

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

APPLE INC., <i>Plaintiff,</i> v. MASIMO CORPORATION and SOUND UNITED, LLC, <i>Defendants.</i>	C.A. No. 22-1377-MN-JLH JURY TRIAL DEMANDED
MASIMO CORPORATION, <i>Counter-Claimant,</i> v. APPLE INC. <i>Counter-Defendant.</i>	
APPLE INC., <i>Plaintiff,</i> v. MASIMO CORPORATION and SOUND UNITED, LLC, <i>Defendants.</i>	C.A. No. 22-1378-MN-JLH JURY TRIAL DEMANDED
MASIMO CORPORATION and CERCACOR LABORATORIES, INC., <i>Counter-Claimants,</i> v. APPLE INC. <i>Counter-Defendant.</i>	

**DECLARATION OF CRAIG S. ROSENBERG, PH.D. IN SUPPORT OF
DEFENDANTS' RESPONSIVE CLAIM CONSTRUCTION BRIEF**

I, Craig S. Rosenberg, Ph.D. hereby declare:

1. I have personal knowledge of the matters set forth in this declaration and, if called upon as a witness, would testify competently thereto.

2. I submit this declaration in support of Masimo Corporation and Sound United, LLC's ("Masimo") Responsive Claim Construction Brief.

I. Introduction

3. Masimo has retained me as an expert in this case. A copy of my curriculum vitae is attached to this report as Exhibit A.

4. I have been asked to evaluate and address the meaning, to a person of ordinary skill in the art ("POSA"), of certain claim phrases in U.S. Patent No. 11,106,352 ('352 patent).

II. Background And Qualifications

5. 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.

6. I consulted for the Boeing Company for over 15 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.

7. 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.

8. 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.

9. 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.

10. I was the lead user interface designer for a company called ObjectSpeed that developed a portable handheld device for use in homes and businesses with many of the same capabilities 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.

11. 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.

12. 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.

13. 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.

14. Many of the projects that are mentioned above utilized touchscreens, including ObjectSpeed, WhereWuz, Disney xVR, Healium, StratoScientific, projects for Boeing, as well as other projects that were not mentioned above (e.g., Immersion Networks spatialized audio software.)

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-one 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 A is a true and correct copy of my curriculum vitae.

III. Applicable Legal Standards

19. I am a computer and human factors engineer by training and profession. The opinions I express in this Declaration involve the application of my knowledge and experience to the evaluation of the '352 Patent and certain prior art to the '352 Patent.

20. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, I have been advised of certain principles of patent law applicable in this matter, which I have used in arriving at my determinations and opinions. The paragraphs below express my understanding of the legal requirements I have used in forming my opinions.

21. I understand that courts generally construe claim terms by giving them their ordinary and customary meaning, as they would have been understood by a POSITA at the time of the invention in view of the intrinsic record (patent specification and file history). However, I understand that the inventors may, in the patent specification, expressly define a claim term to have a meaning that differs from the term's ordinary and customary meaning. I also understand that the inventors may disavow or disclaim certain claim scope, thereby departing from the ordinary and customary meaning, when the intrinsic record demonstrates that a clear and unambiguous disavowal or disclaimer has occurred. I understand that extrinsic evidence, such as relevant technical literature and dictionaries, may be useful in ascertaining how a POSITA would have understood a claim term, but the intrinsic record is the primary source for determining the meaning of claim terms. For the purposes of this review, and to the extent necessary, I have interpreted each claim term in accordance with the principles set forth in this paragraph.

22. For the purpose of this declaration, I understand the time of alleged invention to be around May 16, 2017. My opinions set forth herein are from the perspective of a POSITA at the time of the alleged invention.

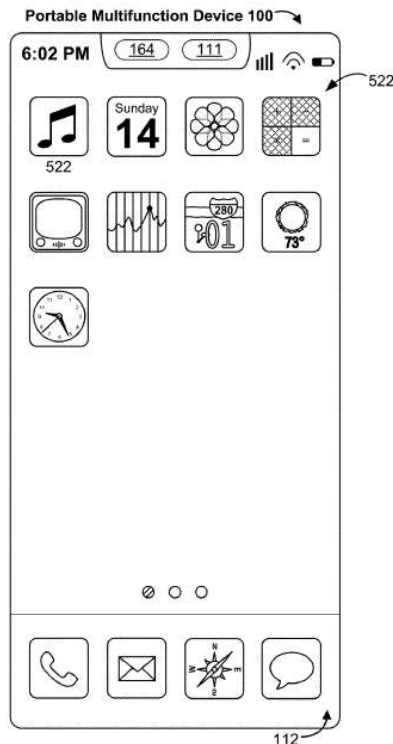
IV. Technical Background and Level Of Ordinary Skill In The Art

23. 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." '352 patent 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.

24. Specifically, the claims of the '352 patent recite using directional gestures to navigate between four different “screen user interfaces”: a “wake screen user interface,” a “home screen user interface,” a “widget screen user interface,” and a “control panel user interface.” '352 patent, claims 1-24.

25. Regarding the “home screen user interface,” the claims recite that a “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.” *Id.*, claims 1, 9, and 17. The specification refers multiple times to figures that depict “home screen user interface 522.” For example, Figure 5H depicts a home screen user interface:



'352 patent, 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 show a screen with multiple application icons corresponding to different applications, consistent with the claim language.

26. Regarding the “widget screen user interface,” the claims recite that a “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.” *Id.*, claims 1, 9, and 17. 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., id.* at 48:64, 49:2-3, 52:8-35. Several figures depict the widget user interface 5140, including, for example, Figure 5CK:



Id., 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. A POSITA would understand the calendar reminder and weather information to be “user interface objects corresponding to different applications . . . contain[ing] application content from an application,” as recited in the claims.

27. Regarding the “control panel user interface,” the claims recite that a “control panel user interface includes a plurality of controls for controlling one or more device functions of the computer system.” *Id.*, claims 7, 15, and 23. Similarly, 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.”

Id. 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. A POSITA would further have understood, based on the specification and the figures, that “controls for controlling one or more device functions” are distinct from the home screen user interface’s “application icons” and the widget screen user interface’s “application content.”

28. 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.

V. A POSITA's Understanding Of The Disputed Claim Term

A. “application”

29. Independent claims 1, 9, and 17 of the '352 patent each recite the term “application” ten times. The word “application” is also used in several other recited terms of the independent claims, including “application icons,” “application content,” and “display of an application.” As such, the meaning of the term “application” is vital to determining the claim scope of the '352 patent.

30. The '352 patent does not specifically define the term “application.” However, the specification includes examples of applications that would assist a POSITA in understanding the meaning of “application” as claimed in the '352 patent. I believe a POSITA would have understood “application” in the '352 patent to denote the ordinary meaning as used in software development and engineering, and as used in the intrinsic record of the '352 patent. A POSITA reading the '352 patent would have understood “application” to mean “a program that, in response to user commands, performs a task beyond: (a) device control, (b) device status indication, or (c) another task related to the internal function of the device itself.”

31. The '352 patent specification's description of applications supports the construction offered above. The specification provides numerous examples of applications, including “Contacts,” “Telephone,” “Video Conference,” “E-mail,” “Instant Messaging,” and many more. '352 patent at Figs. 1A, 3; *see also id.*, 7:36-47. In my view, every example application disclosed in the specification would fall under the above construction, because each example application: (1) provides for user interaction and commands; (2) performs tasks unrelated

to the internal function of the device. For example, a “Contacts” application generally displays contact information in response to user selection of an entry in a contacts list, and a “Telephone” application generally processes phone calls in response to user entry of a telephone number to call.

32. Moreover, the specification specifically distinguishes those “applications” from (1) device “indicators” (e.g., “Signal strength indicator(s) for wireless communication(s), such as cellular and Wi-Fi signals,” “a Bluetooth indicator,” and “a Battery status indicator.”) and (2) “device controls.” ’352 patent, 30:24-67 (listing “indicators” separately from “applications”); *id.*, 80:19-22 (“device controls ... for controlling one or more device functions of the device”). Further, claim 7 of the ’352 patent expressly recites that the “control panel” that includes “controls” for “device functions” is “different from ... the widget screen” that includes “user interface objects corresponding to different applications.” The specification also describes that a “control panel user interface 5138 includes one or more device controls (e.g., flashlight control 5190 and camera control 5192) for controlling one or more device functions of the device.” ’352 patent, 80:19-22. Thus, the specification and claims of the ’352 patent support the above construction by distinguishing “applications” from programs that perform (a) device control, (b) device status indication, or (c) another task related to the internal function of the device itself.

33. Technical glossaries, dictionaries, and encyclopedias also support the above construction. The software engineering industry has long distinguished an “application” (or “application software” or “application program”) for executing user tasks (such as a word processor) from “system software” for controlling the computer (such as device controls and internal status indicators). *See, e.g.*, Exs. 34, 35, 36, 37. For example, the 2001 Hargrave’s Communications Dictionary contrasts an “application” from (1) “an operating system that provides an interface between the hardware and applications,” and (2) “a utility that supports computer

functionality and maintenance.” Ex. 36. Similarly, the Internet Engineering Task Force’s August 2007 Internet Security Glossary defines “application program” as “[a] computer program that performs a specific function directly for a user”—such as a word processor— “as opposed to a program that is part of a computer operating system and exists to perform functions in support of application programs,” such as device controls and internal status indicators. Ex. 37. Moreover, a POSITA would have understood that an “application” is a program that, in response to user commands, performs tasks for an end user. *See, e.g.*, Ex. 38 (“[a] software program . . . that makes calls to the operating system and manipulates data files, thus allowing a user to perform a specific job”); Ex. 35 (“Such software directs the computer to execute commands given by the user....”).

34. In view of both the above intrinsic and extrinsic evidence, a POSITA would understand that device “indicators” and “device controls,” which the specification distinguishes from “applications,” are akin to “system software” excluded by the general-purpose definitions of “application.” Such indicators and controls are part of the device operating system and support device functionality and maintenance, rather than performing tasks for end users.

35. I understand that Apple does not propose a construction with respect to the term “application.” However, I understand that Apple alleged that functions such as turning vibrate mode on or off and Bluetooth status indicators are “applications.” Ex. 39 at 26, 32. A POSITA would not have understood such minor device-control functions to be considered “applications” within the plain and ordinary meaning of the word. A POSITA would understand that these would simply be settings that set or get the status of hardware resources within the device's operating system.

36. I have reviewed Apple’s opening brief on claim construction (“AOB”) and the evidence cited therein with respect to the term “application.” This evidence does not change my

opinion. Moreover, I disagree with Apple’s assertion that the ’352 patent’s disclosure of a “settings application” is at odds with the above construction. In my opinion, Apple incorrectly asserts that the described “settings application . . . does nothing other than provide device control.” AOB, 19. To the contrary, the specification states that the settings application “provides access to settings for device 100 *and its various applications 136.*” ’352 patent, 30:65-67. Thus, the described settings application, in response to user commands, performs tasks unrelated to the internal function of the device. For example, the settings application on an iPhone allows the user to configure settings for other applications, such as which email accounts can be accessed by the email application or display settings for the calendar application. In my view, such tasks go well beyond “(a) device control, (b) device status indication, or (c) another task related to the internal function of the device itself.” Therefore, in my opinion, the described “settings application” constitutes an “application” under the above construction and is thus consistent with the above construction. Apple cites the ’352 patent at 33:15-20 as describing a “settings application.” AOB, 19 n. 5. However, I disagree that the cited passage describes a “settings application” but rather provides an example of an individual settings. The word “application” does not appear in that passage.

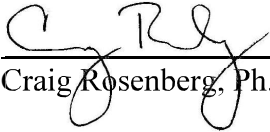
37. I understand that Apple also points to optional indicators that may be included on the icons of the phone and email application—such as “the number of missed calls or voicemail messages” and “the number of unread emails”—as evidence that status indicators may be “applications.” AOB, 19. I disagree with Apple’s argument. The phone and email applications are applications because they process phone calls and email messages, tasks that go beyond “(a) device control, (b) device status indication, or (c) another task related to the internal function of

the device itself.” The optional indicators that may be included on their icons are not, on their own, “applications.”

38. Accordingly, in view of the claims, specification, and ordinary meaning of “application,” in my view, a POSITA would have understood the term “application,” as used in the claims of the ’352 patent, to mean “a program that, in response to user commands, performs a task beyond: (a) device control, (b) device status indication, or (c) another task related to the internal function of the device itself.”

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed on August 9, 2023, at Shoreline, Washington.



Craig Rosenberg, Ph.D.