graphical user interface (GUI).” EX1051, ¶ 8. Specifically, Dascola discloses a home screen user interface and a widget screen user interface.

63. For example, Figure 4A (pictured below) shows “home screen user interface 400.” EX1051, ¶ 244.

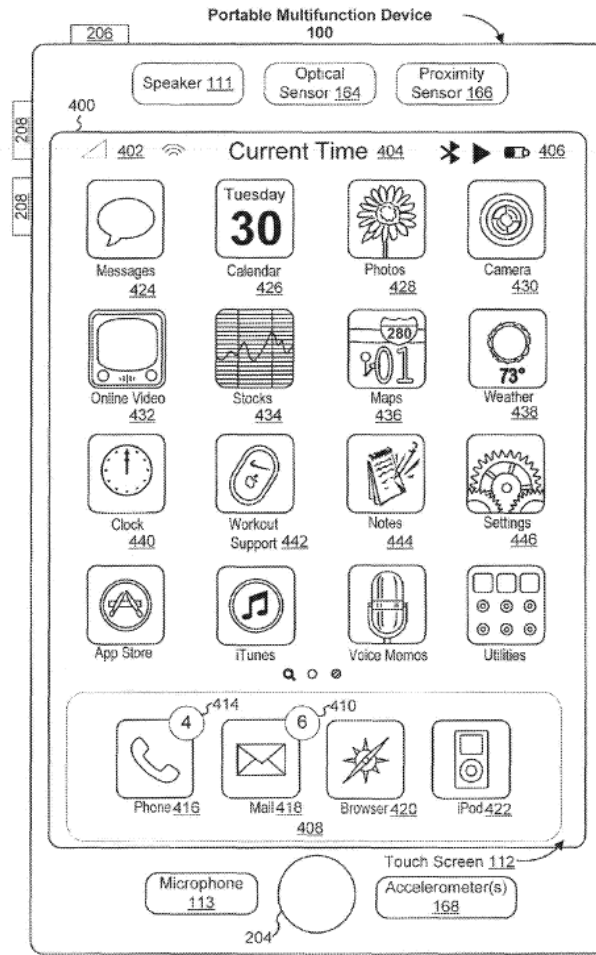


Figure 4A

EX1051, Fig. 4A.

64. As shown in Fig. 4A above, the home screen user interface 400 is displayed on a touch screen. *Id*; see also ¶ 586 (“The device displays (1202), on the display, a user interface that includes a plurality of application icons that correspond to different applications in a plurality of applications (e.g., a desktop or **home screen user interface** generated by an operating system of the device that includes an array of application launch icons).”) (emphasis added).

65. Dascola also discloses a “mini application object screen or ***widget screen***” which is “configured to host a number of mini application objects that are associated with different applications installed on device 100.” EX1051, ¶ 309 (emphasis added); ¶ 314.

66. Thus, Dascola discloses this added limitation.

c. “the one or more input devices comprise a physical push button that is configured as a menu button”

67. Dascola discloses a menu button, stating that in some embodiments, “the menu button is a physical push button” EX1051, ¶ 164.

d. “the radio frequency circuitry is configured to transmit and receive one or more wireless signals”

68. Dascola discloses that the radio frequency circuitry “communicates with networks, such as the Internet . . . an intranet and/or a wireless network, such as . . . a wireless local area network . . . and other devices by wireless communication.” EX1051, ¶ 99. A POSITA would have understood that communicating with a wireless network or with other devices by wireless communication would require the radio frequency circuitry to be configured to transmit and receive wireless signals. Further, Dascola’s disclosure regarding RF circuitry is identical to the disclosure in the ’352 patent cited by Patent Owner as allegedly supporting this limitation. *Compare id. with* EX2001, ¶ 52.

e. “the one or more sensors are configured to detect a contact on the display generation component, detect the input that

meets the display-waking criteria, detect the first input that is directed to the portion of the wake screen user interface”

69. This limitation is duplicative of features recited in the original claims. The independent claims all require detecting an input that meets display-waking criteria and detecting an input directed to a portion of the wake screen user interface. A POSITA would have understood that such detecting would be performed by one or more sensors. A POSITA would further have understood that detecting an input directed to a portion of the wake screen interface would require that the sensors are configured to detect contacts on the display generation component, such as a touchscreen.

70. Moreover, Dascola discloses that “[i]n some embodiments, the user interacts with the GUI primarily through stylus and/or finger contacts and gestures on the touch-sensitive surface.” EX1051, ¶ 8. A POSITA would have understood that in order for the user to interact with the GUI through contacts and gestures on a touchscreen, sensors must be configured to detect those contacts.

71. Dascola also discloses a “wake screen user interface.” For example, “Fig. 5A1 illustrates wake screen user interface 5002 that is displayed when device 100 is activated from a screen-off state (e.g., a sleep state) to a screen-on state (e.g., a wake state).” *Id.*, ¶ 242.

72. Finally, Dascola discloses detecting inputs directed to a portion of the wake screen user interface. For example, “Fig. 6A illustrates an initial user interface

601 (e.g., a lock screen and/or wake screen) at which an input . . . is detected.” *Id.*,

¶ 400. The input may be “an input gesture, such as a drag gesture.” *Id.*

73. Thus, Dascola discloses this added limitation.

74. Thus, Dascola discloses all of the added limitations of Substitute Claim 30.

5. Substitute Claim 31

75. Substitute claim 31 amends claim 12 by adding the following limitations: “receiving, using audio circuitry of the watch, audio data”; “converting the audio data to an electrical signal”; and “transmitting the electrical signal to a speaker.”

76. Dascola discloses that “[a]udio circuitry 100 receives audio data from peripheral interface 118, converts the audio data to an electrical signal, and transmits the electrical signal to speaker 111.” EX1051, ¶ 100. This disclosure is identical to the disclosure cited by Patent Owner as allegedly supporting the added limitations to Substitute Claim 31. *Compare id. with* EX2001, ¶ 53.

77. Thus, Dascola discloses the added limitations of Substitute Claim 31.

6. Substitute Claim 32

78. Substitute Claim 32 amends claim 13 by adding the limitation “wherein one or more sensors in the watch comprise an optical sensor located on a back side

of the watch, opposite to a touch screen display of the display generation component on a front side of the watch.”

79. Dascola discloses that “[d]evice 100 optionally also includes one or more optical sensors 164.” EX1051, ¶ 108. “In some embodiments, an optical sensor is located on the back of device 100, opposite sensor is located on the back of device 100, opposite touch-sensitive display system 112 on the front of the device.” *Id.* This disclosure is identical to the disclosure cited by Patent Owner as allegedly supporting the added limitations to Substitute Claim 32. *Compare id. with* EX2001, ¶ 61.

7. Substitute Claim 35

80. Substitute Claim 35 amends claim 19 by adding the limitation: “wherein the computer system includes a wearable electronic watch and the operations are performed at the wearable electronic watch.” Dascola discloses that “[i]n some embodiments, the device is a personal electronic device (e.g., a wearable electronic device, such as a watch).” EX1051, ¶ 8 (emphasis added).

8. Substitute Claim 36

81. Substitute Claim 36 amends claim 20 by adding two new limitations.

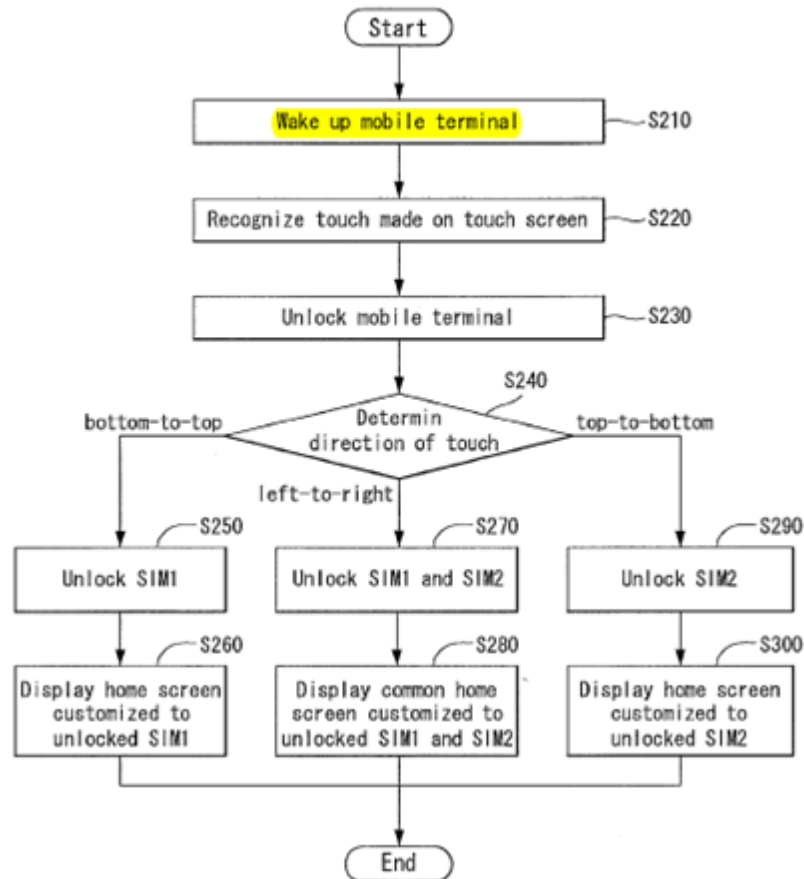
- a. **“wherein the input that meets the display-waking criteria while the computer is in the power saving state, is detected when the display generation component is in a display-off**

state, the display-off state being a power-saving state of the display generation component”

82. This limitation is duplicative of features recited in the original claims. The independent claims all require detecting an input that meets display-waking criteria. A POSITA would have understood, based on the specification, that such that input would be detected when the display is off (hence the need to “wake” the display). A POSITA would further have understood that the display-off state would be a power-saving state, because the display would consume more power while on. *See* EX1001 at 64:56-62; EX1003 ¶76.

83. Chae discloses this limitation. Figure 3 of Chae illustrates a step S210 in which the mobile terminal wakes up:

FIG. 3



EX1005, Fig. 3 (annotated). The specification indicates that, because “steps S210 to S230 of FIG. 3 are identical to the steps S110 to S130, the detailed descriptions thereof are omitted herein.” *Id.* ¶ 102. Accordingly, a POSITA would have understood that the specification’s descriptions of steps S110 to S130 (which are illustrated in Figure 2) also describe the identical steps S210 to S230 of Figure 3.

With respect to step S110 (identical to step S210), the specification teaches:

At step S110, the controller 180 of the mobile terminal 100 wakes up the mobile terminal 100 in response to a control signal that is generated based on a user’s action such as clicking a button (not shown).

Id. ¶ 94. Waking up a smartphone or similar mobile device was a well-known process before the publication of Chae and years before the '352 patent. During periods of inactivity, mobile devices commonly went into a “sleep” or power-saving mode in which the display was turned off so that the device would not use as much power. *See, e.g.*, EX1019 at 4:39-64. A POSITA would have understood that the process of waking up a mobile device includes turning on the previously sleeping display so the device can be operated. *Id.*

- b. “wherein displaying the wake screen user interface in response to the input comprises transitioning the display generation component from the display-off state to a display-on state such that the wake screen user interface replaces an interface provided in the power-saving state of the display generation component”**

84. Dascola discloses that “wake screen user interface 5002 [] is displayed when device 100 is activated from a screen-off state (e.g., a sleep state) to a screen-on state (e.g., a wake state).” EX1051, ¶ 242. A POSITA would have understood that a “sleep state” is a power-saving state of a display generation component, such as a touchscreen.

85. Thus, Chae and Dascola disclose the added limitations of Substitute Claim 37.

9. Substitute Claim 37

86. Substitute Claim 37 amends claim 21 by adding the limitations: “determining that a time during which no input has been detected by the device

increases beyond a threshold duration; and controlling the display generation component to transition from a screen-on state associated with the wake screen user interface to a screen-off state that is a power-saving state of the display generation component.”

87. Dascola discloses that “wake screen user interface 5002 [] is displayed when device 100 is activated from a screen-off state (e.g., a sleep state) to a screen-on state (e.g., a wake state).” EX1051, ¶ 242. A POSITA would have understood that a “sleep state” is a power-saving state of a display generation component, such as a touchscreen.

88. Like waking up, putting a computing device to sleep was a well-known process before the publication of Dascola and years before the ’352 patent. During periods of inactivity, mobile devices commonly went into a “sleep” or power-saving mode in which the display was turned off so that the device would not use as much power. *See, e.g.*, EX1019 at 4:39-64. A POSITA would have understood that the process of transitioning into a sleep state would necessarily involve “determining that a time during which no input has been detected by the device increases beyond a threshold duration,” such as a “timeout” duration. *Id.*, Fig. 5 (transition from display-on state 516 to display-off state 510 when “activity timer expired”); *see also id.* at 4:57-60 (one-second delay before entering sleep state 510). Thus, Substitute

Claim 37 would have been obvious in view of Chae, Narendra, Shuttleworth, and Dascola.

10. Ground 2.1: Substitute Claim 37

89. In the alternative, Substitute Claim 37 would have been obvious in view of Chae, Narendra, Shuttleworth, Dascola, and Zanella. Zanella is directed to a wrist device, such as a watch. EX1052 ¶1. It describes a “practical embodiment of the invention,” including hardware components (¶¶24-25) and the ability to detect gestural inputs (¶¶31-32). Accordingly, Zanella is directed to the same field of endeavor as the ’352 patent, Dascola, Chae, Narendra, and Shuttleworth. A POSITA would have been motivated to combine Zanella with Chae, Narendra, and Shuttleworth for the same reasons provided above regarding Dascola. A POSITA would have understood that applying the user interface techniques taught in Chae, Narendra, and Shuttleworth to the wrist device disclosed in Zanella would yield predictable results.

90. Zanella describes several modalities, including a “standby modality.” EX1052, ¶ 34. For example, “[t]he entry of the wrist device (1) in standby modality, also *in order to allow its optimal management of the energetic resources . . .* is provided as temporized, with periodic reawakening, *with the provision of a limit time at the end of which the modality of standby takes over.*” *Id.* (emphasis added). Zanella also discloses a “second modality with *turned-off display* (24): executed

when . . . *the time provided for passage from the modality of full function is expired.*” *Id.* (emphasis added). A POSITA would have understood the above sections in Zanella to disclose “determining that a time during which no input has been detected by the device increases beyond a threshold duration; and controlling the display generation component to transition from a screen-on state associated with the wake screen user interface to a screen-off state that is a power-saving state of the display generation component.”

B. Ground 3: Substitute Claims 28, 29, 33, 34, 38, and 39 are unpatentable because they would have been obvious in view of Chae, Narendra, Karunamuni, and Dascola.

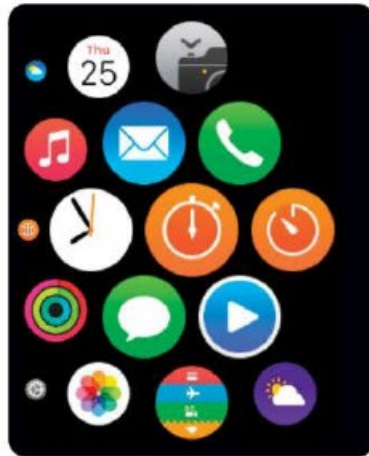
91. In my first declaration, I explained how claims 7, 8, 15, 16, 23, and 24 would have been obvious in view of Chae, Narendra, and Karunamuni. EX1003, ¶¶144-152. Substitute Claims 28, 29, 33, 34, 38, and 39 amend claims 7, 8, 15, 16, 23, and 24, respectively.

92. Dascola discloses each of the amended limitations of Substitute Claims 28, 29, 33, 34, 38, and 39. Thus, if any of claims 7, 8, 15, 16, 23, and 24 are found unpatentable in view of Chae, Narendra, and Karunamuni, then the corresponding Substitute Claims are likewise unpatentable in view of Chae, Narendra, Karunamuni, and Dascola.

93. Chae, Narendra, and Karunamuni all teach user interface navigation methods recited in the original claims. Dascola teaches that methods for user

interfaces may be implemented in various types of hardware devices, such as smartwatches with radio frequency circuitry, tactile output generator(s), and different types of sensors. A POSITA would have understood that the user interface techniques taught in Chae, Narendra, and Karunamuni are applicable to the devices disclosed in Dascola.

94. A POSITA would further have understood that smartphones and smartwatches are substantially similar devices with respect to user interface navigational methods. For example, a POSITA would have understood that both a smartphone and smartwatch could have the same types of user interface screens, such as a wake screen, home screen, widget screen, and control panel, and that a user could navigate between these screens using directional inputs. The primary difference between such devices would be the size of the screen. However, a POSITA would have understood how to implement the user interface techniques taught in Chae, Narendra, and Karunamuni to a smaller device such as a smartwatch. Smartwatches existed long before the '352 patent; as such, a POSITA would have been aware of ways to implement smartphone functionality into a smartwatch, such as by making icons more compact. For example, the original Apple Watch released in 2015 included a home screen with many compact widgets and application icons.



1 Open the **Stopwatch** app by tapping its icon on your Apple Watch's Home screen.

EX1053 at 77. Users could also interact with the Apple Watch using gestural inputs on the display.



The Display

You can navigate your Apple Watch interface with the simple touch of a finger by swiping, touching and dragging, tapping, and pressing the display.

- **Swipe** up, down, left, and right to move around on your Apple Watch's display screen.
- **Touch and drag** items to move them around.
- **Tap** icons and menu items to select them or to move down deeper into options and settings.

95. *Id.* at 23. Thus, a POSITA would not have encountered significant technical obstacles in implementing known user-interface screens and navigational methods on a smartwatch screen.

96. Thus, applying the user interface techniques taught in Chae, Narendra, and Karunamuni to the smartwatch disclosed in Dascola would simply require substituting one known element (a smartphone) for another (a smartwatch). Accordingly, the combination would yield predictable results. Moreover, applying the user interface techniques to a smartwatch would not prove significantly more challenging than applying those techniques to a different type of electronic device, such as a smartphone.

1. Substitute Claim 28

97. Substitute Claim 28 amends claim 7 by adding the limitation: “wherein the computer system is a wearable electronic watch that comprises an optical sensor located on a back side of the watch, opposite to a touch screen display of the display generation component on a front side of the watch.”

98. Dascola discloses that “[i]n some embodiments, the device is a personal electronic device (e.g., a wearable electronic device, such as a watch).” Dascola, ¶ 8 (emphasis added).

99. Dascola also discloses that “[d]evice 100 optionally also includes one or more optical sensors 164.” EX1051, ¶ 108. “In some embodiments, an optical sensor is located on the back of device 100, opposite sensor is located on the back of device 100, opposite touch-sensitive display system 112 on the front of the device.” *Id.* This disclosure is identical to the disclosure cited by Patent Owner as

allegedly supporting the added limitations to Substitute Claim 28. *Compare id. with* EX2001, ¶ 61.

100. Thus, Dascola discloses the added limitation of Substitute Claim 28.

2. Substitute Claim 29

101. Substitute Claim 29 is identical to claim 8, except that it depends from Substitute Claim 28 instead of claim 7. Thus, if claim 8 and Substitute Claim 28 are found to be unpatentable, then Substitute Claim 29 is likewise unpatentable.

3. Substitute Claim 33

102. Substitute Claim 33 amends claim 15 by adding the limitation: “wherein the radio frequency circuitry is configured to transmit the one or more wireless signals to a communication system, the communication system comprising one of a Bluetooth system, a Wireless Fidelity system, or a Long Term Evolution system.”

103. Dascola discloses that the radio frequency circuitry “communicates with networks, such as the Internet . . . an intranet and/or a wireless network, such as . . . a wireless local area network . . . and other devices by wireless communication.” EX1051, ¶ 99. A POSITA would have understood that communicating with a wireless network or with other devices by wireless communication would require the radio frequency circuitry to be configured to transmit and receive wireless signals.

104. Dascola further discloses that “[t]he wireless communication optionally uses any of a plurality of communications standards, protocols and technologies, including . . . long term evolution (LTE) . . . Bluetooth, Wireless Fidelity (Wi-Fi).” *Id.*

105. Dascola’s disclosure regarding RF circuitry is identical to the disclosure in the ’352 patent cited by Patent Owner as allegedly supporting this limitation. *Compare id. with* EX2001, ¶ 52.

4. Substitute Claim 34

106. Substitute Claim 34 is identical to claim 16, except that it depends from Substitute Claim 33 instead of claim 15. Thus, if claim 16 and Substitute Claim 33 are found to be unpatentable, then Substitute Claim 34 is likewise unpatentable.

5. Substitute Claim 38

107. Substitute Claim 38 amends claim 3 by adding two new limitations. Dascola discloses each of these new limitations.

a. “generating one or more tactile outputs in response to an occurrence of an event of interest”

108. Dascola discloses that “tactile output generator(s) 167 [] produce tactile outputs . . . in response to user interactions with device 100 .” EX1051, ¶ 123. A POSITA would have understood that a user interaction with the device is an “event of interest” which causes generation of a tactile output.

- b. **“transmitting one or more wireless signals to a communication system, the communication system comprising one of a Bluetooth system, a Wireless Fidelity system, or a Long Term Evolution system”**

109. Dascola further discloses that “[t]he wireless communication optionally uses any of a plurality of communications standards, protocols and technologies, including . . . long term evolution (LTE) . . . Bluetooth, Wireless Fidelity (Wi-Fi).” EX1051, ¶ 99. This is identical to the disclosure in the ’352 patent cited by Patent Owner as allegedly supporting this limitation. *Compare id. with* EX2001, ¶ 52.

6. Substitute Claim 39

110. Substitute Claim 39 is identical to claim 24, except that it depends from Substitute Claim 38 instead of claim 23. Thus, if claim 24 and Substitute Claim 38 are found to be unpatentable, then Substitute Claim 39 is likewise unpatentable.

C. Ground 5: Substitute Claims 25-27, 30-32, and 35-37 would have been obvious in view of Chae, Narendra, Shuttleworth, and Dascola and further in view of Hong and/or Android.

111. In my first declaration, I explained how claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, and Shuttleworth, and further in view of Hong and/or Android. EX1003, ¶¶128-143. Substitute Claims 25-27, 30-32, and 35-37 amend claims 3-5, 11-13, and 19-22, respectively.

112. Dascola discloses each of the amended limitations of Substitute Claims 25-27, 30-32, and 35-37. *Supra* ¶¶ 53-89. Thus, if any of claims 3-5, 11-13, and 19-22 are found unpatentable in view of Chae, Narendra, and Shuttleworth, and

further in view of Hong and/or Android then the corresponding Substitute Claims are likewise unpatentable in view of Chae, Narendra, Shuttleworth, and Dascola, and further in view of Hong and/or Android.¹

D. Ground 6: Substitute Claims 28, 29, 33, 34, 38, and 39 are unpatentable because they would have been obvious in view of Chae, Narendra, Karunamuni, and Dascola and further in view of Hong and/or Android.

113. In my first declaration, I explained how claims 7, 8, 15, 16, 23, and 24 would have been obvious in view of Chae, Narendra, and Karunamuni, and further in view of Hong and/or Android. EX1003, ¶¶128-143. Substitute Claims 28, 29, 33, 34, 38, and 39 amend claims 7, 8, 15, 16, 23, and 24, respectively.

114. Dascola discloses each of the amended limitations of Substitute Claims 28, 29, 33, 34, 38, and 39. *Supra* ¶¶ 97-110. Thus, if any of claims 7, 8, 15, 16, 23, and 24 are found unpatentable in view of Chae, Narendra, and Karunamuni, and further in view of Hong and/or Android then the corresponding Substitute Claims are likewise unpatentable in view of Chae, Narendra, Karunamuni, and Dascola, and further in view of Hong and/or Android.²

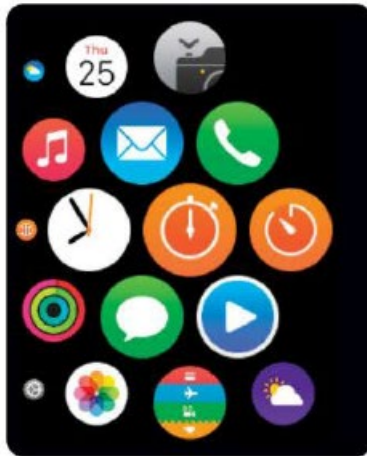
115. Chae, Narendra, Karunamuni, Hong, and Android all teach user interface navigation methods recited in the original claims. Dascola teaches that

¹ This also applies to Grounds 5.1, 5.2, and 5.3 identified in my first declaration.

² This also applies to Grounds 6.1, 6.2, and 6.3 identified in my first declaration.

methods for user interfaces may be implemented in various types of hardware devices, such as smartwatches with radio frequency circuitry, tactile output generator(s), and different types of sensors. A POSITA would have understood that the user interface techniques taught in Chae, Narendra, Karunamuni, Hong, and Android are applicable to the devices disclosed in Dascola.

116. A POSITA would further have understood that smartphones and smartwatches are substantially similar devices with respect to user interface navigational methods. For example, a POSITA would have understood that both a smartphone and smartwatch could have the same types of user interface screens, such as a wake screen, home screen, widget screen, and control panel, and that a user could navigate between these screens using directional inputs. The primary difference between such devices would be the size of the screen. However, a POSITA would have understood how to implement the user interface techniques taught in Chae, Narendra, Karunamuni, Hong, and Android to a smaller device such as a smartwatch. Smartwatches existed long before the '352 patent; as such, a POSITA would have been aware of ways to implement smartphone functionality into a smartwatch, such as by making icons more compact. For example, the original Apple Watch released in 2015 included a home screen with many compact widgets and application icons.



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EX1053 at 77. Users could also interact with the Apple Watch using gestural inputs on the display.



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You can navigate your Apple Watch interface with the simple touch of a finger by swiping, touching and dragging, tapping, and pressing the display.

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- **Touch and drag** items to move them around.
- **Tap** icons and menu items to select them or to move down deeper into options and settings.

Id. at 23. Thus, a POSITA would not have encountered significant technical obstacles in implementing known user-interface screens and navigational methods on a smartwatch screen.

117. Thus, applying the user interface techniques taught in Chae, Narendra, Karunamuni, Hong, and Android to the smartwatch disclosed in Dascola would simply require substituting one known element (a smartphone) for another (a smartwatch). Accordingly, the combination would yield predictable results. Moreover, applying the user interface techniques to a smartwatch would not prove significantly more challenging than applying those techniques to a different type of electronic device, such as a smartphone.

E. Substitute Claims 28, 29, 32, and 36 Lack Written Description Support

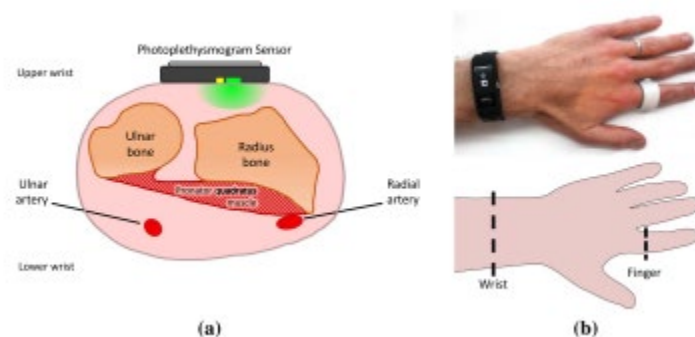
1. Disclosure of a Smart Phone Camera Does Not Support Claims That Seek to Capture Heart-Rate and Oxygen Sensors

118. Substitute Claims 28, 29, and 32 recite “an optical sensor located on a back side of the watch.” The ’352 patent discloses only an optical sensor that “receive[s] light from the environment, projected through one or more lens, and converts the light to data representing an image.” EX2001, ¶ 61. Thus, a POSITA would have understood that the only optical sensor disclosed by the ’352 patent is a camera sensor that works “[i]n conjunction with imaging module 143 (also called a camera module)” that may “capture still images and/or video.” *Id.*

119. The ’352 patent states that in some embodiments, the optical sensor “is located on the back of device 100, opposite touch-sensitive display system 112 on the front of the device, so that the touch screen is enabled for use as a viewfinder for still and/or video image acquisition.” *Id.* This makes sense if the device is a

smartphone or tablet; indeed, virtually all smartphones have cameras located on the back of the phone. However, the Substitute Claims all relate to a wearable electronic watch. Placing a camera on the back of a watch would not make sense, because the user's wrist would block the sensor and prevent the camera from capturing any images or video. Thus, a POSITA would not understand the '352 patent's description of a camera-sensor to disclose an optical sensor on the back of a watch.

120. The Substitute Claims' reference to "an optical sensor located on a back side of the watch" would make sense if the "optical sensor" were understood as a photoplethysmography (or "PPG") sensor. PPG sensors use light to detect a person's pulse rate or oxygen saturation. EX1055, at 356 ("[PPG] is obtained by measuring the light either reflected from, or transmitted through, a tissue bed."). "For instance, smartwatches and fitness bands acquire the PPG . . . by illuminating the skin at the wrist using an LED and measuring the amount of reflected light using a photodetector." *Id.*



EX1055, Figs. 1(a) and 1(b). Thus, a POSITA would understand that Substitute Claims 28, 29, and 32 are directed to a PPG sensor on the back of a watch.

121. However, the '352 patent does not disclose PPG sensors or any other type of optical sensor that detects pulse rate, oxygen saturation, or any other physiological parameter. A POSITA would not understand the '352 patent's disclosure of a camera to include a PPG sensor. Thus, Substitute Claims 28, 29, and 32 lack adequate written description support.

2. “Interface Provided in the Power-Saving State”

122. Substitute Claim 36 recites “an interface provided in the power-saving state of the display generation component.” Patent Owner cites ¶ 376 as allegedly supporting this new limitation. However, that paragraph only states that “the first user interface is a wake screen user interface 504 that is displayed *upon the display transitioning from a display-off state to a display-on state*,” rather than an interface provided in the power-saving state. EX2001, ¶ 376 (emphasis added).

123. Moreover, both ¶ 376 and Substitute Claim 36 itself recite that the power-saving state is a display-off state, meaning that the touchscreen display is turned off. When the display is off, no interface is provided. Thus, it is unclear what “an interface provided in the power-saving state of the display generation component” would entail. A POSITA would not understand ¶ 376 to adequately

support Substitute Claim 36’s recitation of an “an interface provided in the power-saving state of the display generation component.”

124. Thus, Substitute Claim 36 lacks adequate written description support.

F. The Substitute Claims Are Not Patent-Eligible

1. The Substitute Claims Are Directed an Abstract Idea

125. I understand that whether a patent claim is directed to an abstract idea is a question of law for the Board. Therefore, I do not address all of the reasons for which the claims are abstract. However, I understand that claims directed to organizing and displaying information are abstract. The Substitute Claims (which depend from the original independent claims) are focused on the basic idea of organizing information into three screens, each of which is identified by the particular content it contains.

126. Each independent claim recites three interfaces: a “wake screen user interface,” a “home screen user interface,” and a “widget screen user interface.” EX1001, claims 1, 9, 17. Each user interface is defined by the information content it contains. The “widget screen user interface” includes “a plurality of user interface objects [containing] application content from [a corresponding] application.” *Id.* at 87:18-27. The “home screen user interface” includes “a plurality of application icons.” *Id.* at 87:3-5. The “wake screen user interface” may contain any content that is “different from” the home screen user interface. *Id.* at 87:1-3.

127. Each independent claim also recites moving between the screens. The home screen is displayed in response to a movement “in a first direction” and the widget screen is displayed in response to a movement “in a second direction that is different from the first direction.” *Id.* at 86:64-87:2, 87:10-17. Thus, the claims require that information content is organized such that different information can be displayed using different movements.

128. Thus, the focus of the independent claims is the organization and display of information. The Substitute Claims do not change this focus because they add only conventional smartwatch functionality that was widely available in off-the-shelf products for years before the ’352 patent’s priority date.

2. The Substitute Claims Recite Conventional Computer Components and Processes

129. The Substitute Claims recite no inventive concept. Apart from the abstract idea, the Substitute Claims (and the underlying independent claims) recite only conventional computer (or smartwatch) components and processes.

a. Conventional Computer Components

130. Claim 1 (and claims depending from claim 1) recite a “computer system that is in communication with a display generation component and one or more input devices.” Claim 9 (and claims depending from claim 9) recite a “computer system.” Claim 17 (and claims depending from claim 17) recite “[a] computer-readable storage medium comprising instructions . . . executed by one or more processors of

a computer system that is in communication with a display generation component and one or more input devices...” Substitute Claims 25, 28, 30, and 35 further require that the claimed computer system is a “wearable electronic watch” or a “watch comprising ... one or more processors.” Other Substitute Claims recite various conventional smartwatch components, such as sensors, a speaker, tactile output, and wireless communications. These components, both individually and in combination, were well-understood, routine, and conventional long before 2017.

131. The computer components recited in the Substitute Claims were common in smartwatches for years before 2017. For example, these conventional smartwatch features were included in the original Apple Watch that launched in 2015. These features are described, for example, in *Apple Watch (Idiot’s Guides)*, by Dwight Spivey (DK Publishing 1st ed. 2015) (“Idiot’s Guide”). *E.g.*, EX1054 at 15 (optical heart rate sensor), 16 (electronic watch with processor), 24-25 (physical push buttons), 57 (widgets), 106-107 (Bluetooth wireless), 124-25 (waking), 150 (tactile output), 171 (audio), 253-54 (plurality of graphical user interfaces), 278, 281-82, 285 (workout sensor). Moreover, the ’352 patent itself references “known software components for rendering and displaying graphics on touch-sensitive display system[s].” ’352 patent, at 16:64-66.

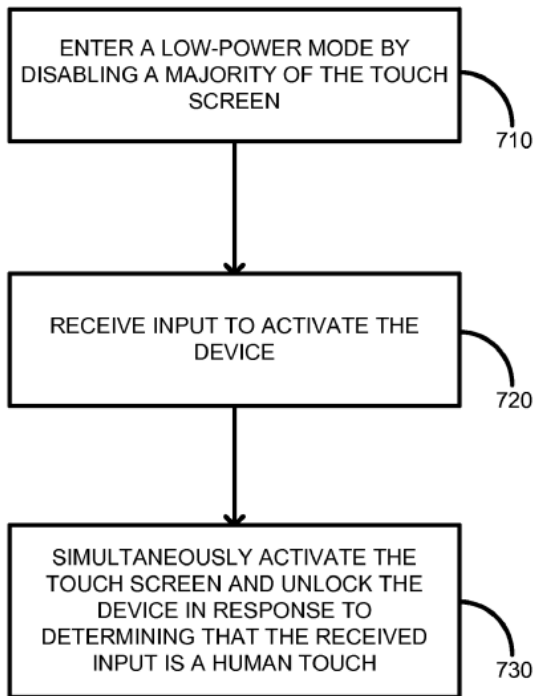
b. Conventional Computer Processes

132. The processes recited by the Substitute Claims are all conventional processes performed by computers. Each of the Substitute Claims recite the following processes: (1) detecting an input that meets display-waking criteria; (2) displaying a user interface; (3) detecting an input directed to a portion of the screen that includes movement; (4) determining that an input meets criteria requiring the input to be in a specific direction; and (5) navigating to a different user interface screen. These processes, both individually and in combination, were well-understood, routine, and conventional long before 2017. Again, all of these features were present in the original Apple Watch, which was widely known and widely available since 2015. EX1054 (Idiot’s Guide) at 23 (swiping), 124-125 (waking), 253-254 (swiping between screens).

133. Other evidence confirms that detecting an input for waking up a mobile device was a well-known computer process years before the ’352 patent. For example, U.S. Patent No. 8,311,514 to Bandyopadhyay et al. (EX1019), issued in 2012, teaches that during periods of inactivity, mobile devices commonly go into a “sleep” or power-saving mode in which the display is turned off so the device can use less power. *Id.* at 4:39-65. Figure 7 of Bandyopadhyay discloses a process that

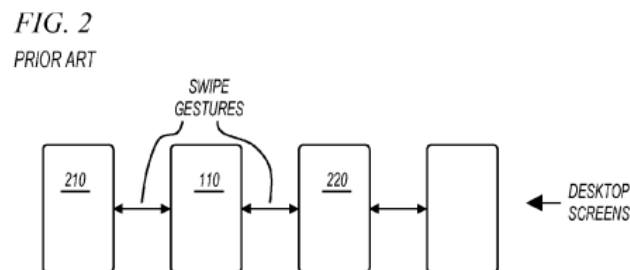
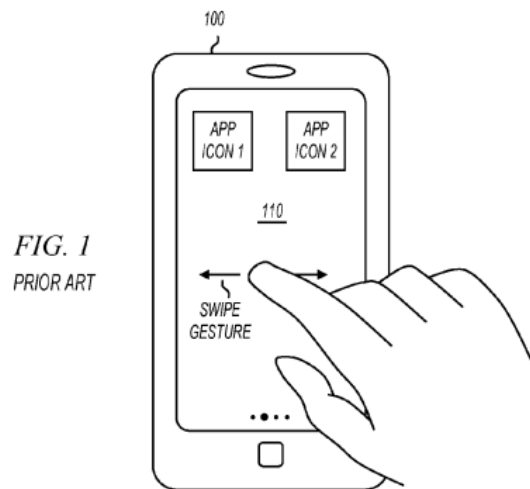
includes “enter[ing] a low-power mode” and “receiv[ing] input to activate the device.”

FIG. 7



EX1019, Fig. 7.

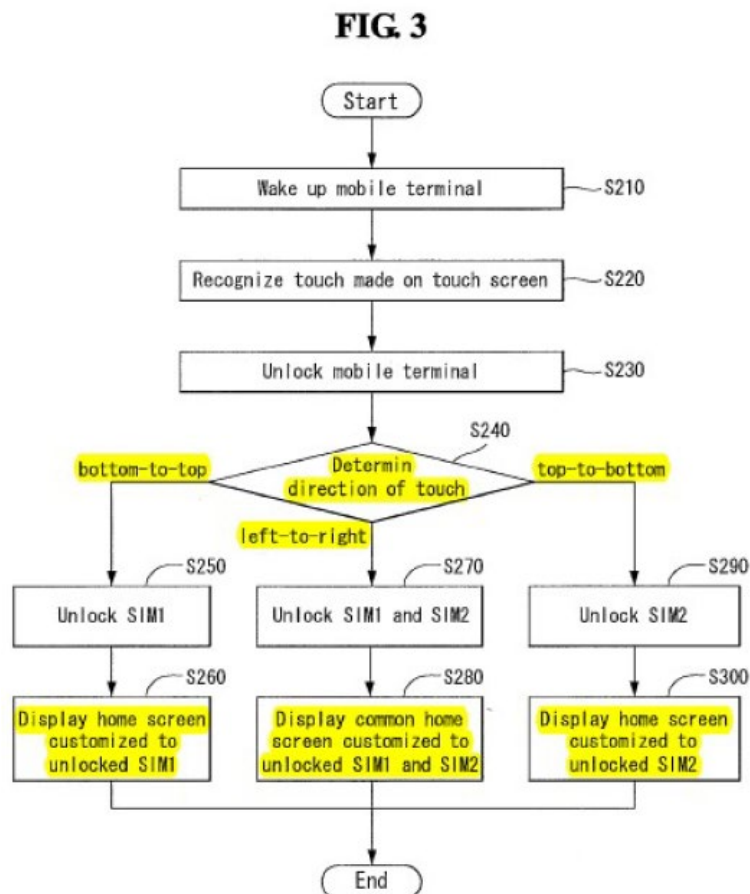
134. Displaying user interfaces and navigating between user interfaces screens were well-known computer processes years before the '352 patent. For example, U.S. Patent Application Publication No. 2013/0305351 A1 (“Narendra”), which was filed in 2012 and published in 2013, disclosed displaying user interfaces and navigating between different screens using swipe gestures. Notably, Prior Art Figures 1 and 2 of Narendra disclose both of these processes, indicating that these processes were well-known even before Narendra was filed in 2012.



EX1006, Figs. 1 & 2.

135. Detecting an input directed to a portion of the screen that includes movement and determining that an input meets criteria requiring the input to be in a

specific direction were well-known computer processes years before the '352 patent. For example, as shown above, Narendra disclosed “swipe gestures,” which a POSITA would understand to be inputs directed to a portion of a touch input device (such as a touchscreen) that includes movement (i.e., a “swipe”). Moreover, U.S. Patent Application Publication No. US 2012/0129495 A1 (“Chae”), which was filed in 2011 and published in 2012, disclosed using directional touch inputs to navigate between different user interface screens.



EX1005, Fig. 3 (annotated).

136. Thus, each of the computer processes recited by the Substitute Claims were well-understood, routine, and conventional long before 2017.

c. Conventional User Interface Elements

137. Each of the user interface screens and elements recited by the Substitute Claims are conventional user interface elements used by computers. Each of the Substitute Claims recite the following user interface elements: (1) a “wake screen user interface,” (2) a “home screen user interface that is different from the wake screen user interface, wherein the home screen user interface includes a plurality of application icons corresponding to different applications, and wherein a respective application icon of the plurality of application icons, when selected, causes display of an application corresponding to the respective application icon,” (3) a “widget screen user interface that is different from the wake screen user interface and the home screen user interface, wherein the widget screen user interface includes a plurality of user interface objects corresponding to different applications, wherein a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object,” and (4) a “control panel user interface that is different from the wake screen user interface and the widget screen user interface, wherein the control panel user interface includes a plurality of controls for controlling one or more device functions of the computer system.” The claims do

not recite any new functionality for wake screens, home screens, widget screens, or control panel screens.

138. These user interface elements, both individually and in combination, were well-understood, routine, and conventional before the '352 patent. For example, Dascola discloses a prior smartwatch that included a wake screen user interface, a home screen user interface, a widget screen user interface, and a control panel user interface as described above.

3. The Substitute Claims Do Not Solve Any Technical Problem

139. As explained above, the Substitute Claims recite conventional and well-known computer elements. Thus, any alleged novelty in the Substitute Claims would have to arise from the specific combination of elements in the Substitute Claims, namely the particular navigational paths for moving among the user-interface screens and associating a particular direction for each navigational path. However, the specific combination of elements in the Substitute Claims fail to solve any technical problem or improve the functioning of a computer.

140. A POSITA would understand that this is a simple matter of choosing from a finite number of design choices. For example, for each navigational path (such as from the wake screen to the home screen, from the home screen to the widget screen, etc.), the POSITA would simply need to choose from a finite set of

directional inputs (such as swipe left, swipe right, swipe up, swipe down, etc.) to associate with that navigational path.

VII. SECONDARY CONSIDERATIONS

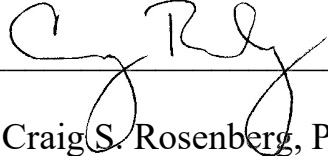
141. I understand that secondary considerations of non-obviousness, such as commercial success, unexpected results, skepticism of others, long-felt-but-unmet need, etc., should be considered when evidence of such factors has been introduced. I am not aware of any evidence of secondary considerations. I reserve the right to respond to any evidence of secondary considerations introduced by Apple.

VIII. CONCLUSION

142. For the foregoing reasons, it is my opinion that Substitute claims 25-39 of the '352 patent would have been obvious to a POSITA at the relevant time in view of the prior art referenced above.

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

Dated: March 6th, 2024

By: 
Craig S. Rosenberg, Ph.D.