

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GARMIN LTD.
AND ZEPP HEALTH CORPORATION,¹
Petitioners

v.

SLYDE ANALYTICS, LLC.,
Patent Owner

Case No. IPR2024-00006
U.S. Patent No. 8,588,033

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

¹ The original petitioners, SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS AMERICA, INC., reached a settlement in principle with the Patent Owner. GARMIN LTD. filed a petition in IPR2024-00765 and was joined as a petitioner to this proceeding. ZEPP HEALTH CORPORATION filed a petition in IPR2024-00833 and was joined as a petitioner to this proceeding.

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I. INTRODUCTION

Patent Owner (“PO”)’s Response begins with the premise that wearable devices such as wristwatches were rudimentary, had no operating system, and required expertise with bare-metal-embedded code in 2010. Paper 14 (“*Response*”). This is contrary to the ’033 Patent, the Challenged Claims, the state of the art. Because PO’s premise is mistaken, its objections to Petitioner’s expert, and the provided motivation to combine are inconsequential. PO’s remaining challenges fare no better for the reasons discussed below. Accordingly, Petitioner respectfully requests that the Board reject PO’s arguments and cancel the Challenged Claims.

II. ARGUMENT

A. The State of the Art Was Further Advanced than Patent Owner Represents.²

Much of PO’s Response is premised on the assumption that, as of the priority date of the ’033 Patent, *wearable devices* such as wristwatches were rudimentary, had no operating system, and were so different in kind from other *mobile devices* that they required an entirely different expertise to understand and develop,

² In this Reply, Petitioner has chosen to focus on the primary arguments raised by Patent Owner. To the extent any claims or grounds are not specifically addressed herein, Petitioner stands on its original Petition.

including expertise with bare metal coding. *Response*, 15. This is demonstrably false.

PO then uses this false supposition to present a heightened standard for what it takes to qualify as a POSITA while misapprehending how a POSITA would have been motivated to make the prior art combinations set forth in the Petition. Accordingly, a proper understanding of the state of the art at the time of the invention is important to interpreting the prior art combinations set out in the Petition.

1. Operating Systems Were Commonly Used in Wristwatches by 2010.

PO's argument begins with the assertion that at the time of the invention, a wristwatch would have been programmed using bare-metal-embedded code, instead of using an on-board operating system, such as Android or iOS. *Response*, 15. PO and Mr. Blackadar argue that "industry leaders" did not develop operating systems for wearable devices until "years after the invention"—pointing to the 2015 Apple Watch and others. *Response*, 16. Therefore, PO concludes, in 2010 a POSITA would not have been able to rely on an operating system in developing a watch or other small wearable device. This argument ignores both the evidence in the industry and the evidence provided by the '033 Patent itself.

PO is wrong when it argues that "industry leaders" did not develop operating systems for wearable devices, and the examples it provides are the result of cherry-picking devices to suit its argument. In fact, by 2010 at least five "industry

leaders”—IBM, Microsoft, LG, Apple, and Sony Ericsson—had implemented an operating system on a small wearable device. Ex-1052, ¶¶5-15. This undercuts PO’s entire claim that “wearable devices in 2010 (the priority date of the ’033 Patent) were programmed primarily using bare-metal-embedded code.” *Response*, 15. Mr. Blackadar admits that he was not aware of these products, and accordingly, he did not consider them when making statements about the state of the art. Ex-1070, 21:10-22:13.

On this issue and several others noted below, Mr. Blackadar relied on own experience at the time, to the exclusion of relevant information available to a POSITA, which renders his opinions unreliable. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986) (“The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art.”) PO’s response also ignores the evidence in the Petition that ***nearly a decade prior*** to the ’033 priority date, IBM proved that you could run an operating system on a wristwatch, publicly demonstrating its IBM Linux watch that had “a powerful processor capable of running the Linux operation system version 2.2[.]” Ex-1002, 39; Ex-1052, ¶8. Mr. Blackadar further admits that as early as the 1990s there was a watch that relied on an operating system. Ex-2004, ¶55; Ex-1070, 21:1-9 (“Q. Did that Timex watch use an operating system? A. It was a custom one from Timex, such that they were able to draft up an API...”). And, during his deposition, Mr. Blackadar

that he believes that by 2010, with the advancements that had been made in processors, a POSITA would not have been limited to bare-metal-embedded code, but could have used a small-footprint operating system. Ex-1070, 33:8-34:4 (“I believe that at that point in time, 2010, with the advent of the ARM, the other processors, that it could have gone to a TinyOS or some other small OS”). *Contra, Response*, 15-17. This too affirms that not all devices at the time of the ’033 Patent had to use bare-metal-embedded code. Ex-1070, ¶17.

Accordingly, a complete consideration of the state of the art in 2010 shows that PO’s argument is fatally flawed.

2. The ’033 patent does not limit the invention to bare-metal-embedded code.

PO’s focus on bare-metal-embedded code versus operating systems also does not comport with the ’033 patent’s disclosures. Ex-1052, ¶¶18-19. Bare-metal-embedded code is not mentioned in the ’033 patent claims or specification, nor was it mentioned during prosecution. Ex-1052, ¶16. The ’033 patent accordingly does not require the invention to be implemented with bare-metal-embedded code. Ex-1070, 33:8-43:20 (Mr. Blackadar agreeing). *Raytheon Techs. Corp. v. General Elec. Co.*, 993 F.3d 1374, 1380 (Fed. Cir. 2021) (“[T]e prior art ... must enable a skilled artisan to make and use **the claimed invention.**”). Even the “state of the art” section of the ’033 patent describes wristwatches having operating systems. Ex-1064 (US20050278757), [0022], [0087], [0094], Figs. 2-3. Accordingly, even the

inventors understood that their watches were not limited to bare-metal-embedded code, even in 2010.

3. The relied on prior art references contemplated the use of software—and therefore an operating system—in a watch at the time of the invention.

Mooring also provides evidence that a POSITA developing a watch with the features claimed in the '033 Patent would have used an operating system. Ex-1052, ¶¶20-22. Mooring explains that a category of watches called “smart watch[es]” was already being sold that could “provide consumers access to news, weather, sports, stocks, instant messenger, e-mail, and horoscopes on a liquid crystal display (LCD).” *Mooring*, [0004]. Mooring also contains over a dozen references to software. *Mooring*, [0012-0013], [0052], [0057-0059], [0061], [0066], [0077], Claims 12, 26, 32. A POSITA would have understood that these disclosures are inconsistent with watches implemented solely with bare-metal-embedded code. Ex-1052, ¶¶20-22; *Mooring*, [0077] (“the embodiments can be implemented using hardware, software, a computer readable medium containing program instructions, or a combination thereof. Software written according to the present invention is to be either stored in some form of computer-readable medium such as memory or is to be transmitted over a network, and is to be executed by a processor.”). As discussed further below, against this technological backdrop, PO’s challenges to Dr. Bederson’s expertise and the motivations of a POSITA to combine the presented art fail.

B. Claim Construction

The Petition presented two terms for construction. Both relate to “means for” phrases appearing in dependent claims. *Petition*, 8-9. PO does not challenge either construction. *Response*, 14.

C. Level of Ordinary Skill in the Art

1. PO’s Proposed Level of Ordinary Skill in the Art is Not Based on the Field of Invention

The Petition identifies the appropriate level of skill in the art as “a bachelor’s degree in electrical engineering, computer science, computer engineering, or a related field, and **2-3 years** of experience in the research, design, development, or testing of touchscreen applications and graphical user interfaces ***for mobile devices*** with additional education substituting for experience and vice-versa.” *Petition*, 7 (emphasis added).

PO alternatively proposes that a POSITA would have had “a bachelor’s degree in electrical engineering, computer science, computer engineering, or a related field, and **5-6 years** of experience in the research, design, development, or testing of touchscreen applications and graphical user interfaces ***for small wearables*** with additional education substituting for experience and vice-versa.” *Response*, 15 (emphasis added).

PO's proposal is based on a misunderstanding of the state of the art at the time of the invention,³ as discussed above in Section II.A, and should be rejected.

Regardless, it does not matter which POSITA definition is adopted because the outcome is the same. Petitioner's expert is qualified in the pertinent art regardless of the definition. *Infra*. Additionally, PO's more sophisticated level of ordinary skill further strengthens Petitioner's obviousness analysis. *See Innovention Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) ("A less sophisticated level of skill generally favors a determination of nonobviousness ... while a higher level of skill favors the reverse."). Thus, the Board may adopt either POSITA definition to arrive at the same conclusion.

2. Dr. Bederson is Qualified in the Pertinent Art

PO admits that Dr. Bederson meets the educational requirements for a POSITA, but challenges his experience concerning "small wearables." *Response*, 18. Dr. Bederson is qualified even under PO's erroneous definition. When PO asked whether Dr. Bederson has ever "designed a touchscreen application for a wristwatch" Dr. Bederson testified that "it depends on exactly how you define

³ Slyde's proposed level of skill in the art is also inconsistent with its litigation positions. In *Slyde v. Apple*, Slyde accuses **Apple iPhones** of infringing the '033 Patent. Ex-1066 at ¶22. An iPhone is not a "small wearable."

wristwatch, but *I certainly have defined interfaces for touchscreen devices that I wore on my arm*, so at least in that way I have.” Ex-2003, 34:14-24; *see also* 24:14-24 (describing experience designing “touchscreen applications for a wide range of small mobile devices including iPod Touches from Apple in the 2000s.”). To the extent that PO contends an Apple iPhone (which is accused in the Apple litigation) is a “small wearable,” then Dr. Bederson’s experience of a touchscreen device worn on the arm is also experience with a “small wearable.”

PO also argues that at the time of the ’033 patent, “wearable devices in 2010 [] were programmed primarily using bare-metal-embedded code[.]” *Response*, 15. As discussed above, this is wrong. Regardless, Dr. Bederson has significant experience in this regard as well. Ex-1052, ¶¶25-37.

While Dr. Bederson has not specifically worked on projects whose application was exclusively limited to wristwatches, complete overlap between a witness’s technical qualifications in the field of the invention is not necessary for the witness’s testimony to be admissible. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide November 2019 (“CTPG”) 5 at 34 (“There is ... no requirement of a perfect match between the expert’s experience and the relevant field.”). Dr. Bederson is “qualified in the pertinent art.” CTPG at 34 (citing

Sundance, Inc. v. DeMonte Fabricating Ltd., 550 F.3d 1356, 1363-64 (Fed. Cir. 2008)).

Thus, Dr. Bederson has the “knowledge, skill, experience, training, [and] education” of a “specialized” nature that is likely to “assist the trier of fact to understand the evidence.” Fed. R. Evid. 702. Accordingly, the Board should find Dr. Bederson has sufficient relevant technical expertise. *SEB S.A.*, 594 F.3d at 1373.

D. Petitioner Established a Motivation to Combine Mooring and Satoshi.

The Petition establishes a motivation to combine Mooring and Satoshi (*Petition*, 23-25), and none of PO’s arguments are to the contrary.

1. The State of the Art Supports the Combination

First, as explained above, PO’s arguments against the motivation to combine misrepresents the state of the art. By 2010 there were numerous examples of sophisticated wristwatches that relied on operating systems and had a wide variety of functionalities. Ex-1052, ¶¶5-15, 39. Even Mooring itself noted that a category of watches called “smart watch[es]” was being sold which could “provide consumers access to news, weather, sports, stocks, instant messenger, e-mail, and horoscopes on a liquid crystal display (LCD).” *Mooring*, [0004]. Against this backdrop, a POSITA would have known that resource-intensive functions available on a mobile phone could be transferred to a watch.

Further, because Mr. Blackadar focused on his own personal experience, he did not fully consider the smartwatch technology available at the time and his motivation to combine opinions are therefore unreliable. He admits that the watches he helped design were not smartwatches. Ex-1070, 19:20-22. Accordingly, the considerations that Mr. Blackadar used when deciding what features to put in the watches he worked on pre-2010 are very different than what a POSITA considering the combination of Mooring and Satoshi would have considered. For example, Mr. Blackadar wanted the watches he developed to have a year of battery life (Ex-1070, 33:21-34:4 (“that watch could last for a year on a normal watch battery, which was one of my bigger metrics at that time”)), believed that people were not used to or interested in charging their watch (*id.* at 27:5-8), and discounted watch upgrades that would have led to a more expensive (e.g., \$250-300) watch. *Id.* at 24:22-24. And, he was thinking about whether to **add** an OS on top of existing non-smartwatch watch designs. *Id.* at 24:15-17 (“You’re not going to go put an operating system on top of that...”). None of these requirements relate to the ’033 claim limitations or what a POSITA considering the proposed prior art combinations would have had in mind. When Mr. Blackadar makes statements about whether an OS could have been used, or what the limitations on processors would have been, it is against the backdrop of his experience, not a POSITAs. *See e.g., id.* at 17:17-18:3 (rejecting TinyOS because he could not use it given his budget, time frame, and battery life requirements).

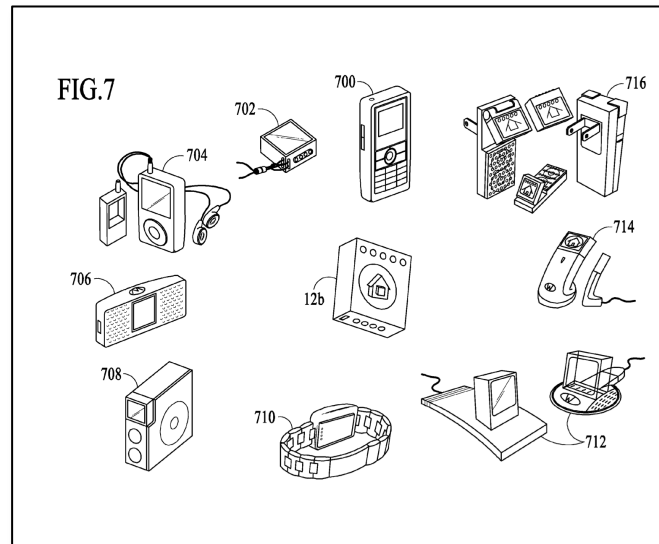
Contrary to PO's assertions, the '033 Patent credits display and microcontroller technology available at the time of the invention as being compatible with, and capable of, being integrated into a wristwatch. '033 Patent, 2:46-58 (noting modern electronic displays are compatible with integration into a wristwatch and that there are available microcontrollers that are "compatible with a watchmaking application"). In other words, the '033 Patent embraces the fact that display and microcontroller technology used in other pertinent areas (e.g., mobile devices) was readily applicable to use in watches. No separate engineering talent and expertise would be necessary given this widespread use in other areas. PO's expert Mr. Blackadar also confirmed that it was possible to implement the claimed features on microcontrollers and LCD screens available at the time and suitable for use in a watch. Ex-1070, 37:23-38:2 (agreeing that "in 2010 it was possible to implement the microcontroller limitations of the '033 Patent claims using microcontrollers that were already available"); 35:18-37 (agreeing no specialized LCD screens were required, and a POSITA could have had "one designed for [him/her] off of off-the-shelf components.").

2. The Nature of the References Supports the Combination

Second, PO argues that because Mooring teaches a wristwatch and Satoshi teaches a mobile phone, there would be no reason to combine them. *Response*, 21-22. In making this argument, PO ignores that the Board noted in the institution

decision that Mooring described an invention that was “both fully functional standalone as well as interchangeable in *other portable devices*, such as watches.”

According to Mooring, these other types of portable devices would include a cell phone handset:



Mooring, Fig. 7. Mooring explicitly states that the modular movement 12b could be used with a phone, telephone, or a watch:

“FIG. 7 is a diagram illustrating exemplary types of **portable device form factors that could be used with modular movement 12 b** and receptacle 22. As shown exemplary types of portable devices that may include standard receptacles 22 for use with modular movement 12 b may include a **cell phone handset 700**, a carrier and strap 702, a media player 704, portable speakers 706, battery dock recharger

and speaker 708, **a watch 710**, a media handset and cradle 712,
a telephone handset 714, and a portable charging cradle 716 for
the modular movement 12 b.”

Mooring, 0068 (emphasis added). Thus, *Mooring* expressly contemplates a LCD and microcontroller that can be interchangeably used in a wristwatch form factor as well as a mobile phone form factor confirms Dr. Bederson’s analysis and supports the POSITA’s motivation to combine. Ex-1052, ¶40.

3. The Availability of LCD Screens and Microcontrollers Supports the Proposed Combination.

Third, PO argues that even though the same physical components—LCD screens and microcontrollers—are present in both mobile devices and wristwatches, they are somehow so fundamentally different in those two applications that *Mooring* and *Satoshi* would not be combined. *Response*, 21-26. *Mooring* expressly teaches the opposite, explaining in its background section that “watches equipped with electronic movements may include *digital displays and small computers that are used in many types of electronic devices*.” In the same paragraph *Mooring* goes on to specifically identify “a liquid crystal display (LCD).” *Mooring*, [0004]; *Petition*, 22.

PO also does not dispute that LCD touch screens were widely used in watches and mobile devices before the ’033 patent. Ex-1002, ¶¶55-63. PO does not identify any relevant distinctions between how an LCD screen in a watch and an LCD screen

in a mobile device operated in 2010, much less any distinctions that are relevant to this analysis.

PO's argument as to any purported differences in microcontrollers⁴ used for watches and mobile devices in 2010 is similarly problematic. *Response*, 23-25. PO first confusingly argues that the '033 patent describes and aims to solve the "problem that...microcontrollers for wristwatches could not be compared or combined with microcontrollers for mobile phones or larger computing devices[.]" *Response*, 23-24; Ex-2004, ¶¶54-55. The '033 Patent says no such thing, nor could it because the words "mobile device" and "phone" do not appear anywhere in the '033 patent.

If anything, the disclosures of the '033 patent say the opposite, admitting that the currently available microcontrollers are, in fact, sufficient for the purposes of the claimed invention:

The invention is based on the observation that the computational power of the current watch microcontrollers (i.e. microcontrollers of a size and with a power consumption compatible with a watchmaking application)

⁴ For independent claim 17, PO defers entirely to its prior arguments regarding Claim 1, Ground 1. *Response*, 39. Claim 17 is a method claim and the term "microcontroller" does not appear in the claim, therefore PO's arguments as to the microcontroller do not apply to Claim 17.

enables a realistic simulation of a complex mechanical movement to be calculated and displayed in real time.

'033 Patent, 2:53-58. And, again, PO's expert confirmed that "In 2010 it was possible to implement the microcontroller limitations in the '033 Patent claims on an already available microcontroller that was suitable for use in a watch." Ex-1070, 38:15-19.

PO then suggests that operating systems for watches were unavailable, or required "a personal computer and a serial interface" to work. But, PO's examples are from 1984 and 2000. As noted above, technology significantly advanced since then. Otherwise, PO simply points to "differing size and power capabilities of microcontrollers between mobile phones and wristwatches," (*Response*, 26) but, as discussed immediately below, PO provides no reason to believe that these differences would have prevented the microcontroller of Mooring from being sufficient for use with the gear train simulation disclosed by Satoshi. Ex-1052, ¶¶41-45.

4. Suitability of Mooring's Microcontrollers For the Proposed Combination.

The '033 Patent does not impose functional requirements for the claimed microcontroller other than that it be sufficient for the claimed functions (e.g., displaying a simulation of a mechanical watch movement). Therefore, the key question is whether a POSITA would have understood that a microprocessor suitable

for use in a wristwatch like the one taught by Mooring would be sufficient to support the proposed combination with the watch face and gears of Satoshi. Based on Mooring's express disclosure of using the same microprocessor in a phone application along with the other reasons provided in the Petition, there is ample reason that a POSITA would have concluded it is. *Mooring*, 0068; *Petition*, 23-25; Ex-1052, ¶¶46-58.

PO's only arguments to the contrary misrepresent Satoshi. **First**, PO argues that Satoshi admitted a concern about the availability of computational resources for its application. *Response*, 25. Mobile phones and, in fact, all computing devices have limits—including limited battery life, memory, and processing availability. Ex-1052, ¶¶23-24, 46. Satoshi's description of "Problems to be solved by the invention" in paragraph 0005 simply identifies this well-known fact of product development. *Id.*, ¶¶47-50. But to say, as PO argues, that Satoshi was therefore "very concerned" that there would be insufficient computational resources available to display gears on a screen goes well beyond Satoshi's disclosures. Satoshi identifies several specific features that could be memory intensive, and none relate to the features of Satoshi relied on with respect to the proposed combination. Specifically, Satoshi explains that (1) it takes a lot of memory and processing to animate gears in real-time based on user input instead of using a "preset gear rotating display," (2) high memory is required to have image data for different colored gears, and (3) storage

capacity will only hold a finite number of “Java applets.” *Satoshi*, [0006]-[0008]. None of these three features—real-time gear rearrangement, colorful gears, or multiple Java applets—have anything to do with the ’033 claim requirements. In any event, Satoshi designed the invention specifically so that it would work “even in an environment where arithmetic processing capability is limited.” *Satoshi*, [0009].

Second, PO argues that *Satoshi* aimed to solve its memory problems by relying on an internet connection and therefore it follows that “the code size” of its implementation “would be enormous.” *Response*, 25. The sole paragraph of Satoshi cited by PO, paragraph 4, says no such thing. Ex-1052, ¶¶51-56. Satoshi discloses downloading Java applets, but never discloses moving information to the web to increase memory, as PO’s expert admits. Ex-1070, 43:6-44:17 (admitting he found no explicit disclosure of “pushing things up to the internet”). A POSITA would not assume that a mere reference to an internet connection suggests moving any of its components to the web. Ex-1052, ¶¶51-56. But even if that were the case, *Mooring* discloses an internet connection and could work the same way if necessary. *Id.* at ¶51; *Mooring*, [0070]. (“Thereafter, the modular movement 12 *b* streams stocks, weather and the like for the user via an Internet connection made using the RF communications interface 610.”).

Further, contrary to PO’s argument, the entire image application of *Satoshi* is designed for “extremely limited image data storage capacity” and “extremely limited

program stores capacity[.]” *Satoshi*, [0080]. Based on these express disclosures of *Satoshi*, there is no reason to assume that “the code size” of *Satoshi*’s “Java implementation would be enormous.” Ex-1052, ¶55.

E. Ground 1: The Combination of Mooring and Satoshi Teaches a Simulation of Mechanical Watch Movement as required by Claim Element 1[d].

A POSITA would have understood that Mooring discloses a simulation of a mechanical watch movement in [0039]:

Examples of an electronic movement may include a quartz movement with an analog or digital display, and with or without a battery. Another example of an electronic movement may include a computer-based movement with a touchscreen or LCD display and battery, for instance.

Mooring, [0039]; *Petition*, 31-32; Ex-1002, ¶150; Ex-1052, ¶¶59-61. Mooring discloses an analog display (i.e. hour and minute hands) and that the movement of those hour and minute hands may be a computer-based movement simulated on a touchscreen, similarly to the actual mechanical hour and minute hands depicted in Figure 1A’s mechanical movement. *Petition*, 31-32.

In any event, PO does not dispute that *Satoshi* teaches “display[ing] watch hands[.]” *Petition*, 34; Ex-1052, ¶62. The *Petition* argues that “it would have been obvious to a POSITA **to implement the watch face and gears of Satoshi in the electronic display of the wristwatch of Mooring.**” *Id.* For this additional reason,

the proposed combination satisfies the “simulation of mechanical watch movement” limitation.

F. Satoshi Teaches Synchronization and Synchronization by the User

Claim 1 requires, *inter alia*, “said microcontroller being further arranged for synchronizing the displayed time by said mechanical movement with that of said quartz oscillator.” The combination of Mooring and Satoshi meets this claim element. *Petition*, 30-36; Ex-1002, ¶¶146-162.

In its opposition, PO first argues that “[a] user’s direct interaction to synchronize the time is not entering and executing a request as required by the claim.” *Response*, 36. This argument is inconsistent with the ’033 Patent’s specification, which teaches “This synchronization can be performed...**at the user’s request through an appropriate command.**” ’033 Patent, 4:3-6. The ’033 Patent further explains that “*the time displayed by the simulated and displayed mechanical movement is thus synchronized with the quartz time...manually by the user interacting on one of the push-buttons 41 or on the touch sensor.*” *Id.*, 8:44-49. Consistent with these teachings, Satoshi explains that “based on an operation by the user, the current time can be read from the clock function of the mobile phone” and that “by operating the set key, the angles of the hands 9 are fixed and the process ends.” *Satoshi*, [0087]; Ex-1002, ¶¶170-171. Accordingly, the involvement of a user does not support PO’s position.

PO next argues that “a POSITA would have looked for any disclosure of commands passed from the user to a microcontroller, but none exist in Satoshi.” *Response*, 35. But a POSITA would have understood from Satoshi’s disclosures that this is exactly what happens. Satoshi discloses a microcontroller that controls the display of the mechanical watch movement. *Petition*, 32; Ex-1002, ¶152; Ex-1007, ¶40. Satoshi discloses that as a result of user action, the displayed time is synchronized to a time based on the mobile phone clock function. *See* Ex-1007, ¶87. Ultimately, Satoshi discloses that the user action results in the “angles of the hands” becoming “fixed” upon operation of “the set key,” and a POSITA would understand that this is a result of the microprocessor executing code to perform the synchronization. *Id.*; *Petition*, 38; Ex-1002, ¶¶170-171.

PO then complains that the institution decision was wrong in failing to consider paragraph 88 of Satoshi, but that paragraph merely supports the arguments raised in the *Petition*. For example, paragraph 88 explains that during the synchronization process the device may enter an “editing mode,” but that upon leaving that mode to return to the “execution mode” “the hands 9 **advance to the current time** and are redrawn.” *Satoshi*, [0088]. PO’s concern seems to be references to a scenario where a “long time” may pass in editing mode but even that sentence of the disclosure explains that “while **execution mode** is opened” it can “advance to angles of the hands 0 based on the current time” and the paragraph

concludes by noting that “an **accurate time** can be set for the angles of the hands 9.” *Id.* As noted above, a POSITA would know from the paragraph immediately before that “the current time” refers to the accurate time “read from the clock function of the mobile phone.”⁵ *Id.*, [0087]. A POSITA considering as a whole the disclosures of Satoshi in these paragraphs would understand that Satoshi is disclosing “said microcontroller being further arranged for synchronizing the displayed time” with the more accurate time otherwise available. *Petition*, 30-36; Ex-1002, ¶¶146-162.

PO’s arguments as to claims 11 and 12 fail for the same reasons. *Response*, 34-36. PO argues that Satoshi does not perform synchronization; that is incorrect as explained above. PO’s arguments as to the limitation in claim 11 “the wristwatch of claim 1, arranged for performing said synchronization periodically in an automatic manner” suggests that PO is construing “periodically” and “an automatic manner” without expressly proposing a construction for those terms. As set out in the *Petition*, that limitation is met. *Petition*, 37. Likewise, PO’s arguments as to the limitation in claim 12 “means for entering and executing a request for said synchronization by

⁵ In the proposed combination, the current time comes from the quartz oscillator of Mooring. *Petition*, 38-39. PO does not specifically challenge this element of the combination.

the user” go beyond the requirements of the claim. PO argues that a POSITA would have looked for any disclosure of commands passed from the user to a microcontroller” but provides no reason why such a disclosure would be required to meet the claims under PO’s reading. As set out in the Petition, that limitation is met. *Petition*, 38-40.

G. Mooring-Satoshi in View of Louch (Ground 3) Expressly Teaches “Displaying said Mechanical Movement on the Whole Surface of the Electronic Display” as Required by Claim 13

The combination of Mooring-Satoshi in view of Louch renders Claim 13 obvious. *Petition*, 53. Louch’s “world clock widget 402” can display the time and “can *consume the entire display area 406*.” *Id.*, 54 (citing Ex-1008 ¶67). PO offers no challenge to this disclosure, only arguing that Claim 13 is not obvious for the same reasons as Claim 1 noted for Ground 1. *Response*, 39. Thus PO does not dispute that Louch expressly teaches “displaying said mechanical movement on the whole surface of the electronic display” and at least Ground 3 renders Claim 13 invalid as obvious.

H. PO’s Further Motivation to Combine Arguments Should be Rejected.

1. Motivation to Combine Mooring-Satoshi with Tam (Grounds 4, 5, and 6)

Petitioner is using Tam (Ex-1012) in the grounds, not Tam (Ex-1015). Accordingly, the PO’s quotation of a purported teaching away within Tam (Ex-

1015) is not applicable to Petitioner's grounds. *Response*, 52 (quoting Ex-1015, 0021).

PO also misapprehends the proposed combination. The Petition is not proposing that a wristwatch would run 3d CAD files. *Petition*, 64-66, 73-74, 78, 84-85, citing Bederson. A POSITA would understand that Tam teaches simulating the movements of internal watch components in a wristwatch. *Id.* As explained in the Petition, a POSITA would be motivated to use Tam's teachings of realistic simulated mechanical movement in the proposed combination to improve realism and the user's experience. *Petition*, 64. As the Petition explains, the desirability of realistic simulated mechanical movement is taught by both Satoshi and the '033 Patent (Ex-1001, 1:35-46; Ex-1007 ¶4) and therefore a POSITA would have been motivated to consider Tam's realistic simulations. If Tam teaches that its simulations can be used not only for educational purposes but also to validate mechanical designs, as PO states, this is a valuable feature from a POSITA's perspective, and a reason why a POSITA would have considered the reference. It would only add to the desired realism of the resulting simulation.

2. Motivation to Combine Mooring-Satoshi with Inoue (Grounds 4, 6)

Inoue is relied on for its disclosure of a crown on a watch. *Petition*, 63-69, 87-88. PO does not dispute that use of a crown on a watch is a common, well-known feature. *Id.* PO only complains that a POSITA would not have incorporated Inoue's

crown into a watch with a *simulation* of mechanical movement. Regardless of any other features of the watch, adding the common watch feature of a “crown” to a watch is an entirely reasonable step that a POSITA would have been motivated to take for the reasons set out in the Petition. *Petition*, 63. PO’s further argument—that Inoue is a reference by Seiko, a watch vendor that purportedly did not use simulations in its commercial products at the time—is completely irrelevant. *Response*, 43. Inoue is prior art for all that it discloses and there is no commercialization requirement in the law for prior art.

3. Motivation to Combine Mooring-Satoshi with Ruchonnet (Grounds 5, 6)

The only basis for PO’s argument against using Ruchonnet in the proposed combinations is a conclusion, not an argument. PO states that “the mere knowledge of various mechanical watch components that Petitioner admits Ruchonnet provides is not enough to use the simulations of Tam on a wristwatch.” PO does not dispute that the watch components for which the Petition relies on Ruchonnet are well-known in mechanical watches. *See e.g.*, claim 9 (“a regulating organ with a balance, a returning element and an escapement”). A POSITA would have been motivated to show the internal workings of a mechanical watch, as expressly taught by Satoshi and Tam. *Petition*, 73-74, 77; Ex-1002 ¶¶274-278.

I. The Prior Art Teaches Claims 2-3, 6-10, 17, 18, and 19.

PO provides no further arguments specific to claims 2-3, 6-10, 17, 18, or 19.

Accordingly, Petitioner stands on the arguments made in the Petition.

III. CONCLUSION

Petitioner respectfully requests the Board find all the Challenged Claims unpatentable.

Dated: November 11, 2024

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UPDATED EXHIBIT LIST

Previously Filed by Petitioner

Exhibit 1001	U.S. Patent No. 8,588,033 (“the ’033 Patent”)
Exhibit 1002	Declaration of Benjamin B. Bederson
Exhibit 1003	Curriculum Vitae of Benjamin B. Bederson
Exhibit 1004	Prosecution History of the ’033 Patent (Application No. 13/631,116)
Exhibit 1005	U.S. Patent Application Publication No. 2009/0196124 (“Mooring”)
Exhibit 1006	Japanese Publication No. JP2005/242456 (“Satoshi”)
Exhibit 1007	Certified English translation of Satoshi
Exhibit 1008	U.S. Patent Application Publication No. 2008/0186808 (“Lee”)
Exhibit 1009	U.S. Patent Application Publication No. 2008/0168368 (“Louch”)
Exhibit 1010	U.S. Patent Application Publication No. 2008/0151700 (“Inoue”)
Exhibit 1011	U.S. Patent Application Publication No. 2005/0122844 (“Ruchonnet”)
Exhibit 1012	L.C. Tam, Tom Kong, and R. Du, Physical-Based Simulation of Mechanical Watches and Clocks 1-6 (2007)
Exhibit 1013	Declaration of Mary K. Roach on Authentication of Publication
Exhibit 1014	Linux Watch, https://researcher.watson.ibm.com/researcher/view_group_subpage.php?id=6102 (last visited Sept. 29, 2023).
Exhibit 1015	Lam Chi Tam, Geometry-Based Simulation of Mechanical Movements and Virtual Library 1-113 (2008)
Exhibit 1016	Watch, https://en.wikipedia.org/wiki/Watch (last visited Oct. 1, 2023)
Exhibit 1017	ISBN Search, https://isbnsearch.org/isbn/0791843068 (last visited Oct. 5, 2023)
Exhibit 1018	Palm (PDA), https://en.wikipedia.org/wiki/Palm_(PDA) (last visited Sept. 27, 2023).
Exhibit 1019	<u>L.C. Tam, Y. Fu, and R. Du, Virtual Library of Mechanical Watch Movements 127-136 (2007)</u>
Exhibit 1020	Claim Mapping Table
Exhibit 1021	Chandra Narayanaswami et al., IBM’s Linux Watch: The

	Challenge of Miniaturization 33-41 (2002).
Exhibit 1022	Skeleton Clock, https://en.wikipedia.org/wiki/Skeleton_clock (last visited Oct. 1, 2023)
Exhibit 1023	Benjamin B. Bederson & James D. Hollan, Pad++: A Zooming Graphical Interface for Exploring Alternate Interface Physics 17-26(1994).
Exhibit 1024	David Rogers, Feimo Hou, Chandelle Vuolo & Benjamin B. Bederson, Tossing Objects in a Desktop Environment (1996).
Exhibit 1025	Benjamin B. Bederson, Fisheye Menus 217-225 (2000)
Exhibit 1026	Leslie E Chipman, Benjamin B. Bederson & Jennifer A. Golbeck, SlideBar: Analysis of a linear input device 1-9 (2004).
Exhibit 1027	Hilary Browne et al., Designing a Collaborative Finger Painting Application for Children (2000).
Exhibit 1028	Pekka Parhi, Amy K. Karlson & Benjamin B. Bederson, Target Size Study for One-Handed Thumb Use on Small Touchscreen Devices 203-210 (2006).
Exhibit 1029	Amy K. Karlson, Benjamin B. Bederson & José Contreras-Vidal, Understanding One-Handed Use of Mobile Devices 1-22 (2007).
Exhibit 1030	Test of Time Awards, https://ieevis.org/year/2021/info/awards/test-of-time-awards (last visited Oct. 3, 2023).
Exhibit 1031	Test of Time Awards, https://ieevis.org/year/2022/info/awards/test-of-time-awards (last visited Oct. 3, 2023).
Exhibit 1032	Takeo Igarashi & Ken Hinckley, Speed-dependent Automatic Zooming for Browsing Large Documents 139-148 (2000).
Exhibit 1033	Skeleton watch, https://en.wikipedia.org/wiki/Skeleton_watch (last visited Oct. 1, 2023)
Exhibit 1034	Laurie Kahle, All is Revealed (March/April 2016)
Exhibit 1035	Analog watch, https://en.wikipedia.org/wiki/Analog_watch (last visited Oct. 1, 2023)
Exhibit 1036	Quartz clock, https://en.wikipedia.org/wiki/Quartz_clock (last visited Oct. 1, 2023)
Exhibit 1037	Joshua Munchow, Here's Why The Crown Is The Unsung Hero Of Watchmaking (And Why Rolex Wears The Crown),

	https://quillandpad.com/2018/12/09/heres-why-the-crown-is-theunsung-hero-of-watchmaking-and-why-rolex-wears-the-crown/ (last visited Oct. 2, 2023)
Exhibit 1038	U.S. Patent No. 3,146,580 (“Simon”)
Exhibit 1039	U.S. Patent No. 3,362,154 (“Perret”)
Exhibit 1040	Kinetics (physics), https://en.wikipedia.org/wiki/Kinetics_(physics) (last visited Oct. 2, 2023)
Exhibit 1041	Dynamics (mechanics), https://en.wikipedia.org/wiki/Dynamics_(mechanics) (last visited Oct. 2, 2023)
Exhibit 1042	Gear train, https://en.wikipedia.org/wiki/Gear_train (last visited Oct. 2, 2023)
Exhibit 1043	Mechanical watch, https://en.wikipedia.org/wiki/Mechanical_watch (last visited Oct. 2, 2023)
Exhibit 1044	Accelerometer, https://en.wikipedia.org/wiki/Accelerometer (last visited Oct. 2, 2023)
Exhibit 1045	Benjamin Arthur, Parts of a Mechanical Watch – An Illustrated Guide, https://www.benswatchclub.com/blog/parts-of-a-mechanical-watch (last visited Oct. 2, 2023)
Exhibit 1046	L.C. Tam, Tom Kong, and R. Du, Physical Based Solutions of Mechanical Watches and Clocks, https://asmedigitalcollection.asme.org/IMECE/proceedingsabstract/IMECE2007/43068/123/325857 (last visited Oct. 5, 2023)
Exhibit 1047	Declaration of Rachel J. Waters on Authentication of Publication
Exhibit 1048	Automatic, https://www.collinsdictionary.com/us/dictionary/english/automatic (last visited Oct. 5, 2023)
Exhibit 1049	Matthew Catellier, How Accurate Should Your Mechanical Watch

	Be?, https://www.watchreviewblog.com/how-accurate-shouldmechanical-watchbe/#:~:text=A%20non%2Dcertified%20watch%2C%20meanwhile,watch%20about%20once%20a%20week (last visited Oct. 10, 2023).
Exhibit 1050	Pusher, https://www.watch-wiki.net/doku.php?id=pusher (last visited October 10, 2023).
Exhibit 1051	Stipulation Regarding Invalidity Challenges

Currently Filed by Petitioner

Exhibit 1052	Supplemental Declaration of Benjamin B. Bederson
Exhibit 1053	https://www.itprotoday.com/microsoft-windows/watch-out-spot-devices-due-this-fall (last visited Nov. 11, 2024)
Exhibit 1054	https://news.microsoft.com/2002/11/17/microsoft-launches-smart-personal-object-technology-initiative/ (last visited Nov. 11, 2024)
Exhibit 1055	https://www.gsmarena.com/lg_gd910-2644.php (last visited Nov. 11, 2024)
Exhibit 1056	https://www.computinghistory.org.uk/det/43164/matsucom-OnHand-PC/
Exhibit 1057	Benjamin B. Bederson. (1992). A Miniature Space-Variant Active Vision System: Corext-I. New York University Dissertation, Computer Science Department.
Exhibit 1058	Benjamin B. Bederson. (1995). Audio Augmented Reality: A Prototype Automated Tour Guide. ACM CHI Conference Companion, pp. 210-211
Exhibit 1059	Benjamin B. Bederson, Aaron Clamage, Mary Czerwinski, and George Robertson. 2004. <i>DateLens: A Fisheye Calendar Interface for PDAs</i> . ACM Transactions on Computer-Human Interaction. Vol 11, No. 1. March 2004, pp. 90-119.
Exhibit 1060	Benjamin B. Bederson, Amir Khella, 2004, "Pocket PhotoMesa: A Zoomable Image Browser for PDAs"
Exhibit 1061	iPod Nano 6 th Gen User Guide, 2010
Exhibit 1062	Sony LiveView User Guide, 2010
Exhibit 1063	Microsoft Computer Dictionary Fifth Edition, 2002

Exhibit 1064	US Patent Application No. 2005/0278757 to Grossman et al.
Exhibit 1065	US Patent No. 11,061,524 to Bederson et. al
Exhibit 1066	Complaint from <i>Slyde v. Apple</i> , Case No. 2:24-cv-003310-RWS-RSP, Dkt. 1 (E.D. Tex.).
Exhibit 1067	https://web.archive.org/web/20090322202310/http://www.tinyos.net/ (last visited Nov. 11, 2024)
Exhibit 1068	https://appledb.dev/device/iPod-nano-(6th-generation).html (last visited Nov. 11, 2024)
Exhibit 1069	https://arstechnica.com/gadgets/2011/01/6g-ipod-nano-hack-just-beginning-of-long-road-to-nano-apps/ (last visited Nov. 11, 2024)
Exhibit 1070	Transcript of Deposition of Mr. Blackadar (Ex. 1052) (“Blackadar Tr.”);

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. §42.24 that the foregoing *Petitioner's Reply To Patent Owner's Response*, excluding any table of contents, certificates of service or word count, or appendix of exhibits, contains 5,364 words according to the word-processing program used to prepare this document (Microsoft Word) and is within the 5,600 word limit for replies to patent owner responses to petitions.

Dated: November 11, 2024

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CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.6

Pursuant to 37 C.F.R. § 42.6, I hereby certify that a true copy of the *Petitioner's Reply To Patent Owner's Response and Exhibits* were served via electronic mail on November 11, 2024, in its entirety on the following lead and back-up counsel for Patent Owner, Petitioner (Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.), and Petitioner (Zepp Health Corporation):

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