

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
U.S. Patent No. 11,106,352

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 1003 in support of a Petition for *Inter Partes* Review of U.S. Patent No. 11,106,352 (“the ’352 patent”).

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 the 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:

- ’352 patent (EX1001);
- File history of the ’352 patent (EX1002);
- 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);
- Yang (EX1020);
- 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 Petition challenging the patentability of the '352 patent. I have not been provided or

reviewed the Petition or any drafts of the Petition, and, thus, the Petition or drafts of the Petition have not influenced my testimony or analysis set forth in this declaration.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

6. I hold a Bachelor in Science degree in Industrial Engineering and a Masters in Science degree and a Ph.D. in Human Factors from the University of Washington School of Engineering. For over 28 years I have worked in the areas of human factors, user interface design, software development, software architecture, systems engineering, and modeling and simulation across a wide variety of application areas, including aerospace, communications, entertainment, and healthcare. For the past 18 years, I have served as a consultant for Global Technica, Sunny Day Software, Stanley Associates, Techrizon, CDI Corporation, and the Barr Group. In this capacity, I have provided advanced engineering services for many companies.

7. I consulted for the Boeing Company for over 16 years as a senior human factors engineer, user interface designer, and software architect for a wide range of advanced commercial and military programs. Many of the projects that I have been involved with include advanced software development, user interface design, agent-based software, and modeling and simulations in the areas of missile defense, homeland security, battle command management, networking and communications, air traffic control, location-based services, and Unmanned Aerial

Vehicle (“UAV”) command and control. Additionally, I was the lead system architect developing advanced air traffic controller workstations and air traffic control analysis applications, toolsets, and trade study simulations for Boeing Air Traffic Management.

8. I was also the architect of the Boeing Human Agent Model. The Boeing Human Agent Model is an advanced model for the simulation of human sensory, cognitive, and motor performance as applied to the roles of air traffic controllers, pilots, and UAV operators. In another project, I was the lead human factors engineer and user interface designer for Boeing’s main vector and raster computer-aided drafting and editing system that produces the maintenance manuals, shop floor illustrations, and service bulletins for Boeing Commercial Aircraft Company. Additional responsibilities in my time as a consultant include system engineering, requirements analysis, functional specification, use case development, user stories, application prototyping, modeling and simulation, object-oriented software architecture, graphical user interface analysis and design, as well as UML, C++, C#, and Java software development.

9. In 1995 and 1996, I was hired as the lead human factors engineer and user interface designer for the first two-way pager produced by AT&T. Prior to this technology, people could receive pages but had no way to respond utilizing their pager. This new technology allowed users to utilize a small handheld device to

receive and send canned or custom pages, access and update an address book, and access and update a personal calendar. This very project involved designing the entire feature set, user interface/user interaction design and specification, as well as all graphical design and graphical design standards.

10. In 1999–2001, I was the lead human factors engineer and user interface designer for a company called Eyematic Interfaces that was responsible for all user interface design and development activities associated with real-time mobile handheld 3D facial tracking, animation, avatar creation and editing software for a product for Mattel. My work involved user interface design, human factors analysis, requirements gathering and analysis, and functional specifications.

11. I was the lead user interface designer for a company called ObjectSpeed that developed a portable handheld device for use in homes and businesses that had many of the same capabilities that we take for granted in mobile cellular phones. This portable multifunction device supported email, chat, video conferencing, internet radio, streaming media, Microsoft Outlook integration, photo taking and sharing, etc. The ObjectSpeed device was specifically designed and developed as a portable handheld device.

12. I am the founder, inventor, user interface designer, and software architect of WhereWuz. WhereWuz is a company that produces advanced mobile software running on GPS-enabled smartphones and handheld devices. WhereWuz

allows users to record exactly where they have been and query this data in unique ways for subsequent retrieval based on time or location. WhereWuz was specifically designed and developed to run on small handheld devices.

13. I am the co-founder of a medical technology company called Healium. Healium developed advanced wearable and handheld user interface technology to allow physicians to more effectively interact with electronic medical records. I am also the co-founder of a medical technology company called StratoScientific. StratoScientific is developing a handheld smartphone stethoscope that turns a handheld computer such as a smartphone, PDA, laptop, or tablet into a full-featured digital stethoscope.

14. I designed and developed a large software project for Disney World called xVR that allowed the operational employees of Disney World to utilize a handheld device to view the status of all of the guests within multiple attractions as well as within one of their restaurants. The application could run in a real-time/live mode where it would display data collected from sensors that showed the location and status of all guests within the attraction; the application could also be run in a fast-time/simulated mode. The application was developed on a laptop computer and was specifically designed to run on a variety of handheld devices, including laptops, PCs, smartphones, and tablets.

15. I have received numerous awards for my engineering work relating to interface design, computer graphics, and the design of spatial, stereographic, and auditory displays, including a \$10,000 scholarship from the I/SEC for advancing the field of interactive computer graphics for flight simulation and a Link Foundation award for furthering the field of flight simulation and virtual interface design. I have created graphics for several popular book covers as well as animations for a movie produced by MIRAMAR. I have published twenty-two research papers in professional journals and proceedings relating to user interface design, computer graphics, and the design of spatial, stereographic, and auditory displays.

16. I graduated from the University of Washington in 1988 with a B.S. in Industrial Engineering. After graduation, I continued my studies at the University of Washington. In 1990, I obtained an M.S. in Human Factors. In 1994, I graduated with a Ph.D. in Human Factors. In the course of my doctoral studies, I worked as an Associate Assistant Human Factors Professor at the University of Washington Industrial Engineering Department. My duties included teaching, writing research proposals, designing and conducting funded human factors experiments for the National Science Foundation, as well as hiring and supervising students.

17. While studying at the University of Washington, I also worked as a human factors researcher and designed and performed advanced human factors

experiments relating to interface design, stereoscopic displays, and advanced visualization research, which was funded by the National Science Foundation. My duties included user interface design, systems design, software development, graphics programming, experimental design, as well as hardware and software interfacing.

18. 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

19. I have been asked to provide my opinion as to whether the 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.

20. 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

21. 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.

22. 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.

23. 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

24. 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.

25. 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

26. 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

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

IV. BACKGROUND OF THE ’352 PATENT

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

33. 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.

34. 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

35. 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. As explained below, the claimed navigational paths in response to directional swipe gestures were trivial and obvious implementations of the general concept of using directional swipe gestures to move from one screen to another disclosed in Chae and Narendra.

C. Claim Listing

36. For conciseness and ease of reference, the claim listing below lists a shorthand limitation label that I use in this declaration to refer to each claim limitation. For example, any reference to “limitation 1b” in this declaration refers to the limitation of claim 1 that recites “at computer system that is in communication with a display generation component and one or more input devices.”

Limitation	Claim Language
1a	A method, comprising:
1b	at computer system that is in communication with a display generation component and one or more input devices:
1c	while the computer system is in a power saving state, detecting an input that meets display-waking criteria;

Limitation	Claim Language
1d	in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;
1e	while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and
1f	in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met: displaying of 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; and

Limitation	Claim Language
1g	in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met: displaying 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.
2	The method of claim 1, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.
3	The method of claim 1, including: while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and in response to detecting the second input that is directed to the portion of the widget screen user interface: in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.

Limitation	Claim Language
4	The method of claim 3, including: while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and in response to detecting the third input that is directed to the portion of the home screen user interface: in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.
5	The method of claim 3, including: while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and in response to detecting the fourth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.

Limitation	Claim Language
6	The method of claim 1, including: while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and in response to detecting the fifth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.
7	The method of claim 1, including: in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met: displaying of 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.

Limitation	Claim Language
8	The method of claim 7, including: while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and in response to detecting the sixth input that is directed to the portion of the control panel user interface: in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.
9a	A computer system, comprising:
9b1	one or more processors that are in communication with a display generation component and one or more input devices; and
9b2	memory storing instructions, the instructions, when executed by the one or more processors, cause the processors to perform operations comprising:
9c	while the computer system is in a power saving state, detecting an input that meets display-waking criteria;
9d	in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;
9e	while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and

Limitation	Claim Language
9f	in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met: displaying of 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; and
9g	in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met: displaying 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.
10	The computer system of claim 9, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.

Limitation	Claim Language
11	The computer system of claim 9, wherein the operations include: while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and in response to detecting the second input that is directed to the portion of the widget screen user interface: in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.
12	The computer system of claim 11, wherein the operations include: while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and in response to detecting the third input that is directed to the portion of the home screen user interface: in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.

Limitation	Claim Language
13	The computer system of claim 11, wherein the operations include: while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and in response to detecting the fourth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.
14	The computer system of claim 9, wherein the operations include: while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and in response to detecting the fifth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.

Limitation	Claim Language
15	The computer system of claim 9, wherein the operations include: in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met: displaying of 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.
16	The computer system of claim 15, wherein the operations include while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and in response to detecting the sixth input that is directed to the portion of the control panel user interface: in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.
17a	A computer-readable storage medium comprising

Limitation	Claim Language
17b	instructions, the instructions when 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, cause the processors to perform operations comprising:
17c	while the computer system is in a power saving state, detecting an input that meets display-waking criteria;
17d	in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;
17e	while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and
17f	in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met: displaying of 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; and

Limitation	Claim Language
17g	in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met: displaying 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.
18	The computer-readable storage medium of claim 17, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.
19	The computer-readable storage medium of claim 17, wherein the operations include: while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and in response to detecting the second input that is directed to the portion of the widget screen user interface: in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.

Limitation	Claim Language
20	The computer-readable storage medium of claim 19, wherein the operations include: while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and in response to detecting the third input that is directed to the portion of the home screen user interface: in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.
21	The computer-readable storage medium of claim 19, wherein the operations include: while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and in response to detecting the fourth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.

Limitation	Claim Language
22	The computer-readable storage medium of claim 17, wherein the operations include: while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and in response to detecting the fifth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.
23	The computer-readable storage medium of claim 17, wherein the operations include: in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met: displaying of 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.

Limitation	Claim Language
24	The computer-readable storage medium of claim 23, wherein the operations include while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and in response to detecting the sixth input that is directed to the portion of the control panel user interface: in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.

V. CLAIM CONSTRUCTION

A. “wake screen user interface,” “home screen user interface,” “widget screen user interface,” and “control panel user interface”

37. I assessed the meaning of the various user-interface screens recited in the claims, including “wake screen user interface,” “home screen user interface,” “widget screen user interface,” and “control panel user interface.” In my view, the claim language surrounding these phrases defines the scope of these phrases. For example, claims 1, 9, and 17 expressly recite that the “home screen user interface” is “different from the wake screen user interface” and “includes a plurality of application icons corresponding to different applications.”

38. I also assessed whether the labels “wake,” “home,” “widget,” and “control panel” independently impose additional limitations beyond those defined by the surrounding claim language. In my opinion, a POSITA would not have understood these labels to impose any such additional limitations. The language surrounding these claim phrases is detailed and specific enough to set forth the meaning of the claim phrases. For example, a POSITA would have understood that a “home screen user interface” is, in accordance with the surrounding claim language, a screen “different from the wake screen user interface” that “includes a plurality of application icons corresponding to different applications.” In my opinion, a POSITA would not read the term “home” as imposing any additional limitation. Rather, in my view, the labels “home,” “widget,” “wake,” and “control panel” are merely convenient and concise shorthand terms to identify and distinguish the different user interfaces.

1. “wake screen user interface”

39. In my opinion, “wake screen user interface,” recited in claims 1, 9, and 17, should be construed to mean a user interface displayed when the device wakes up. Each of claims 1, 9, and 17 recites “detecting an input that meets display-waking criteria” and “in response to detecting the input that meets the display-waking criteria, displaying ... a wake screen user interface.” The claims do not recite any specific content that needs to be displayed on the wake screen user interface.

40. The specification describes “waking the device from the screen-off state to the screen-on state” and then “displaying a wake screen user interface.” EX1001 at 2:31-34, 3:63-66. The specification further indicates that, “[i]n some embodiments, wake screen user interface 504 is a user interface that is displayed when the device transitions from a screen-off state to a screen-on state.” *Id.* at 38:18-20; *see also id.* at 48:24-29. The specification further states that “a wake screen user interface 504 is displayed on waking the device.” *Id.* at 50:32-33.

41. The drawings and specification depict and describe examples of the types of content and features that can be displayed or accessible on embodiments of the wake screen. Some such examples are a clock, notifications, messages, a flashlight, and a camera. *See, e.g.*, Figs. 5B, 5D, 5E, 5J, 5L, 5O, 5P, 5Q, 5X, 5Y, 5Z, 5CU. But neither the claims nor the specification suggests that such content and features are mandatory. Therefore, in my opinion, a POSITA would have understood that the “wake screen user interface” limitation does not require any specific content or features to be displayed on or accessible from the wake screen.

42. Accordingly, “wake screen user interface” should be construed to be a user interface displayed when the device wakes up.

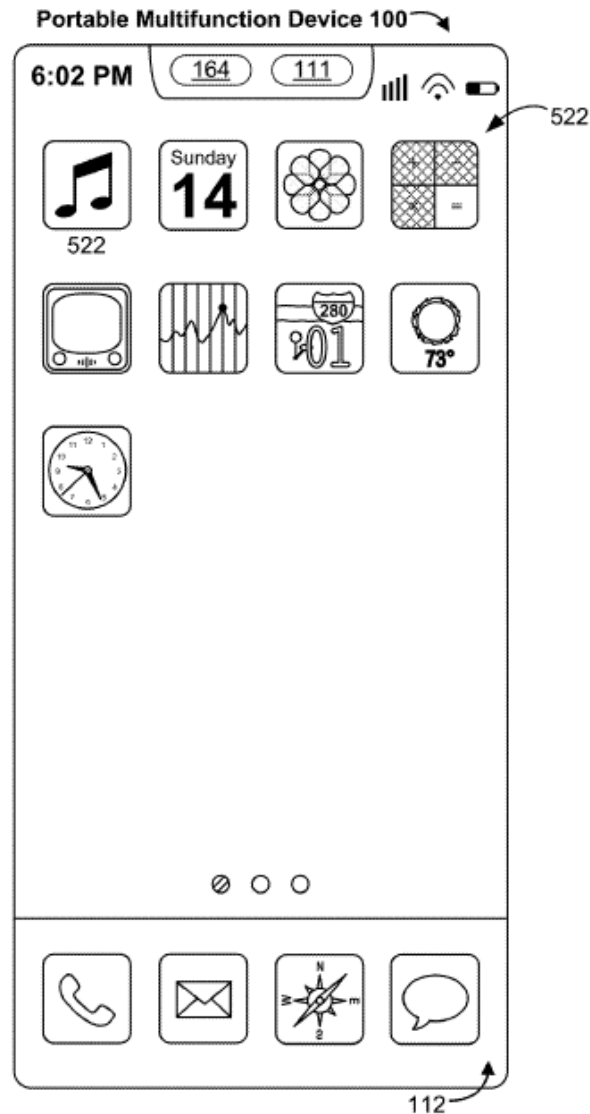
43. To be clear, I do not mean to suggest that the wake screen user interface is displayed *only* immediately after the device wakes up. Claim 5 provides one example in which the wake screen is displayed after the user navigates from the

home screen. In such cases, however, a POSITA would have understood that the displayed wake screen is the same one that would be displayed just after the device wakes up.

2. “home screen user interface”

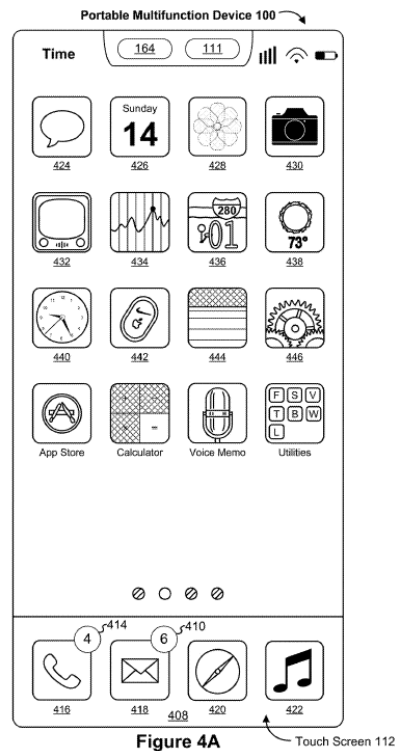
44. In my opinion, in view of the surrounding claim language in claims 1, 9, and 17, “home screen user interface” should be construed to mean a screen “different from the wake screen user interface” and that “includes a plurality of application icons corresponding to different applications.”

45. The specification refers multiple times to figures that depict “home screen user interface 522.” For example, Figure 5H depicts a home screen user interface:



EX1001, Fig. 5H; *see e.g., id.* at 39:20-22 (Fig. 5H), 39:27-32 (Fig. 5K), 40:61-64 (Figs. 5AG-5AH), 44:16-21 (Figs. 5CC-5CQ), 46:44-50 (Figs. 5DJ-5DS), 52:8-24 (Fig. 5FU). These figures consistently show a screen with multiple application icons corresponding to different applications, consistent with the claim language. The written description generally does not describe the “home screen user interface 522” in detail. However, it includes at least one illustrative parenthetical: “(e.g., a user interface for a menu of application as described with regard to FIG. 4A).” *Id.* at

39:20-22. Referring to Figure 4A, the specification states, “FIG. 4A illustrates an example user interface for a menu of applications on portable multifunction device 100 in accordance with some embodiments.” *Id.* at 30:24-26. Figure 4A is shown below.



Id., Fig. 4A. The illustrated “interface for a menu of applications” is simply multiple application icons on a user-interface screen.

46. Therefore, “home screen user interface” means a screen “different from the wake screen user interface” and that “includes a plurality of application icons corresponding to different applications.” A POSITA would have understood that the claim language says the home screen “*includes* a plurality of application icons”

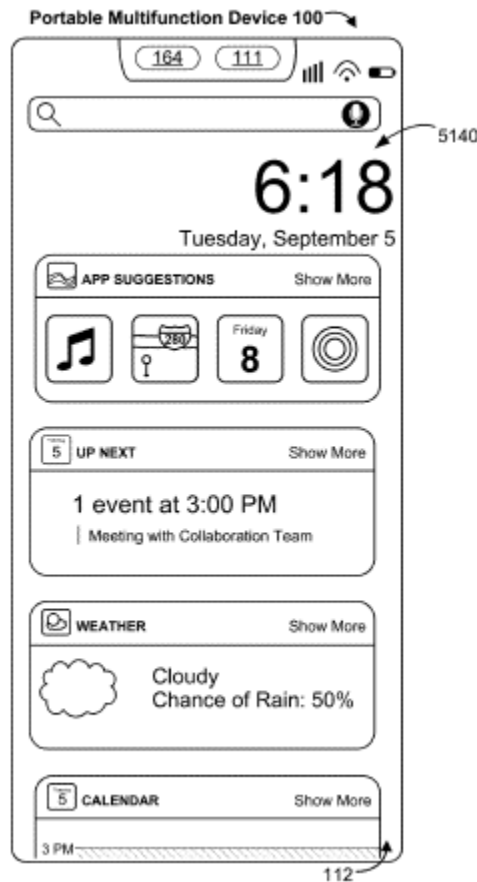
but does not say it includes application icons *only*. Accordingly, a “home screen user interface” may also include other objects, such as widgets or controls.

3. “widget screen user interface”

47. In my opinion, in view of the surrounding claim language in claims 1, 9, and 17, “widget screen user interface” should be construed to mean a screen “different from the wake screen user interface and the home screen user interface” and that “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.*” EX1001, claims 1, 9, 17 (emphasis added). A POSITA would have understood that the emphasized language describes an object that is commonly called a “widget” and that is different than the “application icons” included on the “home screen user interface.” Therefore, a POSITA would have understood that a “widget screen user interface” is a screen different from the wake screen and home screen that includes multiple widgets or “user interface objects” as claimed.

48. Outside of the Abstract, the specification does not use the phrase “widget screen user interface” but references a “widget user interface 5140,” which a POSITA would have understood to be the same thing. *See, e.g.*, EX1001 at 48:64,

49:2-3, 52:8-35. Several figures depict the widget user interface 5140, including, for example, Figure 5CK:



EX1001, Fig. 5CK. The widget user interface 5140 appears to display a calendar reminder showing a reminder for a meeting at 3:00 pm and weather information indicating a 50% chance of rain.

49. Assuming that the drawings and specification provide written description for the claim language, they support construing “widget screen user interface” to mean a screen “different from the wake screen user interface and the home screen user interface” and that “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.” A POSITA would have understood that the claim language requires that the widget screen “*includes* a plurality of user interface objects” as claimed but does not require that it includes such user interface objects or widgets *only*. Therefore, a POSITA would have understood that a “widget screen user interface” may also include other objects, such as application icons or controls.

4. “control panel user interface”

50. In my opinion, in view of the surrounding claim language, “control panel user interface” should be construed to mean a screen “different from the wake screen user interface and the widget screen user interface” and that “includes a plurality of controls for controlling one or more device functions of the computer system.”

51. The specification states that “the displayed first user interface is a control panel user interface, wherein the control panel user interface includes one or more device controls for controlling one or more device functions of the device.” EX1001 at 4:15-18, 80:15-22. Further, several drawings, including Figure 5CE below, depict the control panel user interface 5138:



A POSITA would have understood the figure shown above to depict several “controls for controlling one or more device functions,” including, for example, a brightness control, a volume control, a toggle control to turn airplane mode on or off, and other controls. However, nothing in the claims or specification suggests that these specific controls are mandatory. Thus, a POSITA would have understood that the “control panel user interface” limitation includes at least two controls but is not limited to a specific type of controls.

52. Accordingly, the “control panel user interface” limitation should be construed to mean a screen “different from the wake screen user interface and the

widget screen user interface” and that “includes a plurality of controls for controlling one or more device functions of the computer system.” A POSITA would have understood that the claim language requires that the control panel user interface “*includes* a plurality of controls for controlling one or more device functions of the computer system” does not require it to include controls *only*. Therefore, a POSITA would have understood that a “control panel user interface” may also include other objects, such as application icons or widgets.

B. “input that is directed to a portion of” a user interface

53. Several claims recite that an action of navigating from one screen to another is invoked by user “input that is directed to a portion of” the current screen. *See, e.g.*, claim 1 (navigating from a wake screen to a home screen upon detecting “a first input that is directed to a portion of the wake screen user interface and includes first movement”). This claim language means that the “input is directed to a portion of” the screen, rather than a physical button, keyboard, or other input device external to the screen. The claim language does not require the input to be directed to a *predefined* location on the screen, such as a location marked by a virtual home button or other indicator.

54. The specification describes one embodiment in which a user navigates from a wake screen to a home screen by an upward swipe “at location that corresponds to home affordance 552.”

FIG. 5GC illustrates an input (e.g., an upward swipe) by a contact on touch screen 112 that is initiated by a contact at location that corresponds to home affordance 552, as indicated by focus selector 5244. In response to the input, display of wake screen user interface 504 is replaced by display of home screen user interface 522, as shown in FIGS. 5GC-5GD.

EX1001 at 53:4-10; *see also id.*, Fig. 5GC. However, the claim language does not limit the claims to this disclosed embodiment. The specification also describes an embodiment in which navigating from one screen to another involves more general rightward and leftward swipe gestures with no specified starting location:

While displaying the wake screen user interface, the device detects (906) a first swipe gesture In accordance with a determination that the first swipe gesture is in a first direction (e.g., rightward ...), the displayed first user interface is a mini-application-object user interface 5140. ... In accordance with a determination that the first swipe gesture is in a second direction (e.g., leftward ...), that is opposite the first direction, the displayed first user interface is a control panel user interface 5138.

EX1001 at 79:64-80:22. A POSITA would have understood that, in this embodiment, the swipe gestures are directed to a portion of the screen because all swipe gestures involve the user touching a portion of the screen. However, a POSITA would have understood that the gestures in this second embodiment do not need to start at any predefined location. Nothing in the claim language or specification limits the claims to either the first disclosed embodiment, where the

swipe has to be “at location that corresponds to home affordance 552,” or the second disclosed embodiment, which does not specify any starting location for the swipe. Therefore, a POSITA would interpret the claim language “input directed to a portion of” a screen broadly enough to cover *both* the first and the second embodiment. As such, “input is directed to a portion of” the screen should be construed to mean user input is directed to a portion (but not a *predefined* portion) of the screen rather than a physical button, keyboard, or other input device external to the screen.

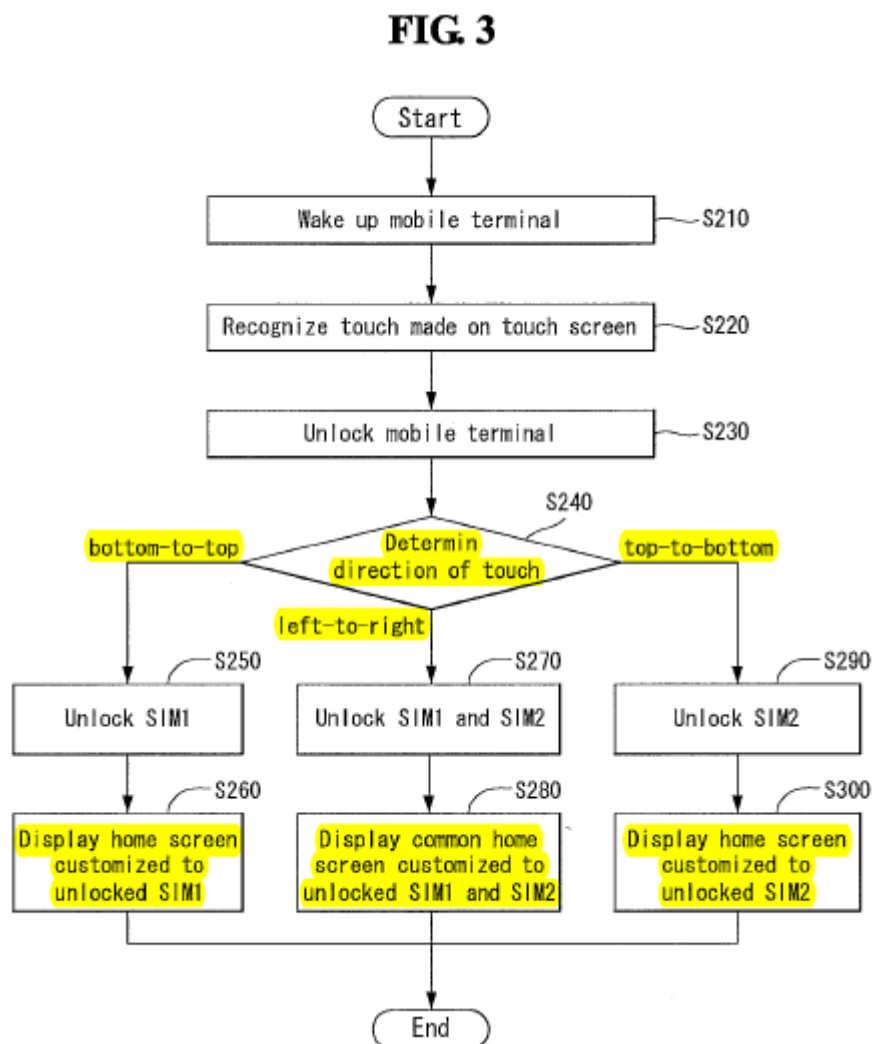
C. “first,” “second,” “third,” etc.

55. The claims use ordinal numbers such as “first,” “second,” and “third” merely as labels to identify instances of “input,” “criteria,” movement,” and “direction.” Beyond serving this identification function, the ordinal numbers do not convey any additional meaning or otherwise limit the claims. For example, the ordinal numbers do not imply any ordering or prioritization (*e.g.*, the “first input” does not need to occur before the “second input”). They also do not imply the existence of unclaimed instances (*e.g.*, claim 7’s recitation of “seventh criteria” does not imply that claim 7 also has “third criteria,” “fourth criteria,” “fifth criteria,” and “sixth criteria”). And while some claims expressly recite a relationship between the claimed instances (*e.g.*, claim 1 recites “second criteria different from the first criteria”), the mere usage of different ordinal numbers does not imply such a relationship.

VI. PRIOR ART BACKGROUND AND SUMMARY

A. Chae

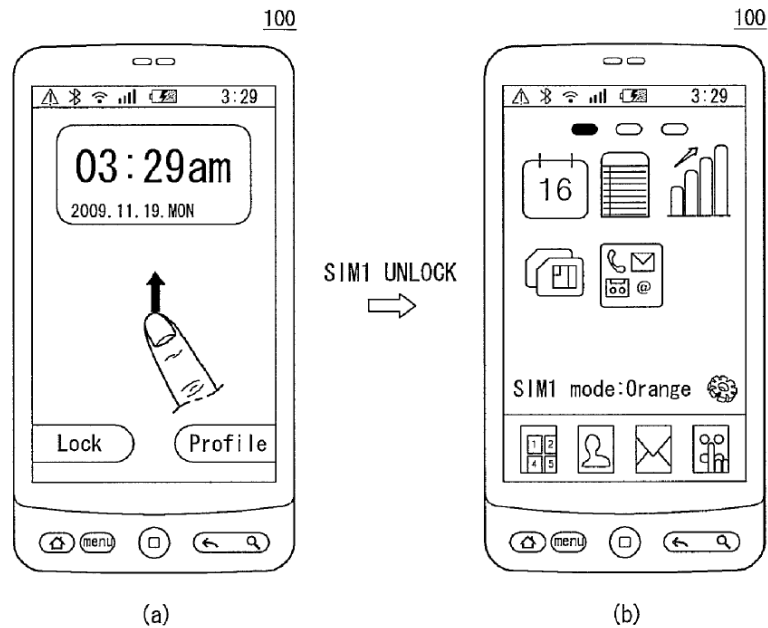
56. U.S. Patent Application Publication No. US 2012/0129495 A1 (Exhibit 1005 or “Chae”), filed by LG Electronics in 2011 and published in 2012, discloses a dual-SIM smartphone that used three different directional swipe gestures to navigate between three different customized home screens:



EX1005, Fig. 3. Chae further discloses that the customized home screens include multiple application “icons and widgets.” *Id.* ¶100. For example, Chae’s Figure 4

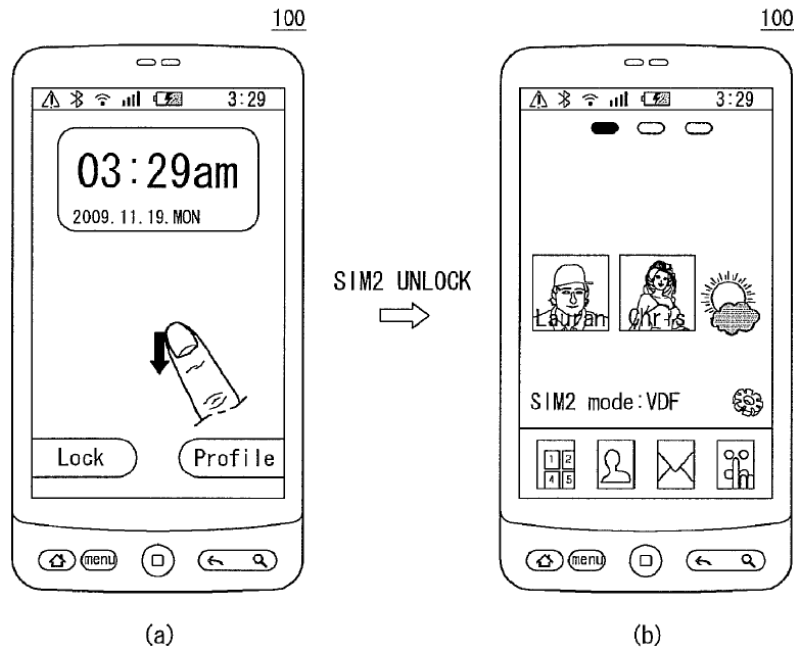
illustrates a user unlocking a SIM to display a screen with multiple application icons by swiping in a bottom-to-top direction:

FIG. 4



Id., Fig. 4. Chae's Figure 6 illustrates a user unlocking a SIM and displaying a screen with multiple widgets by swiping in a top-to-bottom direction:

FIG. 6



Id., Fig. 6.

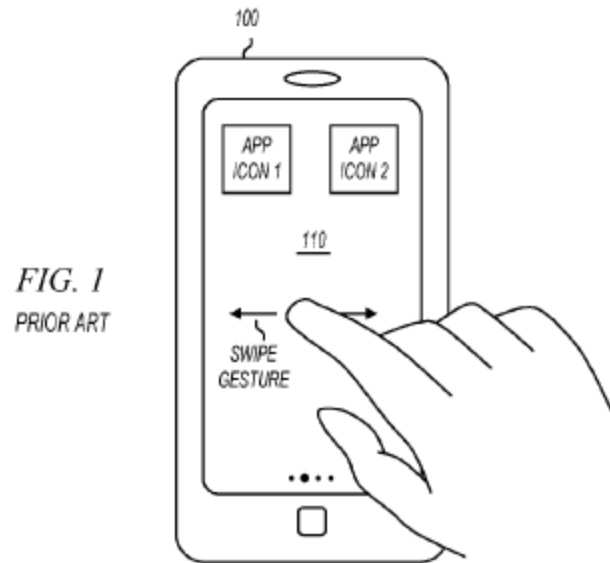
B. Narendra

57. U.S. Patent Application Publication No. US 2013/0305351 A1 (Exhibit 1006 or “Narendra”), filed in 2012 and published in 2013, discloses the use of directional swipe gestures to navigate among multiple user-interface screens of a single-SIM smartphone. Narendra shows that Chae’s dual-SIM structure is not necessary to enable Chae’s navigation among multiple screens using directional swipe gestures. A POSITA would have understood that navigating among multiple screens using directional swipe gestures would work just as well, and would have been just as easy to implement, in single-SIM smartphone as in a dual-SIM smartphone. Narendra specifically discloses a single-SIM smartphone with “a touch

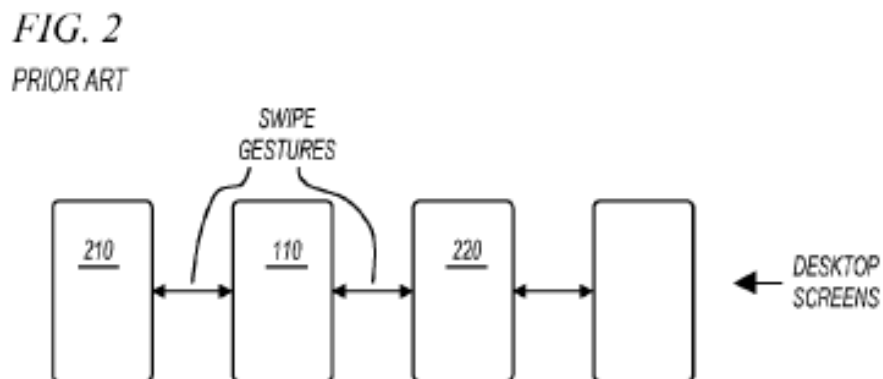
sensitive display that accepts gestures used to navigate between the desktop screens.” EX1006, Abstract. Narendra further discloses the well-known technique of using directional swipe gestures to navigate between smartphone screens:

Mobile devices with touch sensitive displays typically include a desktop screen that shows icons used to launch applications. Some prior art mobile devices include multiple desktop screens that can be navigated using gestures on the touch sensitive display. FIG. 1 shows one such prior art mobile device 100 displaying one desktop screen 110 with two application icons. A user provides a left-to-right or right-to-left swipe gesture across the touch sensitive display to navigate from one desktop screen to the next. FIG. 2 shows a prior art logical orientation of multiple desktop screens that is navigated using swipe gestures. When mobile device 100 is displaying desktop screen 110, a left-to-right swipe gesture navigates from desktop screen 110 to desktop screen 210, and mobile device 100 displays desktop screen 210 as a result. Likewise, when mobile device 100 is displaying desktop screen 110, a right-to-left swipe gesture navigates from desktop screen 110 to desktop screen 220, and mobile device 100 displays desktop screen 220 as a result.

Id. ¶2. Narendra’s Figure 1 illustrates a user making a directional swipe gesture to navigate from one screen to another.



Id., Fig. 1. Narendra’s Figure 2 shows navigational paths between multiple screens that a user can navigate between using directional swipe gestures:



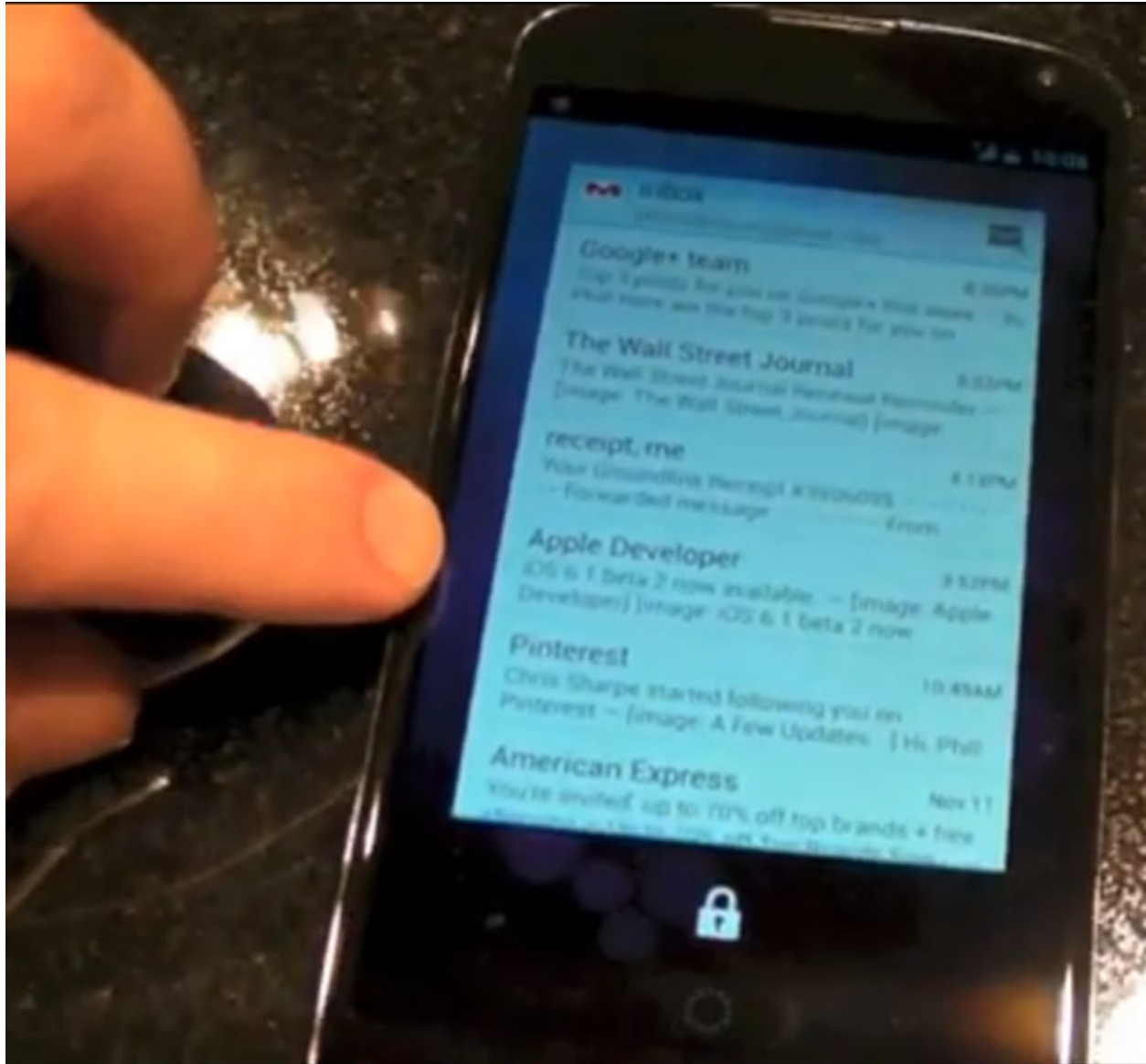
C. Android

58. The video *Android 4.2 lock screen widgets* (Exhibit 1007 or “Android”) is found at https://www.youtube.com/watch?v=ZpN8Wyu_z6Y (the “Current URL”) on YouTube. YouTube indicates the video was uploaded on November 12,

2012.¹ I understand the video was archived by the Internet Archive on November 19, 2012 and the archived video is accessible at https://web.archive.org/web/20121119160047/https://www.youtube.com/watch?v=ZpN8Wyu_z6Y (the “Archive URL”).² EX1051 at 1 (¶5), 4-5. I watched the video of Exhibit 1007 and the videos accessible at the Current URL and the Archive URL. The three videos have the same content. Thus, Exhibit 1007 is a true and correct copy of the video at the Current URL and the Archive URL in MP4 format. Both the Current URL and the Archive URL have the same video identifier (ZpN8Wyu_z6Y), further indicating the video at the Current URL is the same as the video that was archived on November 19, 2012. The video shows several instances of a typical smartphone entering, and waking up from, a power-saving state. The video specifically shows a user using a physical button to cause a smartphone to enter and wake up from a power-saving state. The video also refers to and illustrates widgets that are accessible from the wake screen (also called a lock screen) by using a directional swipe gesture. For example, the still screenshot below shows an electronic mail widget.

¹ The Android 4.2 operating system was released on July 9, 2012.

² In my experience, the archived video sometimes fails to play but will play upon reloading the page at the Archive URL one or more times.



EX1007 at 2:06.

D. Shuttleworth

59. U.S. Patent Application Publication No. US 2014/0189577 A1 (Exhibit 1008) or “Shuttleworth”) discloses replacing traditional physical or virtual home buttons with a dedicated directional swipe gesture for accessing the home screen from any other screen. EX1008 ¶358.

E. Hong

60. U.S. Patent Application Publication No. US 2015/0095819 A1 (Exhibit 1010 or “Hong”), filed by Samsung Electronics in 2014 and published in 2015, shows that a POSITA would have understood that a “widget” is a user interface object that displays content generated by an associated application without needing to (but being able to) open the application. Specifically, Hong’s background section, which describes prior art, states:

The portable phone provides various applications. Recently, application widgets have been provided that enable a user to access contents provided in an application without executing the application, such as a clock, a calendar, a memo, search, a map, news, a real-time camera, and the like.

As noted above, application widgets have been provided that enable a user to access contents in an application without executing the application. A user may check, at a glance, information or a function provided by an application through a widget that functions as a preview of the information or the function without actually executing the application itself.

EX1010 ¶¶4-5. Hong Figure 7A depicts several such widgets on a screen:

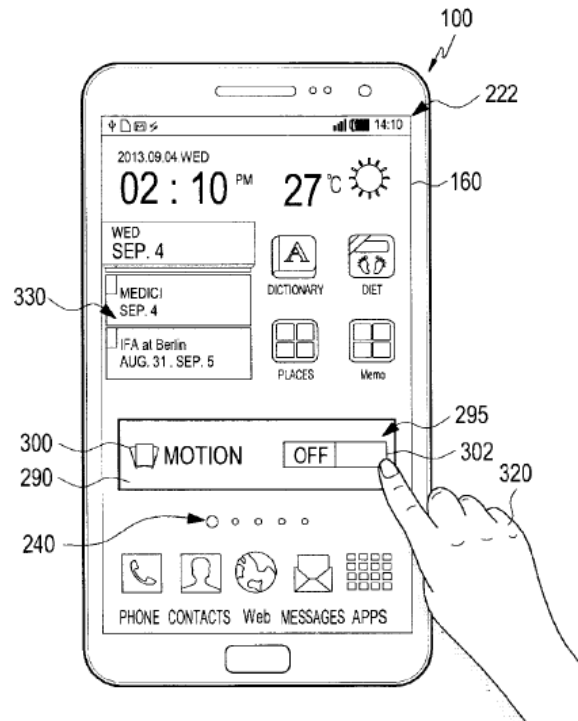


FIG. 7A

EX1010, Fig. 7A.

F. Karunamuni

61. U.S. Patent Application Publication No. US 2015/0346976 A1 (Exhibit 1011 or “Karunamuni”), filed by Apple in 2015 and published in 2015, Karunamuni discloses a smartphone control center accessible using a directional swipe gesture. Figure 3 of Karunamuni illustrates the control center.

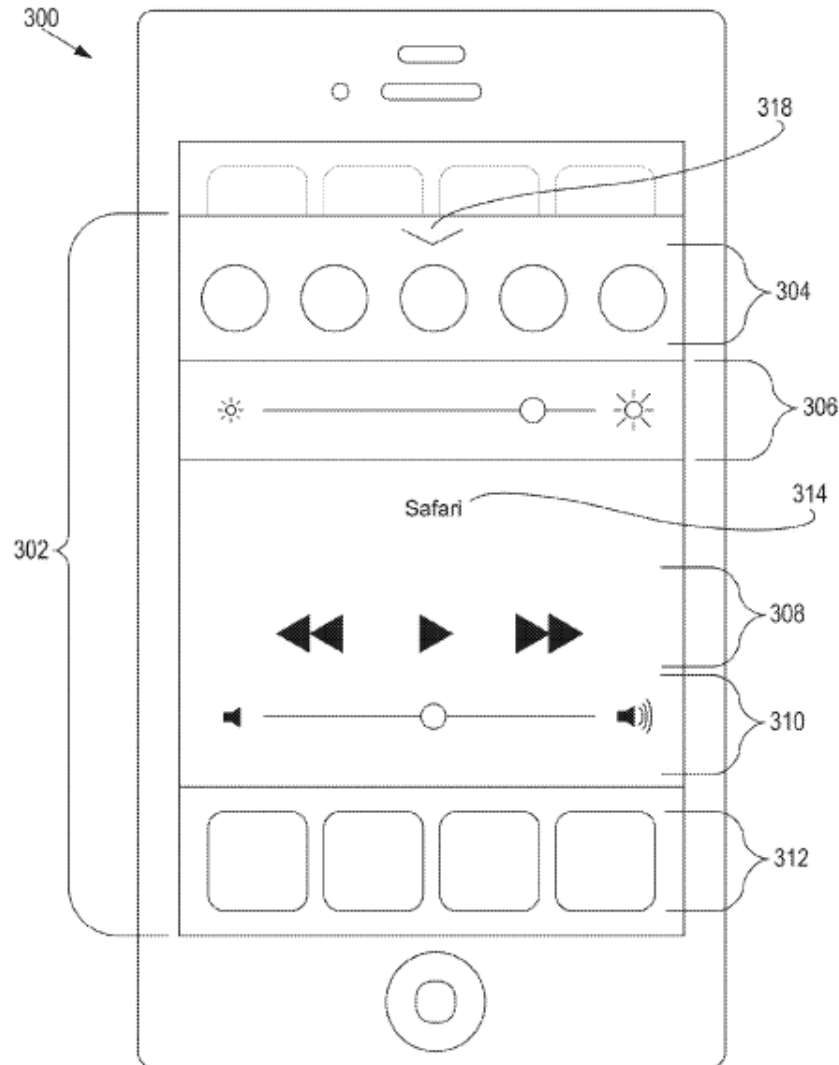


FIG. 3

EX1011, Fig. 3. Karunamuni further describes the controls included on the control center:

Control center interface 302 can also include sliders 306 and 310 for various aspects of the mobile device. Sliders 306 and 310 can pertain to specific applications and/or to the mobile device's operating system as a whole. As shown, slider 306 is operable to change the brightness of the display of the mobile device. Slider 310 is operable to change

the volume of the sound output of the mobile device. As is characteristic of many of the controls in control center interface 302, user interaction with sliders 306 and 310 can modify the values of parameters that affect multiple applications executing on the mobile device simultaneously. This characteristic makes the placement of these kinds of controls within control center interface 302 very useful.

Id. ¶17. In view of Figure 3 and its associated description, a POSITA would have understood that the disclosed control center is a “control panel user interface” as claimed in some of the dependent claims of the ’352 patent.

G. Principles of User-Interface Design

62. 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.

63. 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.

64. 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)

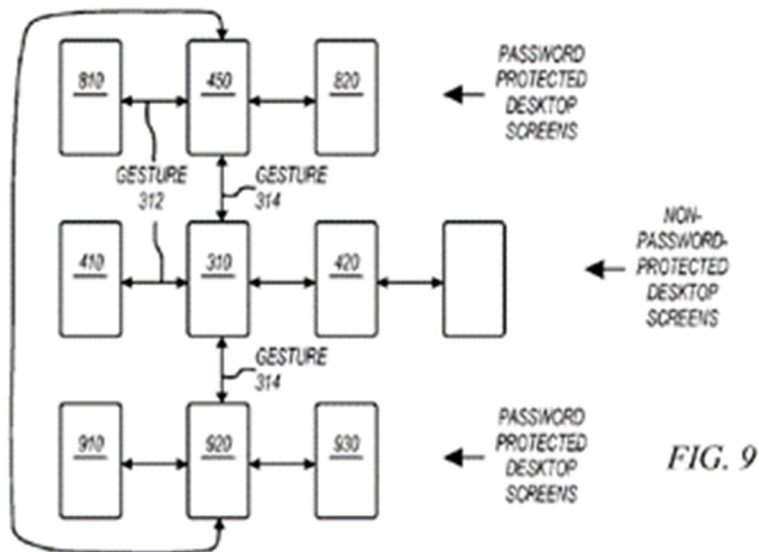
* * *

[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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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.

70. 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.

H. 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, and Karunamuni.

71. Chae, Narendra, Android, Shuttleworth, Hong, and Karunamuni are all in the same field of touchscreen user interfaces for smartphones. 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 smartphone. 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.

72. The general motivation to combine discussed above in Paragraph 71 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.

VII. GROUND FOR UNPATENTABILITY

A. Ground 1: Claims 1, 2, 6, 9, 10, 14, 17, 18, and 22 are unpatentable because they would have been obvious in view of Chae and Narendra.

1. Claim 1

a. Limitation 1a (preamble)

1a	A method, comprising:
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73. Chae discloses that its “FIG. 3 is a flowchart that illustrates one example of the *method* for operating a mobile terminal of FIG. 2.” EX1005 ¶101 (emphasis added).

b. Limitation 1b

1b	at computer system that is in communication with a display generation component and one or more input devices:
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74. Chae discloses a method performed “at computer system that is in communication with a display generation component and one or more input devices,” as required by limitation 1b. Chae discloses an embodiment that is a “mobile terminal” that “can include ... a smart phone, a laptop computer,” or other devices. EX1005 ¶¶10, 43. A POSITA would have understood that a “smart phone” or a “laptop computer” is a “computer system,” and, thus, the disclosed mobile terminal is a “computer system.” Specifically, both a smartphone and a laptop computer have all the components of a computer system, including a processor, an

operating system and other software, memory, storage, an input device, and a display.

75. Chae also discloses that its mobile terminal “comprises a *touch screen*, and a controller configured to simultaneously unlock the mobile terminal ... *in response to a touch made on the touch screen.*” EX1005 ¶10 (emphases added). Chae’s Figure 4(a) is one illustration of the mobile terminal being unlocked in response to a touch made on the touch screen:



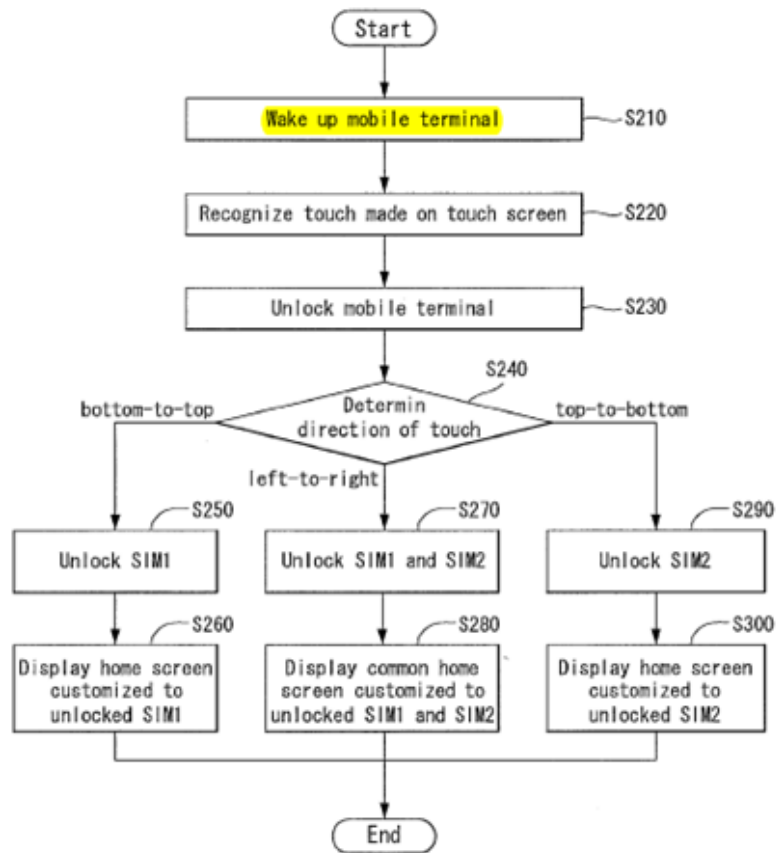
EX1005, Fig. 4(a); *see also id.* ¶104 (description of Figure 4). A POSITA would have understood that the “touch screen” disclosed by Chae is both a “display generation device” and an “input device.” Figure 4(a) illustrates that the touch screen is a “display generation component” that, in the example, is displaying a digital clock. Figure 4(a) also illustrates, and Paragraph 104 explains, that the user drawing a line on the touch screen in a “bottom-to-top direction ... unlocks the first SIM.” EX1005, Fig. 4(a); *See also id.* ¶104. Chae Paragraph 10 further discloses that a “touch made on the touch screen” is an input that causes unlocking of the mobile terminal, confirming that the touch screen is an “input device.” EX1005 ¶10.

c. Limitation 1c

1c	while the computer system is in a power saving state, detecting an input that meets display-waking criteria;
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76. Chae discloses “while the computer system is in a power saving state, detecting an input that meets display-waking criteria,” as required by limitation 1c. Figure 3 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.

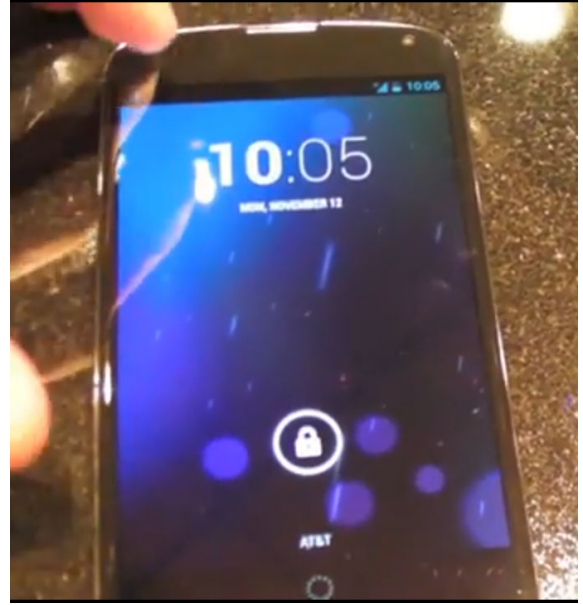
With respect to step S110 (identical to step S210), the specification teaches:

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.*

77. Android shows several instances of a typical smartphone entering, and waking up from, a power-saving state. For example, the following still screenshots from the video show a user using a physical button to cause a smartphone to enter and wake up from a power-saving state:





EX1007 at 0:24-0:28; *see also id.* at 0:40, 1:07, 2:30, 2:59, 3:20, 3:46.

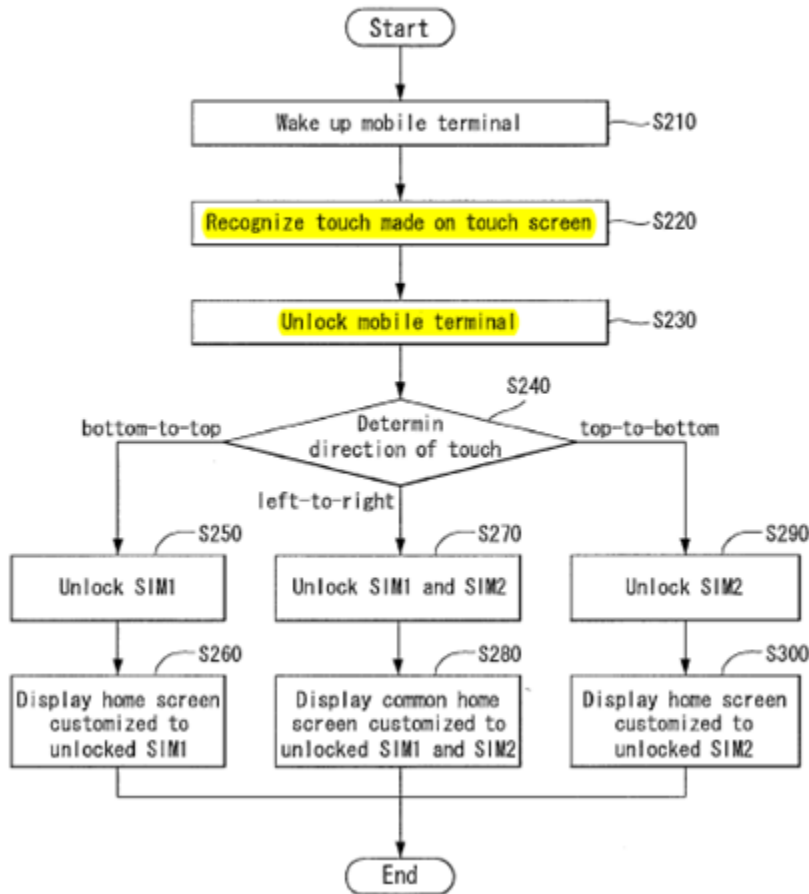
78. A POSITA would have understood Chae’s disclosure that the mobile terminal “wakes up” to refer to the typical wake-up process that was well-known and commonly implemented in smartphones and similar mobile devices. Specifically, a POSITA would have understood that the mobile terminal was in “a power saving state,” with its display darkened, prior to waking up, and that the display turns on upon waking up. A POSITA would have understood that the “user’s action such as clicking a button” referenced in Chae Paragraph 94 is an “input that meets display-waking criteria” because the user’s action does, in fact, cause the mobile terminal (including its display) to wake up.

d. Limitation 1d

1d	in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;
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79. Chae discloses “in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface,” as required by limitation 1d. As explained above, a “wake screen user interface” is a user interface displayed when the device wakes up. Figure 3 illustrates steps S220 and S230, in which the processor recognizes a user touch made on the touch screen and unlocks the mobile terminal:

FIG. 3

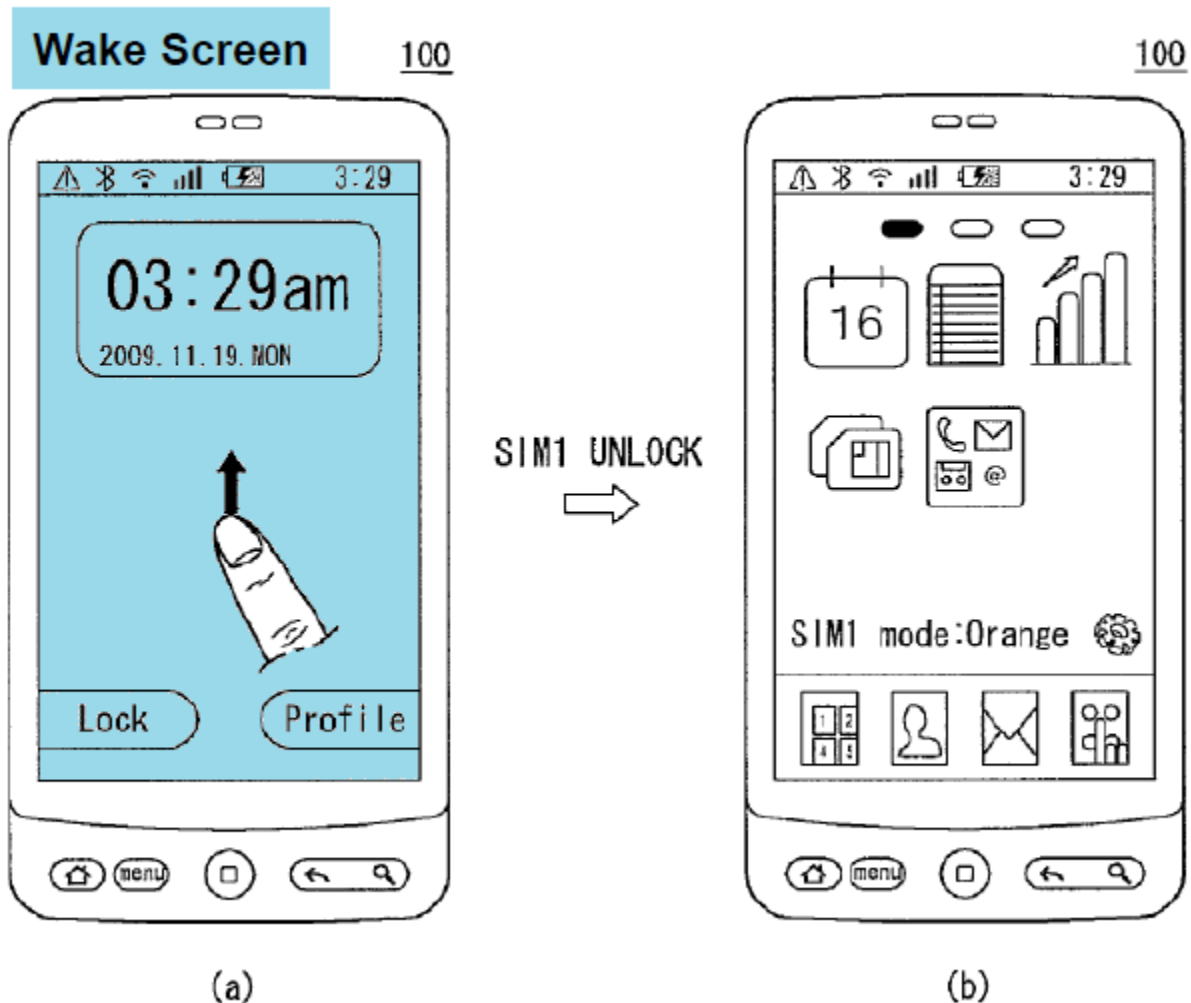


EX1005, Fig. 3. As explained in Chae Paragraph 102, steps S220 and S230 are identical to steps S120 and S130, described in Chae Paragraph 95:

When the user touches the touch screen of the mobile terminal 100 at step S120 the controller 180 unlocks the mobile terminal 100 in response to the touch at step S130.

Id. ¶95. Figures 4(a) and 4(b) illustrate the user touching the touch screen when it is displaying a wake screen:

FIG. 4



EX1005, Figs. 4(a) (annotated) & 4(b). A POSITA would have understood that the screen shown in Figure 4(a) is a “wake screen user interface.” Specifically, the screen is displayed after the device wakes up and, in step S220, it receives user input via the touch screen, which causes the unlocking of the mobile terminal in step S230. Similar to wake screens commonly used by many smartphones prior to the ’352 patent, the wake screen illustrated by Figure 4(a) displays some useful information,

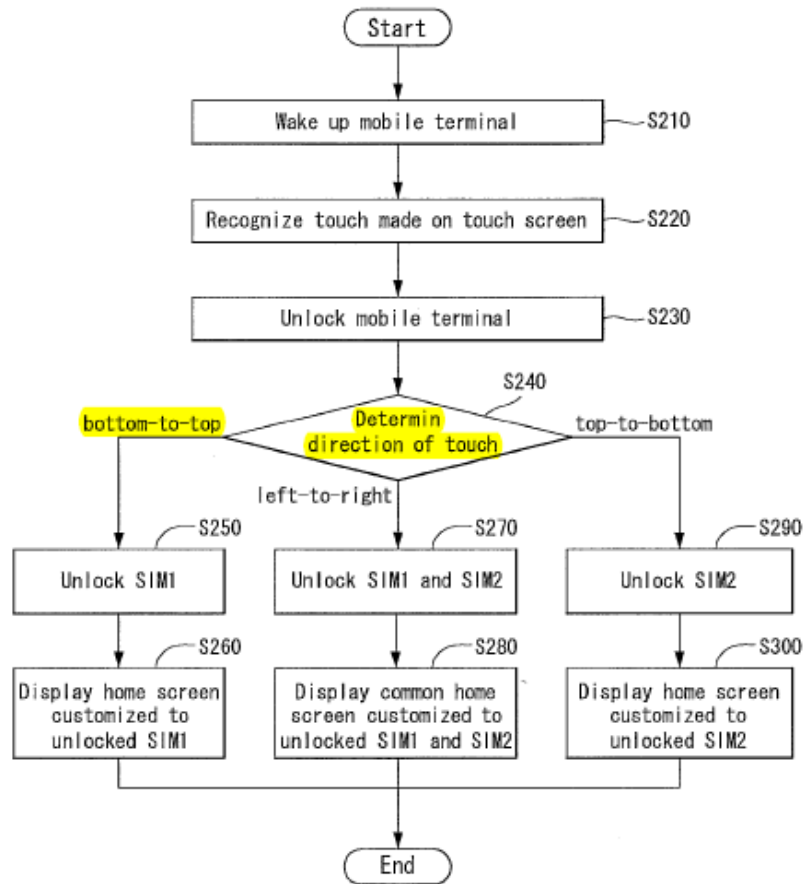
including, for example, a digital clock and various indicators such as battery and Wi-Fi status. *See, e.g.*, EX1007 at 0:25, 0:40, 1:07, 2:30, 2:59, 3:20, 3:46.

e. Limitation 1e

1e	while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and
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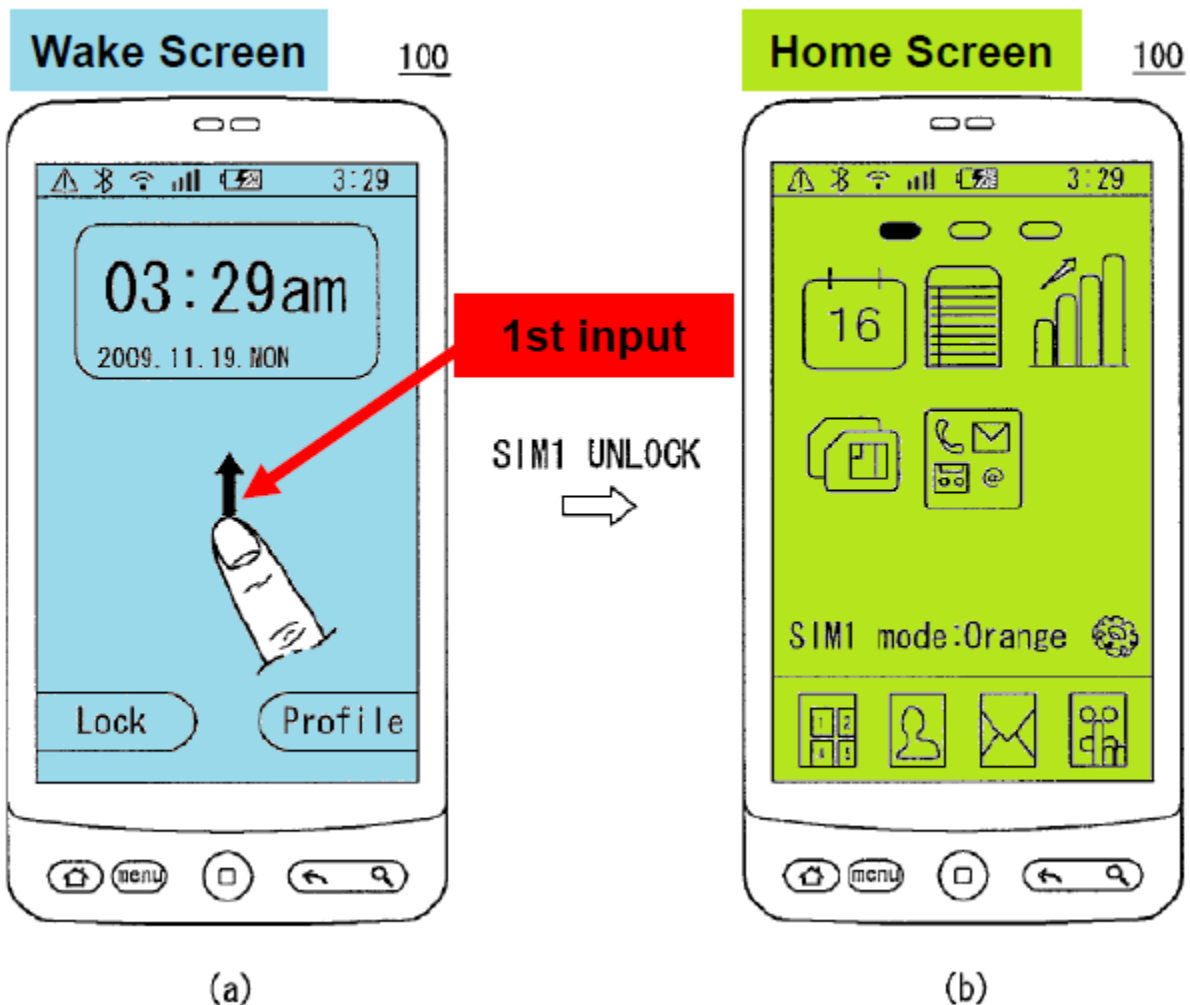
80. Chae discloses “while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement,” as required by limitation 1e. Figure 3 illustrates a decision block S240 that determines a “direction of touch.”

FIG. 3



EX1005, Fig. 3 (annotated). As shown by the left branch out of decision block S240, the “direction of touch” may be a “bottom-to-top” movement. *Id.* The specification further explains, “when a user draws a line” in “a bottom-to-top direction as shown in a diagram (a) of FIG. 4 the controller 180 unlocks the first SIM (SIM1) as shown in the diagram (b) of FIG. 4” and “displays a home screen customized to the first SIM.” *Id.* ¶¶103-104. As shown below by the annotated Figure 4, the specification further explains that the “bottom-to-top” swipe “unlocks the first SIM” and “displays a home screen customized to the first SIM.” *Id.* ¶¶103-104.

FIG. 4



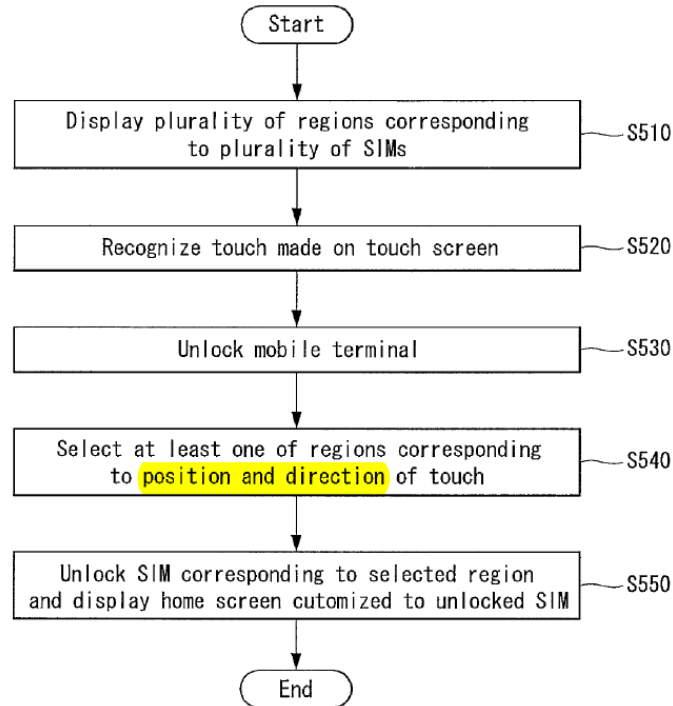
Id., Figs. 4(a) (annotated) & 4(b). A POSITA would have understood that step S240 of Figure 3 “detect[s] a first input that is directed to a portion of the wake screen user interface and includes first movement.” As shown by the text of Figure 3 (“bottom-to-top”) and graphically on Figure 4, and as described in Paragraph 104, the “first movement” is a swipe in a “bottom-to-top direction.”

81. A POSITA would have understood that the user makes the bottom-to-top swipe on a “portion of the wake screen user interface.” Specifically, a POSITA

would have understood that the user necessarily must initiate the bottom-to-top swipe at a portion of the wake screen user interface located below the top edge of the screen so that the device will be able to detect the upward movement. Therefore, the first input is “directed to a portion of the wake screen user interface.”

82. As explained above, the “directed to a portion of the wake screen user interface” claim language does not require the bottom-to-top swipe to occur at a *predefined* location on the wake screen. Therefore, the fact that the bottom-to-top swipe is necessarily initiated at a portion of the wake screen user interface located below the top edge of the screen satisfies the “directed to a portion of the wake screen user interface” claim language. In any event, even if the claim language required the bottom-to-top swipe to start at a predefined location on the wake screen, Chae discloses or makes obvious a bottom-to-top swipe at a predefined location on the wake screen. Specifically, Figure 17 of Chae discloses an embodiment in which the home screen is accessed based on both the “position and direction” of a gesture on the touchscreen:

FIG. 17



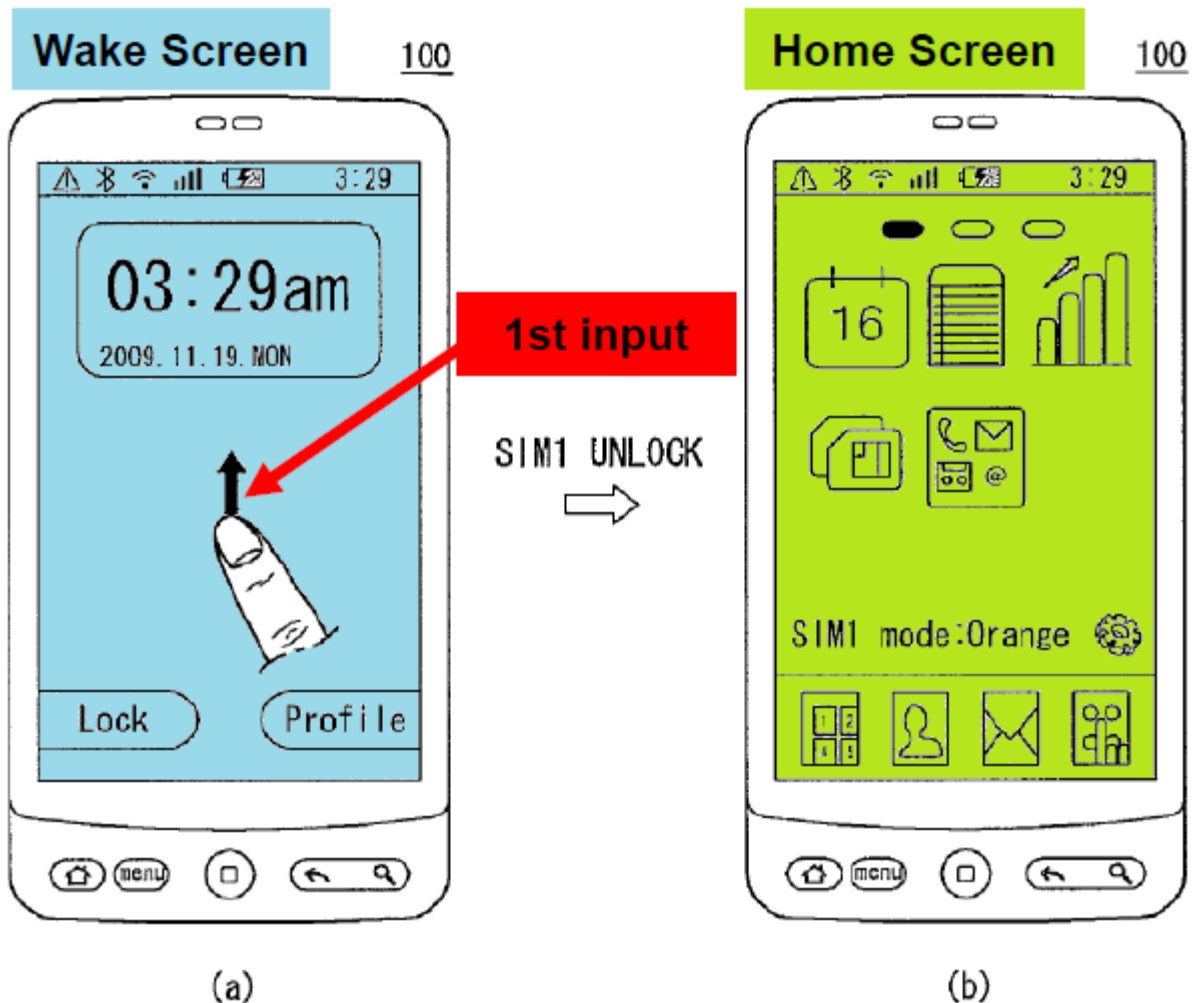
EX1005, Fig. 17 (annotated). A POSITA would have understood that it is necessary to predefine a specific portion of the wake screen associated with the home screen to be accessed to make the accessing of the home screen be based on both the “position and direction of touch.” Further, before the ’352 patent, it was a well-known and common practice in user-interface design to require a gesture to be directed to a predefined position on a screen to reduce the likelihood of inadvertent actions. Therefore, the desire to reduce the likelihood of inadvertently accessing the home screen would have motivated a POSITA to design Chae’s user interface to require the performance of the bottom-to-top swipe gesture at or near a predefined position on the wake screen.

f. Limitation 1f

1f	in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met: displaying of 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; and
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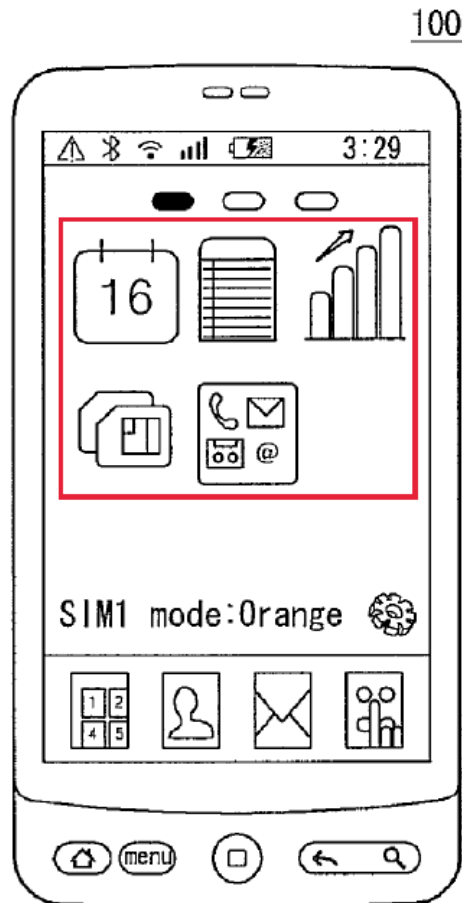
83. Chae discloses limitation 1f, which requires, in response to detecting the “first movement” meeting “first criteria” of being in the “first direction,” displaying a “home screen user interface” with multiple application icons. As explained above, Figures 4(a) and 4(b) illustrate a user swiping in a bottom-to-top direction to unlock a first SIM and display a home screen:

FIG. 4



EX1005, Figs. 4(a) & 4(b) (both annotated); *see also id.* ¶104. Because, as explained above, the first movement is swipe in a “bottom-to-top direction,” the first movement is “in a first direction.” Further, as described in Paragraph 104 and shown in Figure 4(b), the first movement causes display of 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.” A comparison of Figures 4(a) and 4(b) establishes that the home

screen of Figure 4(b) is different from the wake screen of Figure 4(a). A POSITA would immediately recognize that Figure 4(b) depicts a home screen with multiple application icons.



EX1005, Fig. 4(b) (annotated). Chae discloses that each customized screen may display “items includ[ing] *icons* and widgets.” *Id.* ¶100 (emphasis added). Icons and widgets were common and well-understood features of graphical user interfaces years before the filing of the ’352 patent. A POSITA would have understood that the “icons” disclosed by Chae are “application icons” as claimed and that graphical

user interfaces depicted application icons as small, square or rectangular graphical tiles. A POSITA would immediately recognize that the square or rectangular graphical tiles shown in the red box of the annotated figure 4(b) of Chae above are application icons.

84. Several basic functions of graphical user interfaces were well-known prior to the filing of the '352 patent and would have been understood by a POSITA in view of Chae's disclosure. For example, a POSITA would have understood that each of the application icons displayed on a graphical user interface screen corresponds to a different application and that the selection of an icon causes display of the application corresponding to the respective application icon. Therefore, a POSITA would have understood that Chae's disclosure of multiple application icons displayed on Figure 4(b) discloses 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."

85. Moreover, Narendra expressly discloses the common and well-known functionality that selection of an application icon causes display of a corresponding application. Indeed, Narendra's background section, describing prior art to Narendra, discloses that "[m]obile devices with touch sensitive displays typically include a desktop screen that shows icons used to launch applications." EX1006 ¶2.

Narendra further discloses multiple application icons each used to launch a different corresponding application:

Desktop screens on mobile device 300 display content such as application icons, widgets, and the like. Application icons that display on desktop screens are used to launch applications. For example, a user might launch a music player application by tapping on icon 330. Also for example, the user might launch an email application by tapping on icon 332. Both application icons 330 and 332 are displayed on desktop screen 310.

Id. ¶25. A POSITA would have understood that this disclosure is not unique to Narendra, but merely discloses the basic and well-known GUI functionality that selection of an application icon causes the corresponding application to be launched. A POSITA would have understood that Chae’s icons have this same basic and well-known functionality.

86. Accordingly, Chae discloses limitation 1f. If Chae were somehow interpreted as *not* disclosing that its “icons” are “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,” this functionality would have been obvious in view of Narendra. A POSITA would have been motivated by basic GUI design principles and by the teachings of Narendra to add Narendra’s basic GUI functionality to Chae

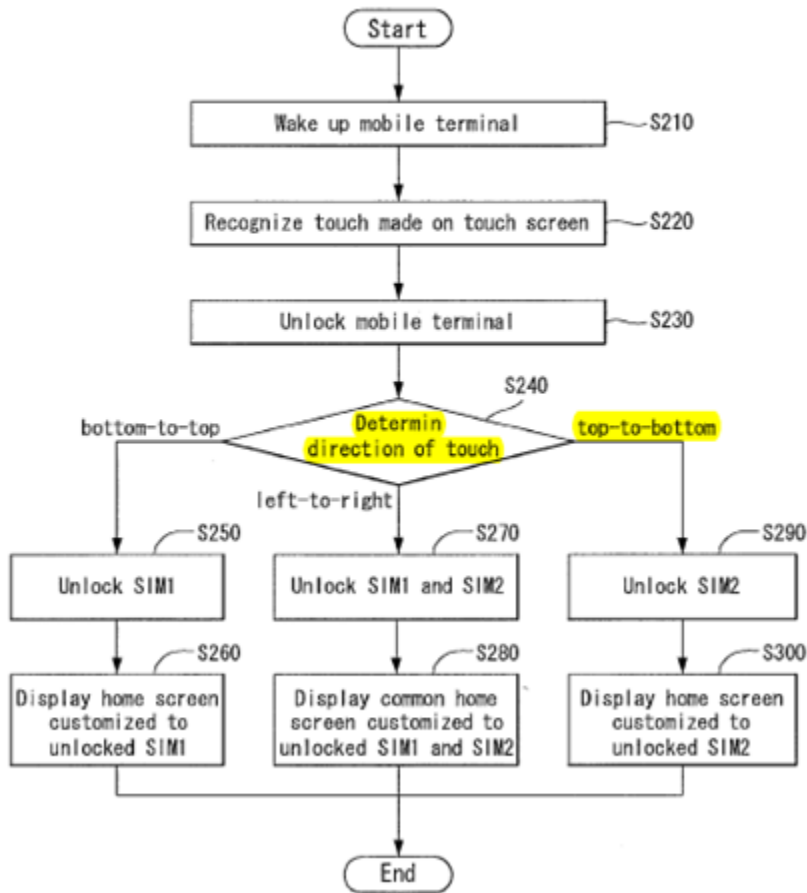
so that the graphical user interface of Chae would have the expected functionality of launching a corresponding application when a user selects a given icon.

g. Limitation 1g

1g	in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met: displaying 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.
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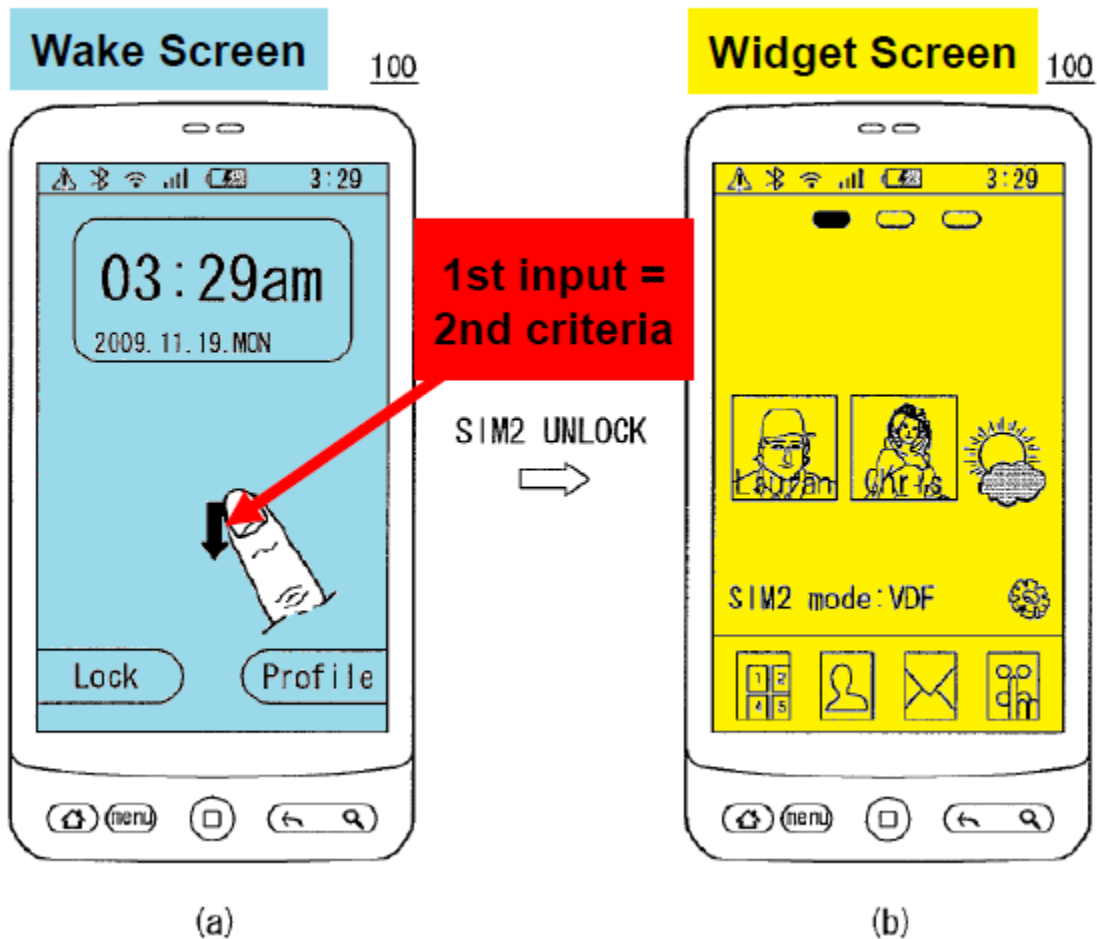
87. Chae discloses limitation 1g, which requires, in response to detecting the “first movement” in a “second direction that is different from the first direction,” displaying a “widget screen user interface” with multiple “user interface objects” containing “application content” from a corresponding application. Figure 3 illustrates a decision block S240 that determines a “direction of touch.”

FIG 3



EX1005, Fig. 3 (annotated). As shown by the right branch out of decision block S240, the “direction of touch” may be a “top-to-bottom” movement. *Id.* Chae Paragraph 109 further explains, “when a user draws a line in a top-to-bottom direction as shown in a diagram (a) of FIG. 6, the controller 180 of the mobile terminal 100 unlocks the second SIM” and “displays a home screen customized to the second SIM.” *Id.* ¶¶108-109. The annotated Figure 6 shown below illustrates the user swiping “top-to-bottom” to unlock the second SIM and display the corresponding screen:

FIG. 6

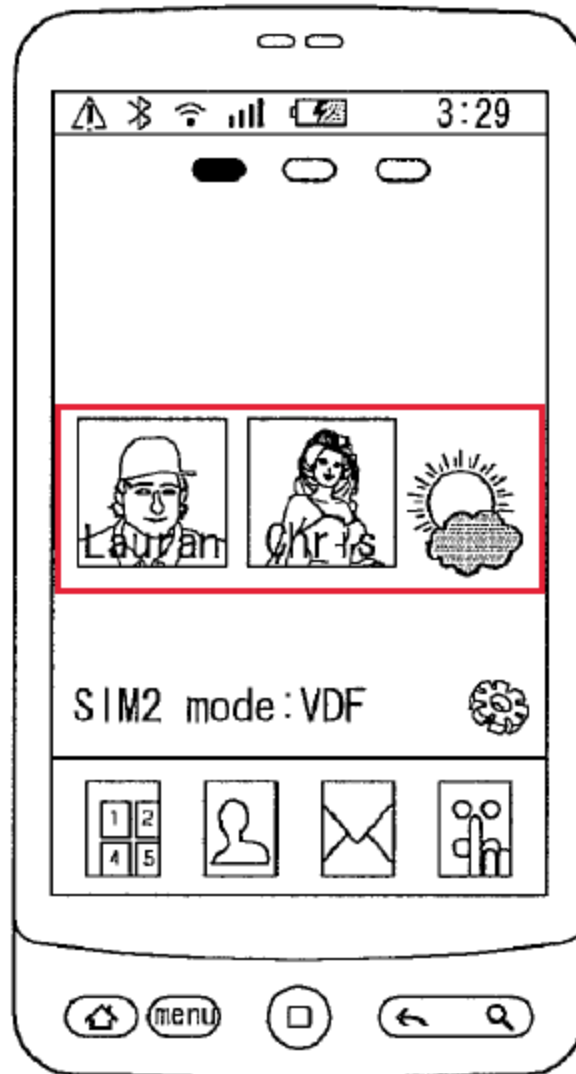


EX1005, Figs. 6(a) & 6(b) (both annotated). A POSITA would have understood that swiping in a “top-to-bottom direction,” as described in Chae Paragraphs 108-109 and shown graphically by Figure 6(a) and in the text of Figure 3, meets a “second criteria different from the first criteria” where the “first movement” is “in a second direction that is different from the first direction.”

88. A POSITA would have understood that the customized home screen shown in Figure 6(b) is a “widget screen user interface” as set forth in claim 1. As explained above, a “widget screen user interface” is a screen “different from the

wake screen user interface and the home screen user interface” and that “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.” The Figure 6(b) screen meets this definition of “widget screen user interface.” A comparison of Figures 4(a), 4(b), (6a), and 6(b) establishes that the screen shown in Figure 6(b) is “different from” **both** (1) “the wake screen user interface” (shown in Figures 4(a) and 6(a)) **and** (2) the “home screen user interface” (shown in Figure 4(b)). Indeed, Chae Paragraph 109 expressly states that the Figure 6(b) home screen is different from the Figure 4(b) home screen: “In comparison to the diagram (b) of FIG. 4, the home screen of diagram (b) of FIG. 6 displays different items when the SIM is unlocked.” EX1005 ¶109.

89. Finally, a POSITA would have understood that two or more of the user interface objects shown on Figure 6(b) are “user interface objects” (widgets) which “contain[] application content from an application corresponding to the respective user interface object.” For example, a POSITA would have understood that the three objects shown in the red box of the annotated Figure 6(b) below are “user interface objects” as claimed:

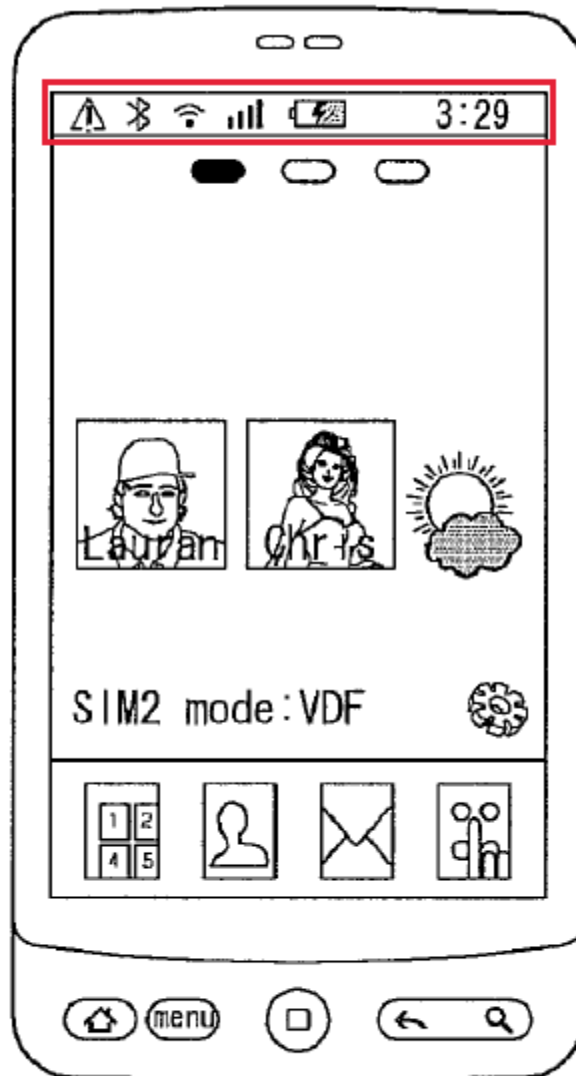


(b)

Id., Fig. 6(b) (annotated). Specifically, the object on the left and in the center include images and names of people (Lauran and Chris) and the object on the right includes a graphical depiction of current weather conditions (partly cloudy). A POSITA would have understood that this information is “application content from an application corresponding to the respective user interface object.” For example, a POSITA would have understood that (1) displaying the images and names of Lauran

and Chris would involve retrieving that content from a corresponding application, such as an image-editing application or an application for managing contacts or profiles and (2) displaying a graphical depiction of current weather conditions would involve retrieving information indicating those current weather conditions from a weather application.

90. In addition, it would also have been obvious to a POSITA to implement the status bar (shown below in a red box) of Figure 6(b) as multiple widgets.



(b)

Id., Fig. 6(b) (annotated). Specifically, the illustrated status bar shows, from left to right, a warning notification indicator, a Bluetooth indicator, a Wi-Fi indicator, a cellular signal indicator, a battery-level indicator, and a digital clock. A POSITA would have understood that each of these status-bar items provides information to the user (such as, for example, cellular signal strength or time of day) and, thus,

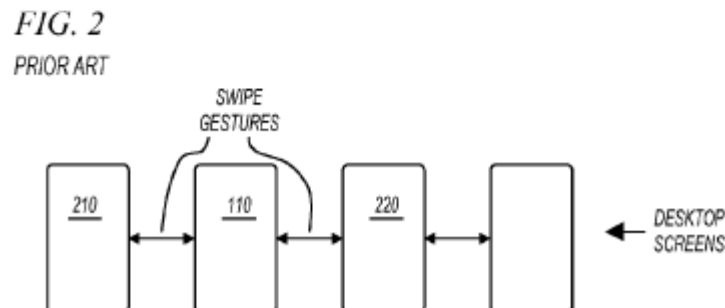
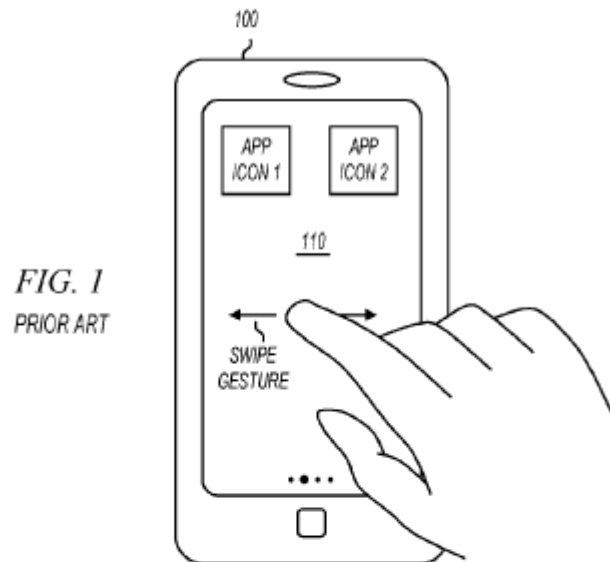
would need to retrieve “application content from an application corresponding to the respective user interface object” to be able to provide that information.

91. Similar to icons, widgets were common and well-known elements of GUIs before both the filing of the '352 patent and Chae's publication. A POSITA would have known that part of the well-known functionality of widgets was that selecting a widget would cause “display of an application corresponding to the respective user interface object.” Figure 6(b), in view of a POSITA's knowledge of this well-known widget functionality, would have conveyed to a POSITA that selecting one of the objects shown in the center of the screen (such as the weather object) or one of the objects on the status bar (such as the digital clock) would cause display of a corresponding application (such as a weather application or a digital clock application). Therefore, a POSITA would have understood that the screen shown in Figure 6(b) is a “widget screen user interface.”

92. Further, even if Chae did not expressly disclose that the customized home screen of Figure 6(b) is a widget screen user interface having multiple widgets, it would have been obvious to a POSITA to include widgets on the Figure 6(b) screen, as taught by Paragraph 100 of Chae:

Here, the home screen customized to the SIM has items displayed on the home screen different from those on a general home screen. These items include icons and *widgets*.

EX1005 ¶100 (emphasis added); *see also id.* ¶¶140, 152-154. In addition, Narendra also discloses that “[d]esktop screens on mobile device 300 display content such as application icons, **widgets**, and the like.” EX1006 ¶25 (emphasis added). Moreover, Narendra discloses that using directional swipe gestures to navigate between different GUI screens was known in the prior art, as shown by prior-art Figures 1 and 2:



Id., Figs. 1, 2; *see also id.* ¶2 (“Some prior art mobile devices include multiple desktop screens that can be navigated using gestures on the touch sensitive display.”)

Therefore, in the field of multi-screen GUIs for touchscreen devices, customizing one or more of the GUI screens to include multiple “widgets” was well known.

93. A POSITA would have understood, in view of Chae’s and Narendra’s disclosures, that those references used the term “widget” to refer to a user interface object that displays content generated by an associated application without needing to (but being able to) open the application. Hong, an application filed in 2014 and published in 2015, supports this understanding. Specifically, Hong’s background section, which describes prior art, states:

The portable phone provides various applications. Recently, application widgets have been provided that enable a user to access contents provided in an application without executing the application, such as a clock, a calendar, a memo, search, a map, news, a real-time camera, and the like.

As noted above, application widgets have been provided that enable a user to access contents in an application without executing the application. A user may check, at a glance, information or a function provided by an application through a widget that functions as a preview of the information or the function without actually executing the application itself.

EX1010 ¶¶4-5. Figure 7A depicts several such widgets on a screen:

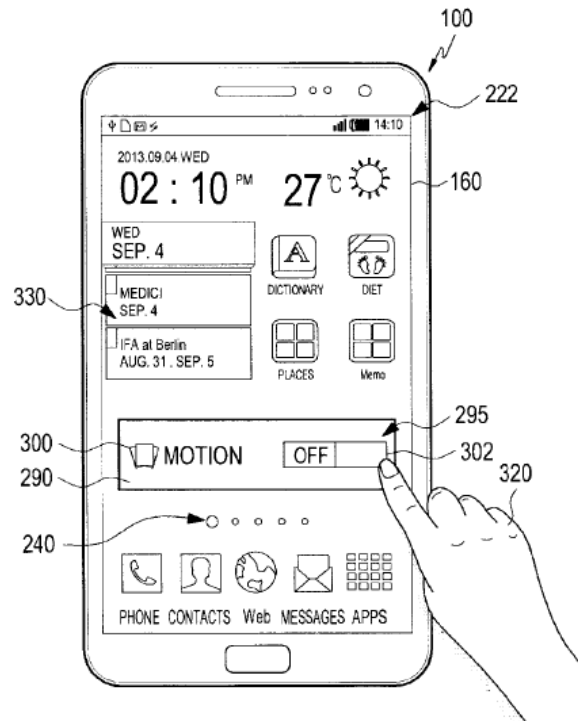
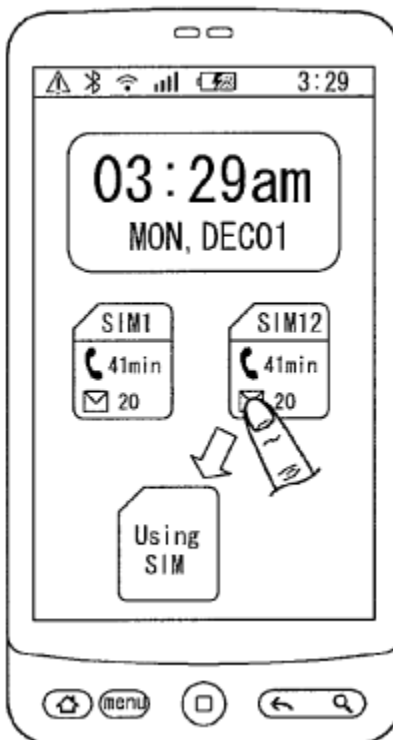


FIG. 7A

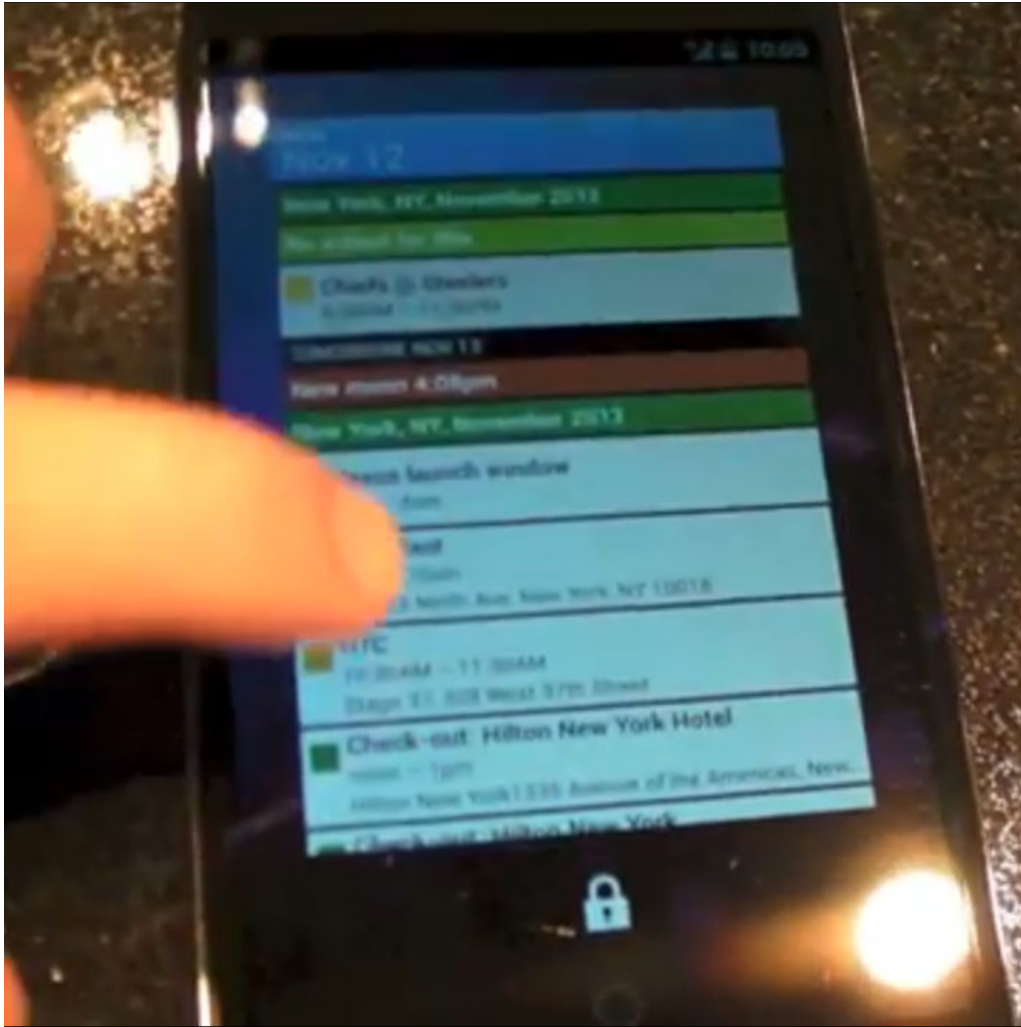
EX1010, Fig. 7A. Consistent with this prior-art description, a POSITA would have understood that a “widget” is a user interface object that displays content generated by an associated application without needing to (but being able to) open the application. Accordingly, a POSITA would have understood that the claimed “plurality of user interface objects”—which claim 1 recites are included in a “widget screen user interface” and each contain “application content from an application corresponding to the respective user interface object”—are widgets. Conversely, a POSITA would have understood that the disclosure of a user interface screen including multiple “widgets” meets the “widget screen user interface” limitation of claim 1.

94. Accordingly, a POSITA would have understood that Chae’s disclosure of a customized home screen including “widgets” discloses the “widget screen user interface” of claim 1. Chae’s description related to another embodiment illustrated by Figure 22 supports that Chae uses the term “widget,” consistent with its well-understood meaning, to refer to a user interface object that displays content generated by an associated application without needing to (but being able to) open the application. Therefore, Chae’s disclosure of a screen with multiple “widgets” meets the “widget screen user interface” limitation. Chae’s Figure 22 graphically depicts “widgets that show use-state information of the first and second SIMs.”
EX1005 ¶152.

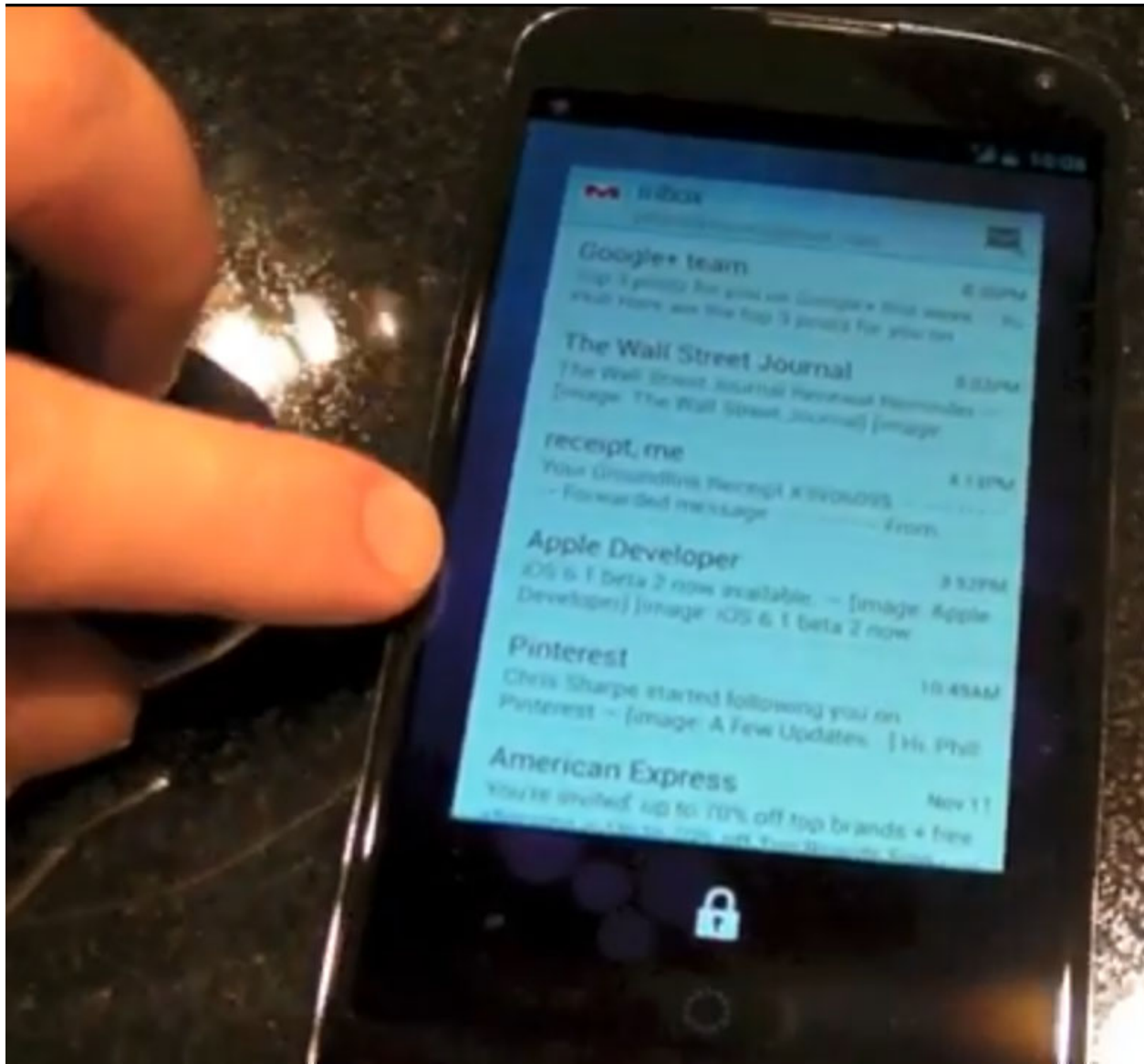


EX1005, Fig. 22. A POSITA would have understood that the referenced “use-state information” includes minutes of talk time associated with each SIM (41 minutes in the illustrated example) and messages associated with each SIM (20 messages in the illustrated example). Thus, the use-state information displayed on each widget is “application content from an application corresponding to the respective user interface object,” as recited by claim 1. The illustrated widgets of Figure 22 further support that Chae’s disclosure of a customized home screen including multiple widgets satisfies the “widget screen user interface” limitation of claim 1.

95. Android further supports that a POSITA would have understood a “widget” to be a user interface object containing application content from an application corresponding to the user interface object. In the video, the user explaining how to add widgets to a lock screen repeatedly refers to “widgets” such as a calendar widget, digital clock widget, email widget, or messaging widget. *See generally* EX1007. It is apparent from the video that the referenced widgets are user interface objects containing content from an application corresponding to the user interface object. For example, below is a still screenshot from the video showing the calendar widget containing content summarizing scheduled events stored in a calendar application:



Id. at 1:11. As another example, below is a still screenshot from the video showing the email widget containing content summarizing messages stored in the email application:



Id. at 2:06. Other examples are shown throughout the video. *See generally id.*

96. Even if Chae’s customized Figure 6(b) home screen did not include widgets—and, again, it is my opinion that Figure 6(b) shows at least three widgets—a POSITA would have been motivated to add multiple widgets to Chae’s customized Figure 6(b) home screen, thereby making it a “widget screen user interface” as claimed. It was well known at the time of Chae’s publication and before the effective

filing date of the '352 patent, that widgets advantageously display useful information generated by applications running in the background, without requiring the user to open the applications. For example, common widgets displayed the date and time of day, weather information such as the local temperature, and financial information such as stock quotes, without requiring the user to open a clock application, a calendar application, a weather application, or a financial application. The efficiency and convenience of using widgets to view such useful information without needing to open applications would have motivated a POSITA to include multiple widgets on Chau's customized Figure 6(b) home screen. A POSITA would have been motivated specifically to include *multiple* widgets (not just one) on a single screen so that as much useful information as possible could be viewed on a single screen without needing to switch between screens. Including multiple widgets on a single screen was a well-known technique of user-interface design to improve the user experience by reducing switching between screens. As mentioned above, this is explicitly disclosed in Figure 6(b) of Chae.

97. That Chae calls the screen shown in Figure 6(b) a customized *home screen* and Figure 3 depicts a top-to-bottom swipe resulting in the unlocking of SIM2 and the display of "*home screen* customized to unlocked SIM2" does not mean that the customized home screen of Figure 6(b) is not a "widget screen user interface." I understand that Chae is not required to use the exact claim phrase

“widget screen user interface” for a POSITA to determine that the disclosed customized home screen of Figure 6(b) is, in fact, a “widget screen user interface” as claimed in the ’352 patent. A POSITA would understand, based on Chae’s disclosure that its customized home screens may “include icons and widgets,” that any of the customized home screens may include a plurality of widgets, and, thus, be a “widget screen user interface” as claimed in the ’352 patent. *See* EX1005 ¶100.

98. Further, it is irrelevant that Chae discloses using two SIM cards—and the user’s selective unlocking of one or both of the SIM cards—to implement the functionality depicted by Figure 3 of Chae. The ’352 patent claims are not limited to devices with just one SIM card and do not exclude devices with two or more SIM cards. In any event, Narendra discloses using directional swipe gestures to navigate between multiple GUI screens (containing application icons and widgets) of a device with a single SIM card. EX1006, Fig. 16 (single SIM card 1610); *see also id.* ¶25 (application icons and widgets), Figs. 1-3 (navigation using directional swipe gestures). Accordingly, a POSITA would have understood that it is not necessary to include two SIM cards in a device to implement Chae’s or Narendra’s disclosure of navigation between different GUI screens containing application icons and widgets using directional swipe gestures. Indeed, it would have been apparent to a POSITA in view of Chae and Narendra that navigation between different GUI screens using directional swipe gestures would enhance the convenience, efficiency,

and ease of use of *any* device with a touchscreen-based GUI, regardless of the number of SIM cards that the device supported.³ Therefore, such convenience, efficiency, and ease of use would have motivated a POSITA to implement the directional-swipe-gesture navigation taught by Chae and Narendra on touchscreen devices having either one SIM card or multiple SIM cards.

99. Accordingly, Chae’s Figure 6(b) customized home screen is or makes obvious a screen that (1) is different from both the wake screen and the Figure 6(a) home screen and (2) “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

³ This is consistent with my own personal knowledge based on my use of single-SIM smartphones having the Android 4.2 operating system. Such single-SIM smartphones used directional swipe gestures to navigate between different GUI screens. The Android 4.2 operating system supported a lock screen and multiple home/widget screens. The home/widget screens could be individually navigated to via multiple different directional swipe gestures. Each home/widget screen could have any combination of (1) only application icons, (2) only widgets, or (3) application icons and widgets.

display of an application corresponding to the respective user interface object.”

Therefore, Chae’s Figure 6(b) customized home screen satisfies or makes obvious a “widget screen user interface,” as claimed.

h. Claim 1 Conclusion

100. Accordingly, Chae and Narendra disclose or make obvious every limitation of claim 1 of the ’352 patent. Further, for the reasons set forth above, a POSITA would have been motivated to implement a combination of Chae and Narendra in a manner that practices every limitation of claim 1. Claim 1, therefore, would have been obvious to a POSITA before the effective filing date of the ’352 patent.

2. Claim 2

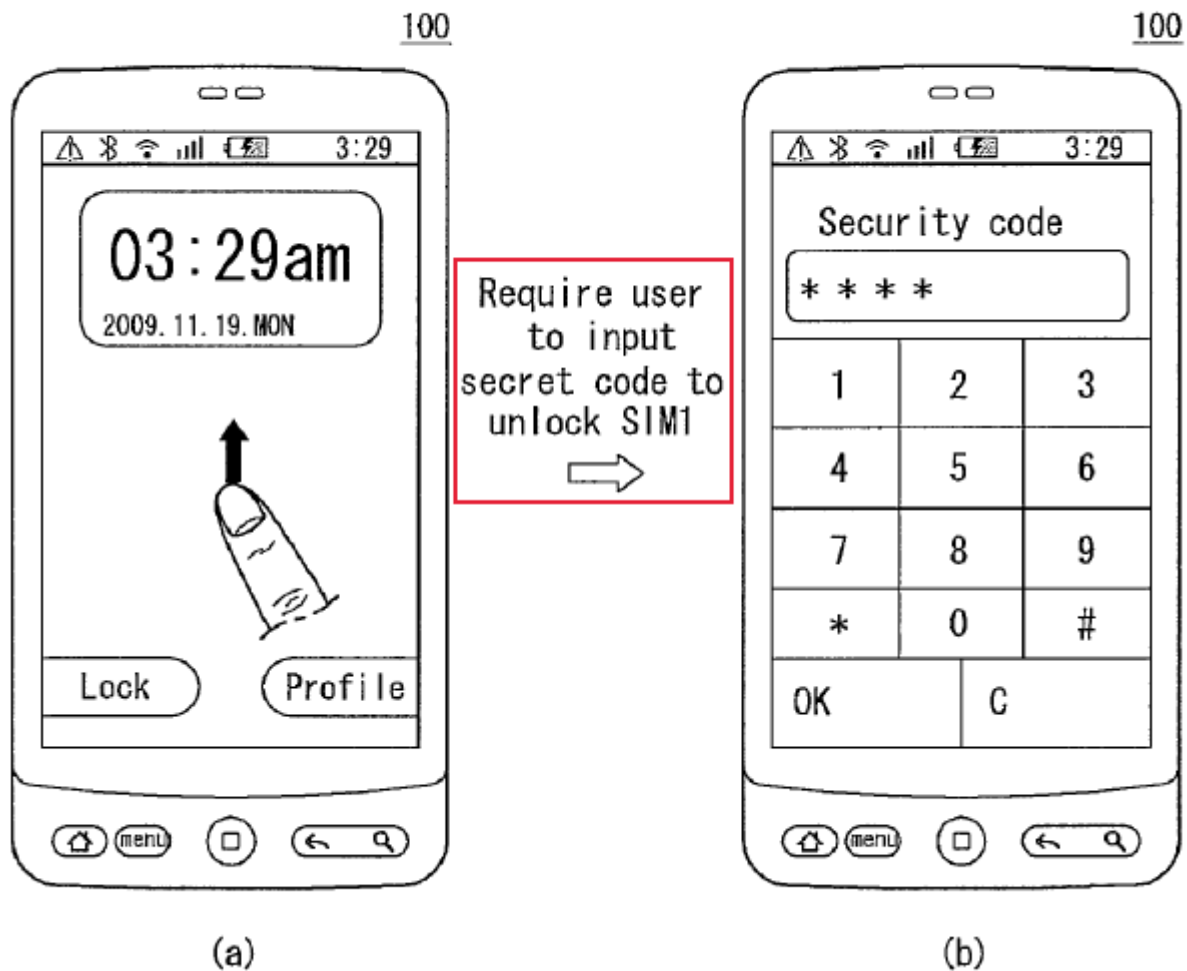
2	The method of claim 1, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.
---	--

101. Claim 2 depends on claim 1 and further recites that the wake screen user interface “has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.” Chae discloses this limitation. Specifically, Figure 4 of Chae illustrates the “first ... authenticated state” and Figure 5 of Chae illustrates the “second ... unauthenticated state.” As described above, Figure 4 illustrates that a user may swipe in a bottom-to-top direction to unlock the first SIM. EX1005 ¶104.

Figure 4 does not require additional authentication to unlock the first SIM, showing that the device is already authenticated. *Id.*; *see also id.* ¶106. Therefore, the wake screen in Figure 4(a) starts out in “a first state that corresponds to an authenticated state of the computer system.”

102. By contrast, while Figure 5 also illustrates a user swiping in a bottom-to-top direction to unlock the first SIM, Figure 5 “displays a user interface for inputting a secret code to unlock the first SIM (SIM1) as shown in a diagram (b) of FIG. 5.” *Id.* ¶105.

FIG. 5



Id., Fig. 5 (annotated). A POSITA would have understood that requiring the inputting of a secret security code to unlock the first SIM is a form of authentication. Indeed, secret security codes are a form of password or passcode that have been well-known and commonly used forms of authentication for many years. Secret security codes operate on the principle that a secret security code assigned to an authorized user and known only to that authorized user can be used to verify that a user who correctly enters the secret security code is the authorized user to whom the

secret security code is assigned. Thus, when the user correctly enters the secret security code, the smartphone authenticates the user, or, in other words, verifies that the user is the authorized user to whom the secret security code is assigned. Therefore, because Figure 5 requires authentication, it shows that the wake screen starts out in Figure 5(a) in a “second state that corresponds to an unauthenticated state of the computer system.”

103. Accordingly, claim 2 would have been obvious in view of Chae and Narendra.

3. Claim 6

104. Claims 3-6 are dependent claims that merely recite different navigation paths for moving among the same wake, home, and widget screens recited in claim 1 in response to a swipe gesture in a particular direction.⁴ A POSITA would have understood that the added limitations of claims 3-6 are trivial and obvious variations of the basic concept of navigating from one user-interface screen to another using directional swipe gestures that both Chae and Narendra disclose and make obvious. As explained for claim 1, both Chae and Narendra disclose using directional swipe gestures to access different screens. In view of Chae’s and Narendra’s disclosures, a POSITA would have recognized that directional swipe gestures are an efficient

⁴ I address claims 3-5 in a separate section below.

and convenient user-interface mechanism for accessing different screens. Further, a POSITA would have recognized that using directional swipe gestures to access different screens is efficient and convenient from *any* screen the user is currently viewing, whether the current screen is a wake screen, home screen, widget screen, control panel screen, or other type of screen.

105. Once a POSITA understood the basic concept of navigating between screens using directional swipe gestures—as taught by Chae and Narendra—the POSITA would have understood that choosing a particular navigational path for moving among the user-interface screens and associating a particular directional swipe gesture with each movement 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 swipe gestures (such as swipe left, swipe right, swipe up, swipe down, etc.) to associate with that navigational path. A POSITA would understand that the basic directional swipe gestures could also be supplemented with variables such as length of swipe, speed of swipe, specific starting or ending zones, etc. However, using the basic directional swipe gestures would have been obvious to a POSITA.

106. A POSITA would have also understood that it would be advantageous to permanently associate a specific directional swipe gesture with a particular screen

(such as the home screen) such that the specific gesture always results in navigation to the particular screen regardless of the origin screen from where the user navigates. In addition, a POSITA would have also understood it would be advantageous to design a context-sensitive navigational system in which the destination screen to which the user navigates in response to a particular directional swipe gesture depends on the origin screen. A POSITA would have easily been able and motivated to combine these approaches by permanently associating a specific directional swipe gesture with the home screen but using a context-sensitive navigational system to navigate among non-home screens.

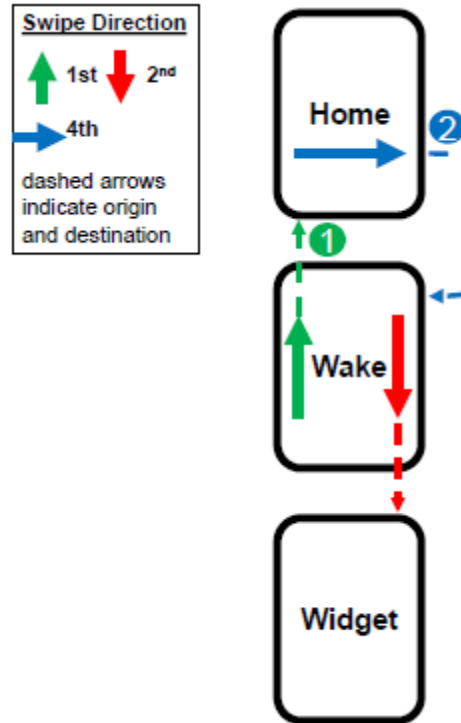
107. As further explained below, it would have been obvious to a POSITA to choose among the finite design choices described above to yield any of the specific navigational paths and associated directional swipe gestures recited by claims 3-6.

108. With respect to claim 6 specifically, claim 6 depends on claim 1 and further recites navigating to the wake screen from the home screen (after accessing the home screen from the wake screen per claim 1) by swiping in a different direction than the user swipes to access either the home screen or the widget screen from the wake screen.

6	The method of claim 1, including: while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and in response to detecting the fifth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.
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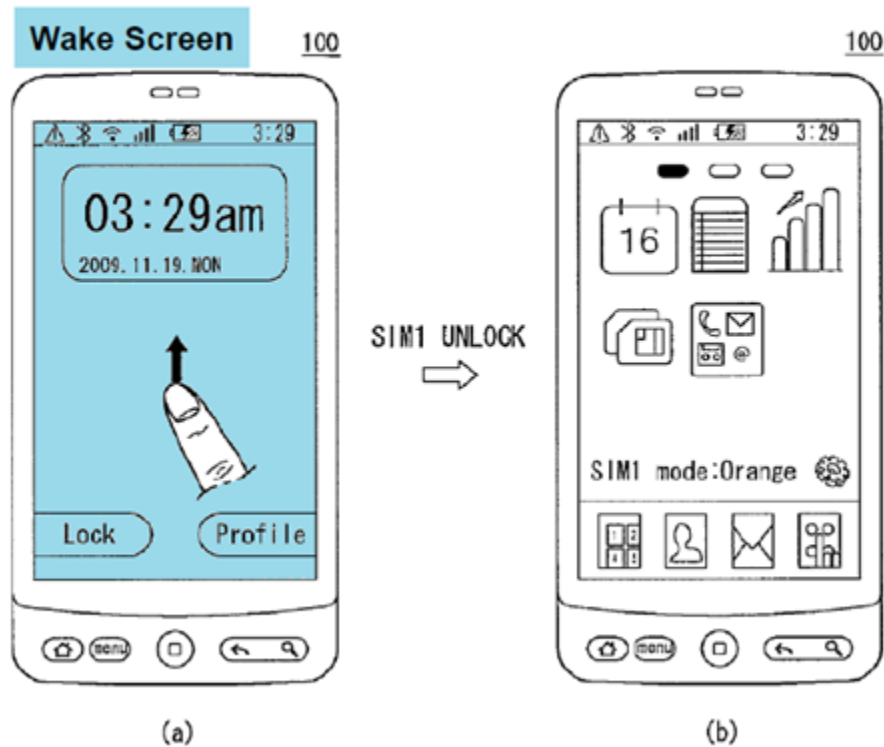
Below is a graphical representation of the two-step navigational path of claim 6.⁵

⁵ The illustrative graphics for claims 3-8 focus on illustrating available navigational paths between various user-interface screens and do not illustrate other claim limitations, which I address elsewhere in this declaration.



109. Claim 6 would have been obvious in view of Chae and Narendra. It would have been obvious to allow the user to return to the home screen to lock the smartphone. As shown by Chae's Figure 4(a), the smartphone is or may be locked while on the wake screen.

FIG. 4



EX1005, Figs. 4(a) (annotated) & 4(b). It was a well-known and common practice to allow the user to return to the wake screen to lock the smartphone to prevent unauthorized users from accessing an unlocked phone while the authorized user was not actively using the phone. Therefore, the enhanced security associated with locking the smartphone would have motivated a POSITA to allow the user to return to the wake screen. However, a POSITA would have wanted to provide a navigational path for returning to the wake screen that is easily distinguishable by the user from the usual paths for navigating to home screens and widget screens. A POSITA would have understood that the wake screen provides much more limited functionality, such as locking and unlocking the smartphone, than home screens or

widget screens. Thus, a POSITA would have been motivated to provide a different directional swipe gesture for returning to the wake screen than used to access the home screen or widget screen, to reduce the likelihood of user confusion or inadvertent access of the wake screen. Further, as explained below with respect to claim 3, there would have been no technical obstacle to making any needed modifications of Chae or Narendra, and, thus, a POSITA reasonably would have expected success in making the modification. The directional swipe gesture is input the user provides by a movement of his or her finger across some of the home screen, and, thus, it is a “fifth input that is directed to a portion of the home screen.” Further, in this configuration the direction of the movement is different than the “first direction” and “second direction.” Therefore, the “fifth input” (the swipe gesture) includes “fifth movement” in a “fourth direction” meeting “sixth criteria” of being “different from the first direction and the second direction.”

110. Accordingly, claim 6 would have been obvious in view of Chae and Narendra.

4. Claim 9

111. Claim 9 is essentially the same as claim 1 in the form of a computer system with a processor that executes instructions stored in memory to perform the method of claim 1. Claim 9 would have been obvious in view of Chae and Narendra.

Limitations 9c through 9g are identical to limitations 1c through 1g. The slight differences included in limitations 9a, 9b1, and 9b2 are addressed below.

a. Limitation 9a (preamble)

9a	A computer system, comprising:
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112. The preamble of claim 9 recites a “computer system.” Chae discloses that its invention “can be implemented in a computer or similar device readable recording medium using software, hardware or a combination thereof.” EX1005 ¶89. Therefore, if the preamble is a limitation, Chae discloses it.

b. Limitation 9b1

9b1	one or more processors that are in communication with a display generation component and one or more input devices; and
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113. As explained above in Paragraph 75 of this declaration, Chae discloses the claimed “display generating component and one or more input devices.”

114. Limitation 9b1 also recites “one or more processors.” Chae discloses that its invention “can be implemented using at least one of application specific integrated circuits (ASICs), digital signal processors (DSPs),” or other types of “processors.” EX1005 ¶90. Chae generally calls the processor “the controller 180.”

Id.

115. Accordingly, Chae discloses limitation 9b1.

c. Limitation 9b2

9b2	memory storing instructions, the instructions, when executed by the one or more processors, cause the processors to perform operations comprising:
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116. Chae discloses that its “procedures or functions can be implemented” using “software codes” that can be “stored in the memory 160 and executed by the controller 180.” EX1005 ¶91. A POSITA would have understood that the disclosed “software codes” are “instructions” as claimed.

117. Accordingly, Chae discloses limitation 9b2.

d. Limitations 9c-9g

118. Limitations 9c through 9g are identical to limitations 1c through 1g. For the reasons set forth above for limitations 1c through 1g, Chae and Narendra disclose limitations 9c through 9g.

e. Claim 9 Conclusion

119. For the reasons set forth above with respect to claim 1, claim 9 would have been obvious in view of Chae and Narendra.

5. Claim 17

120. Claim 17 is essentially the same as claim 1 in the form of a computer-readable storage medium comprising instructions that, when executed by a processor, perform the method of claim 1. Claim 17 would have been obvious in view of Chae and Narendra. Limitations 17c through 17g are identical to limitations

1c through 1g. The slight differences included in limitations 17a and 17b are addressed below.

a. Limitation 17a (preamble)

17a	A computer-readable storage medium comprising
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121. The preamble of claim 17 recites a “computer-readable storage medium.” Chae discloses that its invention “can be implemented in a computer or similar device readable recording medium using software, hardware or a combination thereof.” EX1005 ¶89. Therefore, if the preamble is a limitation, Chae discloses it.

b. Limitation 17b

17b	instructions, the instructions when 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, cause the processors to perform operations comprising:
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122. As explained above in Paragraph 75 of this declaration, Chae discloses the claimed “display generating component and one or more input devices.”

123. Limitation 17b also recites “instructions, the instructions, when executed by one or more processors ... cause the processors to perform the operations.” Chae discloses that its invention “can be implemented using at least one of application specific integrated circuits (ASICs), digital signal processors (DSPs),” or other types of “processors.” EX1005 ¶90. Chae generally calls the

processor “the controller 180.” *Id.* Chae discloses that its “procedures or functions can be implemented” using “software codes” that can be “stored in the memory 160 and executed by the controller 180.” EX1005 ¶91. A POSITA would have understood that the disclosed “software codes” are “instructions” as claimed. Specifically, each computer processor has a set of instructions that define the specific operations that may be performed by the processor. Software code that can be executed by a processor is generally called “object code” and consists of a series of instructions compatible with and ready to be executed by a particular processor. Accordingly, a POSITA would understand that Chae’s disclosure of “software codes” that can be “executed by the controller” means that the codes are executable “instructions.”

124. Accordingly, Chae discloses limitation 17b.

c. Limitations 17c-17g

125. Limitations 17c through 17g are identical to limitations 1c through 1g. For the reasons set forth above for limitations 1c through 1g, Chae and Narendra disclose limitations 17c through 17g.

d. Claim 17 Conclusion

126. For the reasons set forth above with respect to claim 1, claim 17 would have been obvious in view of Chae and Narendra.

6. Claims 10, 14, 18, and 22

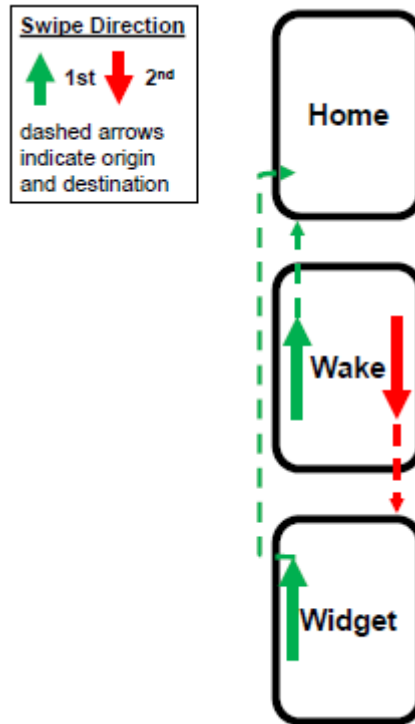
127. Claims 10 and 14 and 18 and 22 are identical to claims 2 and 6 except that they depend directly or indirectly on claims 9 or 17 instead of claim 1. Therefore, for the reasons set forth above with respect to claims 1, 2, 6, 9, and 17, claims 10, 14, 18, and 22 would have been obvious in view of Chae and Narendra.

B. Ground 2: Claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, and Shuttleworth.

1. Claim 3

3	The method of claim 1, including: while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and in response to detecting the second input that is directed to the portion of the widget screen user interface: in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.
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128. Claim 3 depends on claim 1 and further recites navigating to the home screen directly from the widget screen by swiping in the same direction that the user swipes to access the home screen from the wake screen. Below is a graphical representation of the available navigational paths for claim 3.



As explained above, claim 1 would have been obvious in view of Chae and Narendra. In addition, it would have been obvious in further view of Shuttleworth to allow the user to access the home screen directly from the widget screen ***using the same directional swipe gesture that the user would use to access the home screen from the wake screen.***

129. Shuttleworth discloses using a consistent directional swipe gesture to access the home screen from any other screen, thereby replacing hardware or virtual home buttons:

Because the Home screen can be reached so readily by a swipe from the left edge of the phone, there is no need for a dedicated hardware Home button, unlike iOS, or soft button as in Android.

EX1008 ¶353. Shuttleworth further explains:

In one implementation, the swipe is a long swipe in from the left edge; a commit gesture (e.g. a release) after the home screen appears causes the home screen to be displayed after the commit.

Id. ¶359.⁶ And Shuttleworth does not limit the swipe as necessarily coming from the left edge, also disclosing the more general concept that “a swipe in from *an* edge brings up a home screen.” *Id.* ¶358 (emphasis added).

130. Consistent with Shuttleworth’s teaching, a POSITA would have understood that providing the user a consistent mechanism to access the home screen, regardless of which screen the user is currently viewing, was a well-known and accepted user-interface design practice for enhancing the efficiency and ease of use of the user interface. For example, consistent with this well-known practice, and as referenced in Shuttleworth, a POSITA would have known that prior-art smartphones typically included a binary, dedicated mechanism, such as a physical or virtual home button, for accessing the home screen from whichever screen the user is currently viewing. Using a consistent directional swipe gesture to access the home screen, whether from the wake screen or a widget screen, would have been an

⁶ That the swipe is followed by a “commit gesture (e.g. a release)” does not differentiate the swipe from the “second input” of claim 3. Claim 3’s open-ended recitation that the “second input ... *includes* second movement” allows the input to also include a commit gesture.

obvious substitute for a physical or virtual home button for accessing the home screen. A POSITA would have understood that using a consistent directional swipe gesture to access the home screen enhances ease of use, efficiency, and convenience by allowing the user to learn a single gesture for accessing the home screen. Therefore, a POSITA would have been motivated to allow the user to access the home screen directly from the widget screen using the same consistent directional swipe gesture that the user would use to access the home screen from the wake screen, as recited by claim 3.

131. Further, a POSITA would have reasonably expected success in making such modification. There would have been no technical obstacle to configuring Chae or Narendra to allow the user to access the home screen directly from the widget screen using the same directional swipe gesture that the user would use to access the home screen from the wake screen. Indeed, a POSITA would have understood that all gestures can easily be associated with a specific GUI action to be triggered when the user performs the gesture. For example, a patent application titled “Customizable Gestures for Mobile Devices” by Marco de Sa filed in 2012 and published in 2013 discloses allowing users “to define and modify mappings between (1) gestures and (2) actions performed by one or more computing devices in response to a device detecting performance of a gesture.” EX1009, Abstract. This disclosure of allowing users to modify mappings between gestures and actions

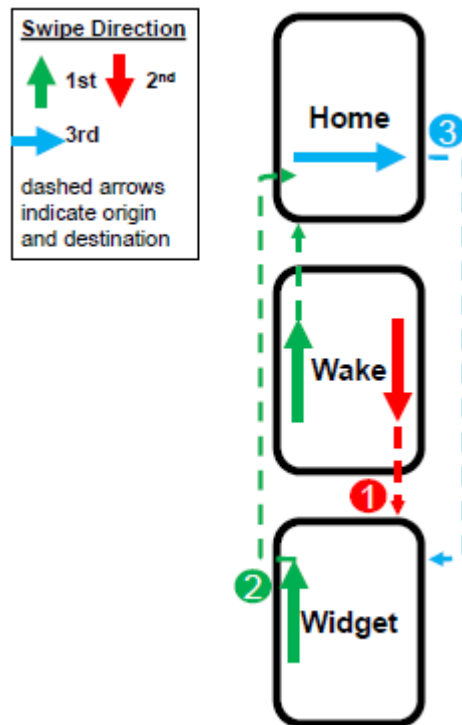
demonstrates the technical ease with which a POSITA would have been able to configure Chae or Narendra to allow the user to access the home screen directly from the widget screen using the same directional swipe gesture that the user would use to access the home screen from the wake screen. This directional swipe gesture is input the user provides by a movement of his or her finger across some of the widget screen, and, thus, it is a “second input that is directed to a portion of the widget screen.” Further, in this configuration the direction of the movement is “in the first direction.” Therefore, the “second input” (the swipe gesture) includes “second movement” meeting “third criteria” of being “in the first direction.”

132. Accordingly, claim 3 would have been obvious in view of Chae, Narendra, and Shuttleworth.

2. Claim 4

4	The method of claim 3, including: while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and in response to detecting the third input that is directed to the portion of the home screen user interface: in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.
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133. Claim 4 depends on claim 3 and further recites returning to the widget screen from the home screen (after navigating to the home screen from the widget screen per claim 3) by swiping in a different direction than the user swipes to access either the home screen or the widget screen from the wake screen. Below is a graphical representation of the three-step navigational path of claim 4.

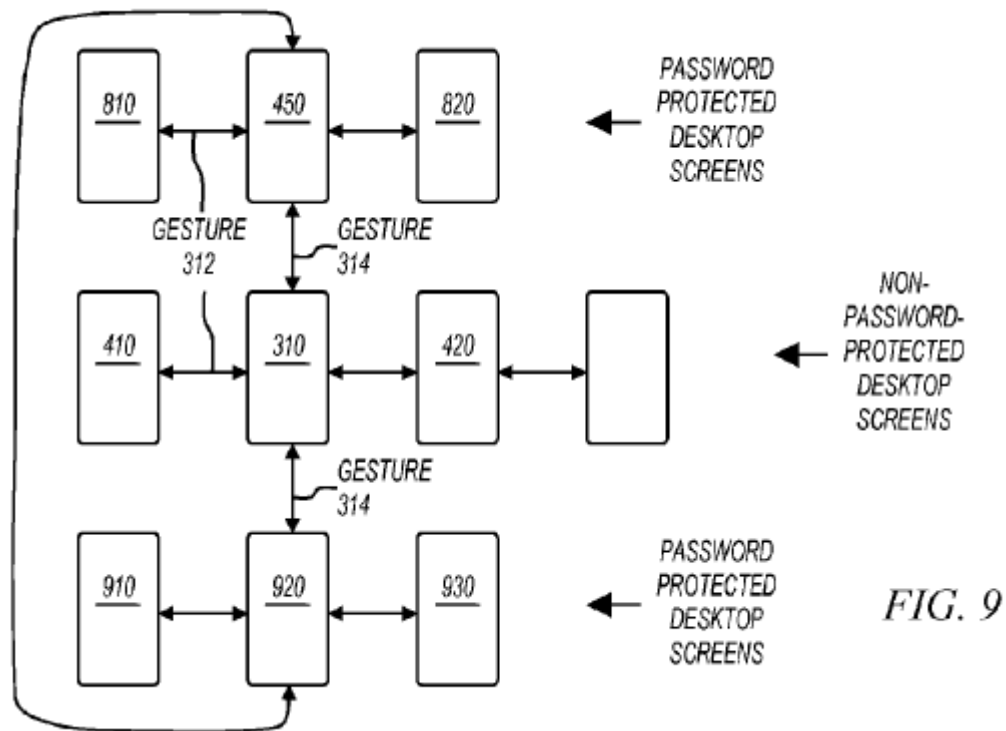


134. Claim 4 would have been obvious in view of Chae and Narendra. As explained for claim 1, both Chae and Narendra disclose using directional swipe gestures to access different screens. As further explained above, a POSITA would have recognized that using directional swipe gestures to access different screens is efficient and convenient from *any* screen the user is currently viewing, whether the

current screen is a wake screen, a home screen, a widget screen, or other type of screen.

135. A POSITA would have been motivated by that efficiency and convenience to allow a user to return to the widget screen after accessing the home screen using a directional swipe gesture. In addition, a POSITA would have been motivated to allow the user to return to the widget screen from the home screen *using a different directional swipe gesture than the user would use to access either the home screen or the widget screen from the wake screen.*

136. As explained above for claim 3, many smartphones typically used a dedicated directional swipe gesture as a substitute for a physical or virtual home button, to navigate to the home screen from any other screen using a consistent mechanism. However, it was also common for smartphones to have a context-sensitive navigational system, in which the destination screen to which the user navigates in response to a particular directional swipe gesture depends on the origin screen, for non-home screens. Narendra discloses such a navigational system, as illustrated by the navigational map shown in Figure 9:



EX1006, Fig. 9. As shown, a user would swipe right from screen 410 to navigate to screen 310, but would swipe left from screen 420, down from screen 450, or up from screen 920 to navigate to the same screen 310. In other words, the user could get to a given destination screen using multiple different swipe directions, depending on the origin screen the user started from. Therefore, before the filing of the '352 patent and the publication of Chae and Narendra, smartphone users would have been familiar with navigating to a non-home destination screen by swiping in one direction from one origin screen but swiping in a different direction from a different origin screen. A POSITA would have understood that such a navigational system scales easily to provide quick, efficient, and easy access to as many screens as desired because it is intuitive and does not require assigning a dedicated directional

swipe gesture to every screen. Thus, the desire to provide a user experience that was familiar to smartphone users and quick, efficient, and easy to use with multiple screens would have motivated a POSITA to configure Chae or Narendra to allow a user to navigate to the widget screen from the wake screen by swiping in one direction but to navigate to the widget screen from the home screen by swiping in a different direction, as recited by claim 4.

137. There is no inconsistency in the facts that a POSITA (1) would have been motivated to configure Chae and Narendra to provide direct access to the home screen using a consistent directional swipe gesture (per claim 3) but (2) would have also been motivated to *not* provide such direct access to the widget screen (per claim 4) or to other non-home screens. A POSITA would have understood that providing such direct access to multiple screens would be logistically difficult and would not scale well because each directly accessible screen would require its own dedicated directional swipe gesture. Thus, while recognizing the efficiency of providing special treatment for the home screen so that a user can always directly navigate to that commonly accessed screen using a consistent directional swipe gesture (as a replacement for a home button), a POSITA would have also recognized the ineffectiveness of attempting to provide direct access to the widget screen or other non-home screens in a situation where there are many screens to navigate between. Accordingly, where there are many screens to navigate among, such as, for example,

multiple home screens, widget screens, or other screens, a POSITA would have avoided using a dedicated swipe gesture for each screen. A POSITA would have understood the desirability of allowing multiple home, widget, and other screens to accommodate the large number of applications, widgets, and other objects that users interact with on a typical smartphone.

138. Further, there would have been no technical obstacle to configuring Chae or Narendra in accordance with claim 4. As explained above with respect to claim 3, a POSITA would have understood that all gestures, including directional swipe gestures, are easily configurable to be associated with any action, such as navigating between different screens, that can be triggered by a gesture. EX1009, Abstract. This disclosure of allowing users to modify mappings between gestures and actions demonstrates the technical ease with which a POSITA would have been able to configure Chae or Narendra in accordance with claim 4. Thus, a POSITA would have reasonably expected success in making the combination. The directional swipe gesture in this configuration is input the user provides by a movement of his or her finger across some of the home screen, and, thus, is a “third input that is directed to a portion of the home screen.” Further, in this configuration the direction of the movement is different than the “first direction” and “second direction.” Therefore, the “third input” (the swipe gesture) includes “third movement” in a

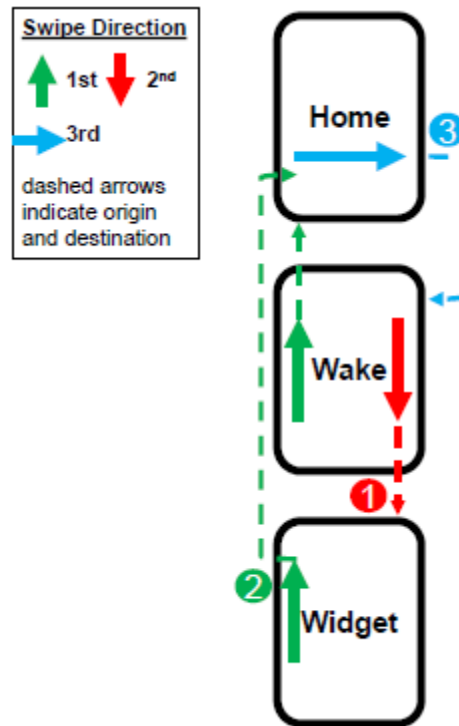
“third direction” meeting “fourth criteria” of being “different from the first direction and the second direction.”

139. Accordingly, claim 4 would have been obvious in view of Chae and Narendra.

3. Claim 5

5	The method of claim 3, including: while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and in response to detecting the fourth input that is directed to the portion of the home screen user interface: in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.
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140. Claim 5 depends on claim 3 and further recites navigating to the wake screen from the home screen (after navigating to the home screen from the widget screen per claim 3) by swiping in a different direction than the user swipes to access either the home screen or the widget screen from the wake screen. Below is a graphical representation of the three-step navigational path of claim 5.



141. Claim 5 would have been obvious in view of Chae and Narendra. Claim 5 is essentially the same as claim 4 except that the user navigates to the wake screen instead of to the widget screen. Simply navigating to a different screen is not a patentable distinction. For the reasons set forth above for claims 3 and 4, using directional swipe gestures to navigate from any screen to any other screen—whether those screens are the home screen, widget screen, wake screen, or other screen—would have been obvious to a POSITA. Further, for the reasons set forth above for claim 4, it would have been obvious to a POSITA to allow a user to navigate from the home screen to the wake screen *using a different directional swipe gesture than the user would use to access either the home screen or the widget screen from the wake screen*. Further, as also explained with respect to claim 4, there would have

been no technical obstacle to configuring Chae or Narendra in accordance with claim

5. The directional swipe gesture in this configuration is input the user provides by a movement of his or her finger across some of the home screen, and, thus, it is a “fourth input that is directed to a portion of the home screen.” Further, in this configuration the direction of the movement is different than the “first direction” and the “second direction.” Therefore, the “fourth input” (the swipe gesture) includes “fourth movement” in a “third direction” meeting “fifth criteria” of being “different from the first direction and the second direction.”

142. Accordingly, claim 5 would have been obvious in view of Chae and Narendra.

4. Claims 11-13 and 19-21

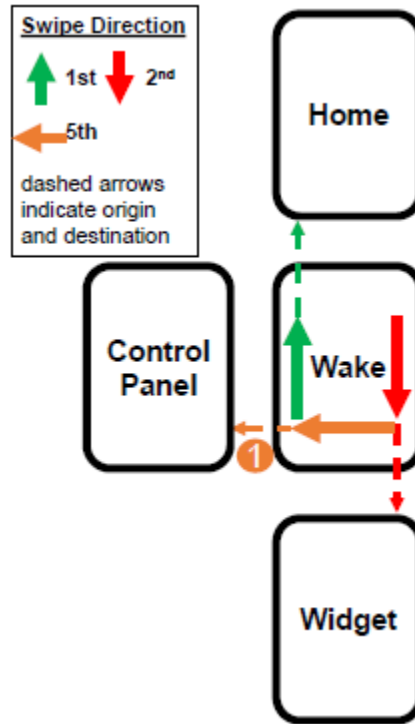
143. Claims 11-13 and 19-21 are identical to claims 3-5 except they depend directly or indirectly on claims 9 or 17 instead of claim 1. Therefore, for the reasons set forth above with respect to claims 3-5, claims 11-13 and 19-21 would have been obvious in view of Chae, Narendra, and Shuttleworth.

C. Ground 3: Claims 7, 8, 15, 16, 23, and 24 are unpatentable because they would have been obvious in view of Chae, Narendra, and Karunamuni.

1. Claim 7

7	The method of claim 1, including: in response to detecting the first input that is directed to the portion of the wake screen user interface: in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met: displaying of 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.
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144. Claim 7 depends on claim 1 and further recites navigating from the wake screen to a control panel by swiping in a different direction than the user swipes to access either the home screen or the widget screen from the wake screen. Claim 7 is similar to claims 3-6 in that it recites a specific navigational path and associated directional swipe gesture. Below is a graphical representation of the navigational path of claim 7.



145. Claim 7 differs slightly from claims 3-6 because it introduces an additional screen called the “control panel.” Karunamuni discloses a smartphone control center that is a “control panel” as claimed. Figure 3 of Karunamuni illustrates the control center.

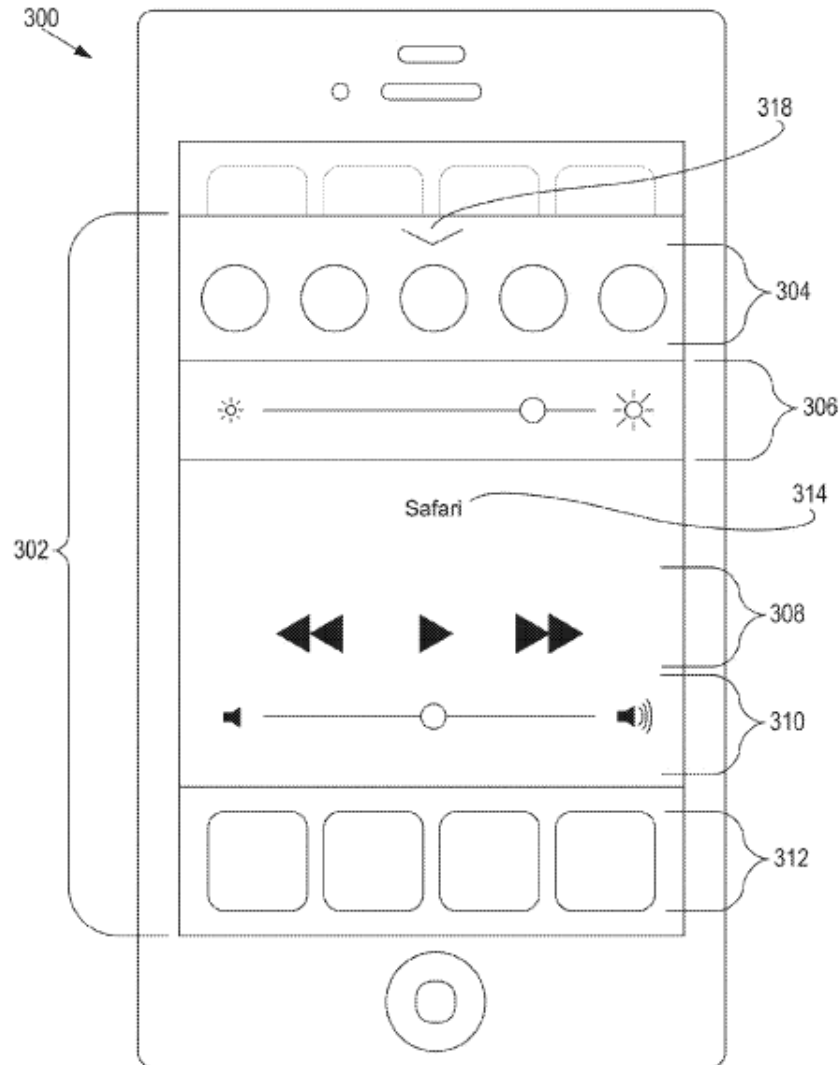


FIG. 3

EX1011, Fig. 3. Karunamuni further describes the controls included on the control center:

Control center interface 302 can also include sliders 306 and 310 for various aspects of the mobile device. Sliders 306 and 310 can pertain to specific applications and/or to the mobile device's operating system as a whole. As shown, slider 306 is operable to change the brightness of the display of the mobile device. Slider 310 is operable to change

the volume of the sound output of the mobile device. As is characteristic of many of the controls in control center interface 302, user interaction with sliders 306 and 310 can modify the values of parameters that affect multiple applications executing on the mobile device simultaneously. This characteristic makes the placement of these kinds of controls within control center interface 302 very useful.

Id. ¶17. In view of Figure 3 and its associated description, a POSITA would have understood that the disclosed control center is a “control panel user interface that is different from the wake screen user interface and the widget screen user interface” and “includes a plurality of controls for controlling one or more device functions of the computer system.”

146. Further, Figure 13 of Karunamuni discloses accessing the control center from “the lock screen” using a directional swipe gesture.

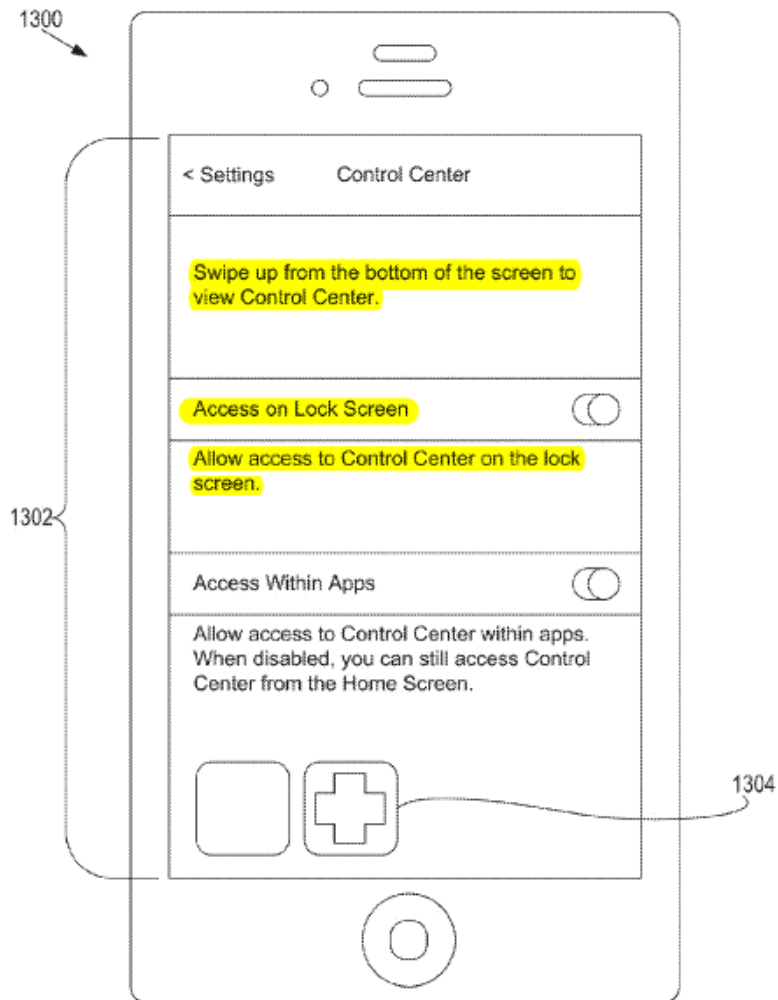
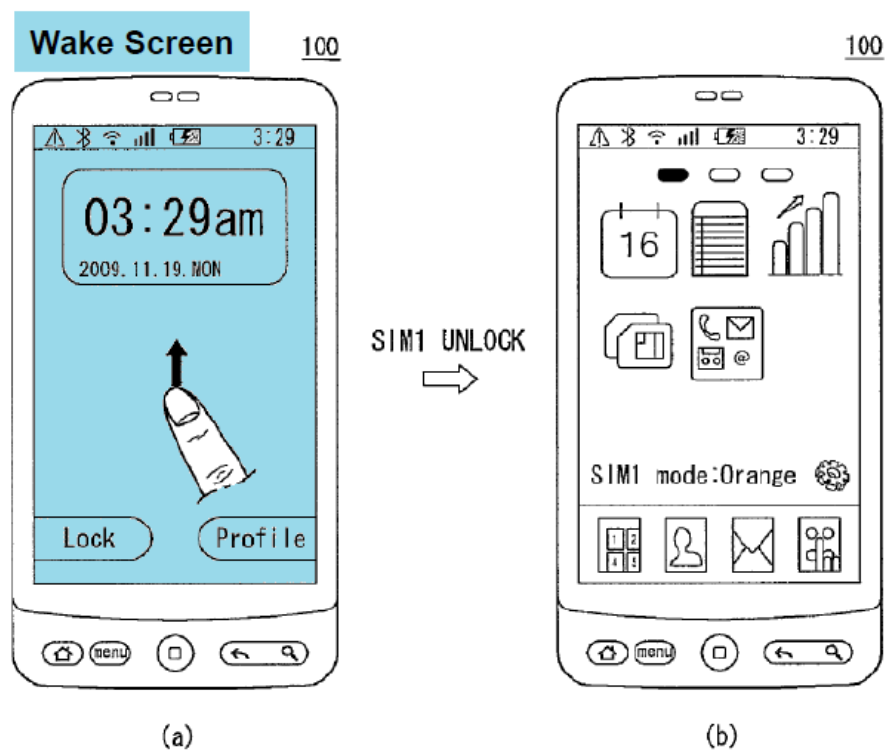


FIG. 13

Id., Fig. 13 (annotated). A POSITA would have understood that a “lock screen,” as disclosed by Karunamuni, is a user interface screen that a user may interact with while the device is locked such that some functions are not accessible. Typically, a user may perform some defined action from the lock screen, such as entering a passcode, that unlocks the device to make additional functions accessible. A POSITA would have understood that a lock screen could also be called a “wake

screen,” as claimed, because, typically, a device is in a locked state upon waking up, and, thus, the wake screen the user interacts with upon the device waking up is the lock screen. Indeed, as explained above and illustrated below, Chae’s wake screen is a lock screen upon which the user may perform a swipe gesture to unlock a SIM and navigate to a different screen.

FIG. 4



EX1005, Figs. 4(a) (annotated) & 4(b). Accordingly, Karunamuni either discloses, or at least makes obvious, accessing the control center from the wake screen using a directional swipe gesture.

147. Figure 13 specifically discloses swiping “up from the bottom of the screen to view Control Center.” EX1011, Fig. 13. As explained above, Chae

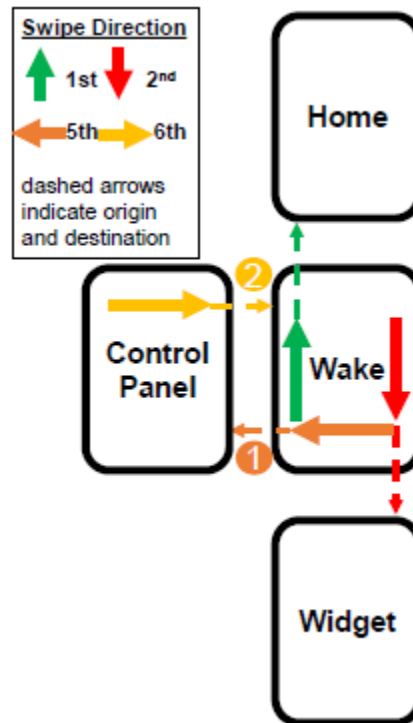
discloses swiping in the same “bottom-to-top” direction to navigate from the wake screen to the home screen. However, a POSITA would have understood that a properly designed GUI would unambiguously associate each gesture-invokable GUI action with a different gesture unique to the particular GUI action. A POSITA would have also understood that associating gestures that are too similar to each other with different GUI actions should be avoided to reduce the risks of user confusion and unintentional invocation of GUI actions. Accordingly, to enhance ease of use and reduce the possibility of unintentional invocation of GUI actions, a POSITA would have been motivated to allow the user to navigate to the control center from the wake screen by swiping in a direction that is different from the swipe directions used to navigate to the home screen or the widget screen from the wake screen. Such directional swipe gesture is input the user provides by a movement of his or her finger across some of the wake screen, and, thus, it is a “first input that is directed to the portion of the wake screen.” Further, in this configuration the direction of the movement is different than the “first direction” and the “second direction.” Therefore, the “first input” (the swipe gesture) includes “first movement” in a “fifth direction” meeting “seventh criteria” of being “different from the first direction and the second direction.”

148. Therefore, claim 7 would have been obvious in view of Chae, Narendra, and Karunamuni.

2. Claim 8

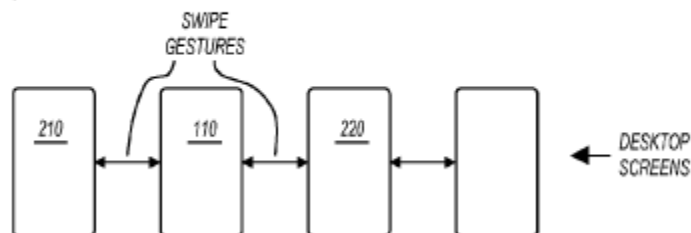
8	The method of claim 7, including: while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and in response to detecting the sixth input that is directed to the portion of the control panel user interface: in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.
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149. Claim 8 depends on claim 7 and further recites returning to the wake screen from the control panel by swiping in the opposite direction from that used to navigate from the wake screen to the control panel. Below is a graphical representation of the two-step navigational path of claim 8.



150. Claim 8 would have been obvious in view of Chae, Narendra, and Karunamuni. It would have been intuitive to a POSITA (and to smartphone users generally) that, if swiping in one direction results in moving from an origin screen to a destination screen, then swiping in the opposite direction should result in moving from the destination screen back to the origin screen. Indeed, the traditional navigational path illustrated by prior-art Figure 2 of Narendra behaves in this intuitive manner.

FIG. 2
 PRIOR ART



EX1006, Fig. 2. As shown, a user starting at screen 110 would swipe right to navigate to screen 220 and would then swipe left (the opposite direction) to navigate back to screen 110.

151. Accordingly, to enhance ease of use and comport with the intuitive notion described above, a POSITA would have been motivated to allow the user to return to the wake screen from the control panel by swiping in the opposite direction from that used to navigate from the wake screen to the control panel, as recited by claim 8. Such directional swipe gesture is input the user provides by a movement of his or her finger across some of the control panel, and, thus, it is a “sixth input that is directed to a portion of the control panel.” Further, in this configuration the direction of the movement is opposite of the direction of the swipe for navigating to the control panel. Therefore, the “sixth input” (the swipe gesture) includes “sixth movement” in a “sixth direction” meeting “eighth criteria” of being “opposite the fifth direction.” Claim 8, therefore, would have been obvious in view of Chae, Narendra, and Karunamuni.

3. Claims 15, 16, 23, and 24

152. Claims 15, 16, 23, and 24 are identical to claims 7 and 8 except that they depend directly or indirectly on claims 9 or 17 instead of claim 1. Therefore, for the reasons set forth above with respect to claims 1, 7, 8, 9, and 17, claims 15,

16, 23, and 24 would have been obvious in view of Chae, Narendra, and Karunamuni.

D. Ground 4: Claims 1, 2, 6, 9, 10, 14, 17, 18, and 22 are unpatentable because they would have been obvious in view of Chae and Narendra, and further in view of Hong and/or Android.

153. As explained above, Ground 1 relies on Hong and Android as background knowledge of a POSITA, not as part of the Chae and Narendra obviousness combination.

1. Ground 4.1

154. In the alternative, claims 1, 2, 6, 9, 10, 14, 17, 18, and 22 would have been obvious in view of Chae, Narendra, and Hong. In this alternative combination, it would have been obvious, in view of Chae’s and Narendra’s general disclosure of screens with multiple widgets and Hong’s more detailed disclosure of specific features of widgets, to implement Chae’s and Narendra’s widgets to have the specific features disclosed by Hong. As explained above, Chae and Narendra disclose user-interface screens with multiple “widgets.” If such disclosure does not alone meet the “widget screen user interface” limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Hong, such as “a clock, a calendar, a memo, search, a map, news,” etc. See EX1010 ¶¶4-5, Fig. 7A. Chae’s and Narendra’s general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior

art for known details for implementing widgets and the POSITA would have easily located Hong and its detailed description of widgets.

2. Ground 4.2

155. In the alternative, claims 1-6, 9-14, and 17-22 would have been obvious in view of Chae, Narendra, and Android. In this alternative combination, it would have been obvious, in view of Chae's general disclosure of waking up a smartphone and Android's detailed illustration of a wake-up process including turning on a display which had previously entered a power-saving state, to implement Chae's wake-up process to have the specific features illustrated by Android. As explained above, Chae discloses waking up a smartphone from a power-saving state, as recited by limitation 1g. If such disclosure is deemed insufficient, it would have been obvious to modify Chae to implement the detailed wake-up process disclosed by Android. *See* EX1007 at 0:24-0:28; *see also id.* at 0:40, 1:07, 2:30, 2:59, 3:20, 3:46. Chae's general disclosure of waking up a smartphone would have motivated a POSITA to search within the prior art for known wake-up processes for smartphones, and a POSITA would have easily located Android and its detailed illustration of a wake-up process.

156. It would have also been obvious, in view of Chae's and Narendra's general disclosure of screens with multiple widgets and Android's more detailed disclosure of specific features of widgets, to implement Chae's and Narendra's

widgets to have the specific features illustrated by Android. As explained above, Chae and Narendra disclose user-interface screens with multiple “widgets.” If such disclosure does not alone meet the “widget screen user interface” limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Android, such as the calendar and email widgets. *See* EX1007 at 1:11, 2:06. Chae’s and Narendra’s general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior art for known details for implementing widgets and the POSITA would have easily located Android and its detailed illustration of widgets.

3. Ground 4.3

157. In the alternative, claims 1, 2, 6, 9, 10, 14, 17, 18, and 22 would have been obvious in view of Chae, Narendra, Hong, and Android. A POSITA would have been motivated to combine both Hong and Android with Chae and Narendra in the manner and for the reasons set forth above with respect to Grounds 4.1 and 4.2.

E. Ground 5: 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.

158. As explained above, Ground 2 relies on Hong and Android as background knowledge of a POSITA, not as part of the Chae, Narendra, and Shuttleworth obviousness combination.

1. Ground 5.1

159. In the alternative, claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, Shuttleworth, and Hong. In this alternative combination, it would have been obvious, in view of Chae's and Narendra's general disclosure of screens with multiple widgets and Hong's more detailed disclosure of specific features of widgets, to implement Chae's and Narendra's widgets to have the specific features disclosed by Hong. As explained above, Chae and Narendra disclose user-interface screens with multiple "widgets." If such disclosure does not alone meet the "widget screen user interface" limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Hong, such as "a clock, a calendar, a memo, search, a map, news," etc. *See* EX1010 ¶¶4-5, Fig. 7A. Chae's and Narendra's general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior art for known details for implementing widgets and the POSITA would have easily located Hong and its detailed description of widgets.

2. Ground 5.2

160. In the alternative, claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, Shuttleworth, and Android. In this alternative combination, it would have been obvious, in view of Chae's general disclosure of waking up a smartphone and Android's detailed illustration of a wake-up process

including turning on a display which had previously entered a power-saving state, to implement Chae's wake-up process to have the specific features illustrated by Android. As explained above, Chae discloses waking up a smartphone from a power-saving state, as recited by limitation 1g. If such disclosure is deemed insufficient, it would have been obvious to modify Chae to implement the detailed wake-up process disclosed by Android. *See* EX1007 at 0:24-0:28; *see also id.* at 0:40, 1:07, 2:30, 2:59, 3:20, 3:46. Chae's general disclosure of waking up a smartphone would have motivated a POSITA to search within the prior art for known wake-up processes for smartphones, and a POSITA would have easily located Android and its detailed illustration of a wake-up process.

161. It would have also been obvious, in view of Chae's and Narendra's general disclosure of screens with multiple widgets and Android's more detailed disclosure of specific features of widgets, to implement Chae's and Narendra's widgets to have the specific features illustrated by Android. As explained above, Chae and Narendra disclose user-interface screens with multiple "widgets." If such disclosure does not alone meet the "widget screen user interface" limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Android, such as the calendar and email widgets. *See* EX1007 at 1:11, 2:06. Chae's and Narendra's general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior art for

known details for implementing widgets and the POSITA would have easily located Android and its detailed illustration of widgets.

3. Ground 5.3

162. In the alternative, claims 3-5, 11-13, and 19-22 would have been obvious in view of Chae, Narendra, Shuttleworth, Hong, and Android. A POSITA would have been motivated to combine both Hong and Android with Chae, Narendra, and Shuttleworth in the manner and for the reasons set forth above with respect to Grounds 5.1 and 5.2.

F. Ground 6: Claims 7, 8, 15, 16, 23, and 24 are unpatentable because they would have been obvious in view of Chae, Narendra, and Karunamuni and further in view of Hong and/or Android.

163. As explained above, Ground 3 relies on Hong and Android as background knowledge of a POSITA, not as part of the Chae, Narendra, and Karunamuni obviousness combination.

1. Ground 6.1

164. In the alternative, claims 7, 8, 15, 16, 23, and 24 would have been obvious in view of Chae, Narendra, Karunamuni, and Hong. In this alternative combination, it would have been obvious, in view of Chae's and Narendra's general disclosure of screens with multiple widgets and Hong's more detailed disclosure of specific features of widgets, to implement Chae's and Narendra's widgets to have the specific features disclosed by Hong. As explained above, Chae and Narendra

disclose user-interface screens with multiple “widgets.” If such disclosure does not alone meet the “widget screen user interface” limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Hong, such as “a clock, a calendar, a memo, search, a map, news,” etc. *See* EX1010 ¶¶4-5, Fig. 7A. Chae’s and Narendra’s general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior art for known details for implementing widgets and the POSITA would have easily located Hong and its detailed description of widgets.

2. Ground 6.2

165. In the alternative, claims 7, 8, 15, 16, 23, and 24 would have been obvious in view of Chae, Narendra, Karunamuni, and Android. In this alternative combination, it would have been obvious, in view of Chae’s general disclosure of waking up a smartphone and Android’s detailed illustration of a wake-up process including turning on a display which had previously entered a power-saving state, to implement Chae’s wake-up process to have the specific features illustrated by Android. As explained above, Chae discloses waking up a smartphone from a power-saving state, as recited by limitation 1g. If such disclosure is deemed insufficient, it would have been obvious to modify Chae to implement the detailed wake-up process disclosed by Android. *See* EX1007 at 0:24-0:28; *see also id.* at 0:40, 1:07, 2:30, 2:59, 3:20, 3:46. Chae’s general disclosure of waking up a

smartphone would have motivated a POSITA to search within the prior art for known wake-up processes for smartphones, and a POSITA would have easily located Android and its detailed illustration of a wake-up process.

166. It would have also been obvious, in view of Chae’s and Narendra’s general disclosure of screens with multiple widgets and Android’s more detailed disclosure of specific features of widgets, to implement Chae’s and Narendra’s widgets to have the specific features illustrated by Android. As explained above, Chae and Narendra disclose user-interface screens with multiple “widgets.” If such disclosure does not alone meet the “widget screen user interface” limitation of claim 1, it would have been obvious to modify Chae and Narendra to implement the specific widgets disclosed by Android, such as the calendar and email widgets. *See* EX1007 at 1:11, 2:06. Chae’s and Narendra’s general disclosure of screens with multiple widgets would have motivated a POSITA to search within the prior art for known details for implementing widgets and the POSITA would have easily located Android and its detailed illustration of widgets.

3. Ground 6.3

167. In the alternative, claims 7, 8, 15, 16, 23, and 24 would have been obvious in view of Chae, Narendra, Karunamuni, Hong, and Android. A POSITA would have been motivated to combine both Hong and Android with Chae,

Narendra, and Karunamuni in the manner and for the reasons set forth above with respect to Grounds 6.1 and 6.2.

VIII. SECONDARY CONSIDERATIONS

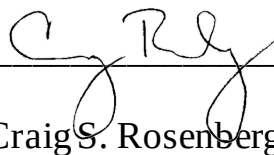
168. I understand that secondary considerations of non-obviousness, such as commercial success, unexpected results, skepticism of others, long-felt-but-unmet need, etc., should be considered when evidence of such factors has been introduced. I am not aware of any evidence of secondary considerations.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

IX. CONCLUSION

169. For the foregoing reasons, it is my opinion that claims 1-24 of the '352 patent would have been obvious to a POSITA at the relevant time in view of the prior art referenced above.

170. 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: 3-2-2023

By: 
Craig S. Rosenberg, Ph.D.