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Paper No. 26
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.
Petitioner,

v.

KEYNETIK, INC.
Patent Owner.

Case IPR2018-00985
Patent 7,966,146 B2

Before LYNNE E. PETTIGREW, IRVIN E. BRANCH, and STACEY G. WHITE, *Administrative Patent Judges*.

WHITE, *Administrative Patent Judge*.

JUDGEMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition requesting *inter partes* review of claims 22 and 23 of U.S. Patent No. 7,966,146 B2 ("the '146 patent," Ex. 1001). Paper 1 ("Pet."). Petitioner, supported by the declaration of Dr. Gregory D. Abowd (Ex. 1002), contends that claims 22 and 23 are unpatentable on the following grounds (Pet. 2):

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
22–23	102(b)	Liberty[1]
22–23	103(a)	Noguera[2] and Liberty

We instituted trial on claims 22 and 23 on all asserted grounds of unpatentability. Paper 7 ("Decision" or "Dec."). Patent Owner, KEYnetik, Inc., filed a Patent Owner Response (Paper 13, "PO Resp."), Petitioner filed a Reply (Paper 15, "Reply"), and Patent Owner filed a Sur-Reply (Paper 19, "Sur-Reply").

An oral hearing was held on August 6, 2019, and a transcript of the hearing is included in the record. Paper 25 ("Tr.").

We have authority under 35 U.S.C. § 6. This Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 22 and 23 of the '146 patent are unpatentable.

A. Related Matters

The parties indicate the '146 patent is at issue in *KEYnetik, Inc. v. Samsung Electronics Co., Ltd.*, No. 2:17-cv-02794 (D.N.J.). Pet. 1; Paper 4.

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[1] U.S. Patent No, 7,535,456 B2, issued May 19, 2009 (Ex. 1005, "Liberty").
[2] U.S. Patent No. 6,847,351 B2, issued Jan. 25, 2005 (Ex. 1006, "Noguera").

B. The '146 Patent

The '146 patent describes a device "having at least one mounted accelerometer configured to sense movement on at least one sensitivity axis." Ex. 1001, 3:5–6. An exemplary device is a "handheld computing device with a visual display" that has "a cursor in communication with the visual display [that] is moved across the display in response to sensed motion." *Id.* at 10:9–12. The device translates user intentions into precise commands by examining "step motion." *Id.* at 13:51–54. Figure 12 of the '146 patent is reproduced below.

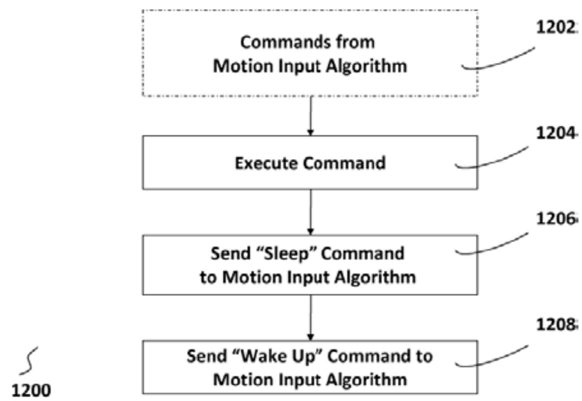

Fig. 12

Figure 12 is a flowchart illustrating a step motion algorithm. *Id.* at 14:17–19. Step motion allows a user to change position while operating the device. *Id.* at 13:55–59. "The step motion algorithm includes instructions to execute a command from the motion input algorithm, instructions to send a sleep command to the motion input algorithm after the command is executed, and instructions to re-activate the motion sensing algorithm from the sleep command after elapse of a defined period of time." *Id.* at 3:11–16. "[C]ommands may be in the form of pitch, roll, and/or yaw signals that correspond to a clockwise, counterclockwise, left, right, up, and down movement of the cursor across the visual display." *Id.* at 10:41–46. The "insensitivity" timeout or sleep period is a time in which "the system automatically balances itself to compensate for the changes in orientation towards gravity and other external forces." *Id.* at 14:5, 14:12–14. The "insensitivity timeout in the step motion algorithm makes the handheld device of the present invention not sensitive to a change in its own position and the user's position." *Id.* at 15:48–51. During this sleep period, the user may readjust the device to restore a comfortable viewing angle. *Id.* at 14:15–16. Executing the sleep command blocks any new commands from the motion input algorithm. *Id.* at 14:24–25. In certain embodiments, calculations may continue in the background. *Id.* at 14:25–26. "After the 'Sleep' time elapses, the simple step motion algorithm sends a 'Wake up' command to the motion input algorithm (1208) to resume sending motion input commands with the current placement serving as a reference point of origin." *Id.* at 14:37–41.

C. Challenged Claims

As noted above, Petitioner challenges claims 22 and 23 of the '146 patent. Claims 22 and 23 are reproduced below:

> 22. An article comprising:
>
> a body having at least one mounted accelerometer, configured to sense movement on at least one sensitivity axis;
>
> a computer readable carrier including a motion input algorithm configured to translate the sensed movement received from the at least one accelerometer into a command, and a step motion algorithm to process the command, the step motion algorithm including instructions comprising:
>
> instructions to execute a command from the motion input algorithm,

> instructions to send a sleep command to the motion input algorithm after the command is executed; and
>
> instructions to re-activate the motion sensing algorithm from the sleep command after elapse of a defined period of time.
>
> 23. The article of claim 22, wherein the sleep communication instructions temporarily block execution of a new command from the motion sensing algorithm.

Ex. 1001, 18:10–28.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, "[a] claim in an unexpired patent that will not expire before a final written decision is issued shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b) (2018)[3]. In determining the broadest reasonable construction, we presume that claim terms carry their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). This presumption may be rebutted when a patentee, acting as a lexicographer, sets forth an alternate definition of a term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Patent Owner seeks construction of the phrase "instructions to send a sleep command to the motion input algorithm after the command is

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[3] The recent revisions to our claim construction standard do not apply to this proceeding because the new "rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date." Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (codified at 37 C.F.R. § 42.100 (2019)).

executed." PO Resp. 16. Petitioner does not seek express construction of any term of the '146 patent, but responds to Patent Owner's proposed constructions in its Reply. Reply 1.

Specifically, Patent Owner seeks to construe the scope of two aspects of that claim phrase. First, Patent Owner asserts that the sleep command "initiates a temporary sleep period during which any sensed movement will not result in an executed command, even upon the expiration of the sleep period." PO Resp. 18 (citing Ex. 2001 ¶ 72). Second, Patent Owner argues that the claim phrase "'after the command is executed' requires the 'sleep command' (i.e., Algorithmic Step 2) to be logically associated with and conditioned upon the prior execution of a motion input algorithm command (i.e., Algorithmic Step 1) such that both algorithmic steps are within the same 'step motion algorithm.'" *Id.* at 29 (citing Ex. 2001 ¶ 104). We address each assertion in turn.

1. Scope of the Sleep Command

Patent Owner contends that the claims require a three step motion algorithm that (1) executes a motion command; (2) sends a sleep command after the execution of the motion command; and (3) re-activates motion sensing after a defined period of time. *Id.* at 20–21. Patent Owner argues that these three steps move the system into and out of two conditions, "awake" and "sleep." *Id.* at 22. According to Patent Owner, "a [person of ordinary skill in the art] would recognize that during the 'sleep' period movement is either: (1) not sensed; (2) sensed but not translated into a command; or (3) sensed and translated into a command that is blocked prior to its execution." *Id.* at 19 (citing Ex. 2001 ¶ 75). In other words, no commands are executed based on movement sensed during a sleep period.

As support for its position, Patent Owner directs us to the "sleep commands" found in both the UNIX and Windows operating systems. *Id.* at 23. Patent Owner contends that one of ordinary skill in the art would have been aware of those sleep commands and understood that they "were used to **<u>pause</u>** certain system processes." *Id.* (citing Ex. 2001 ¶ 87).

Patent Owner contends that a sleep command, as described in the '146 patent, "paus[es] the placement of the cursor on the screen, meaning that any new motion commands must be blocked or ignored." *Id.* (citing Ex. 2003; Ex. 2001 ¶ 88). As described in the text of the '146 patent, "[t]he Simple Step Motion algorithm has an additional feature based on the introduction of an 'insensitivity' timeout, also known as a sleep period" and "during the period of 'insensitivity' the system automatically balances itself to compensate for the changes in orientation towards gravity and other external forces. During the period of 'Sleep' the user can bring the handheld device back to restore the viewing angle or change the position to stay comfortable." Ex. 1001, 14:4–5, 11–16. Further, "[t]he sleep command blocks any new commands from the motion input algorithm." *Id.* at 14:24–25.

The parties, however, appear to be in agreement "that the recited 'sleep command' initiates a 'sleep' period, and that the claimed 'article' remains in the 'sleep' period until it receives 'instructions to re-activ[at]e the motion sensing algorithm . . . after a defined period of time.'" PO Resp. 17 (citing Pet. 62–63). The question before us then is what is next after a sleep command has terminated. Specifically, is the sleep command broad enough to encompass systems in which data collected during the sleep period has an impact on the commands executed after the sleep command has terminated?

Petitioner argues that "the 'insensitivity timeout' is introduced to make the handheld device "not sensitive to a change in its own position and the user's position. But this does not mean (and, indeed, the specification does not state) that the device would not be sensitive to a more significant movement than a simple change to the viewing angle or position of the device." Reply 5 (citing Ex. 1001, 15:48–52; *id*. at 14:11–16).

We find Petitioner's argument to be persuasive. The '146 patent states that

> Following execution of the command at step (1204), a sleep command is sent to a motion input algorithm (1206). The sleep command blocks any new commands from the motion input algorithm. *However, in one embodiment, the calculations of motion parameters may continue in the background.* After completion of step (1206) the motion input algorithm receives a wake up command (1208) and is accessible for the next motion.

Ex. 1001, 14:22–29 (emphasis added). Patent Owner contends that despite the language referring to continuing calculations in the background, the '146 patent does not teach that any such movement is part of any commands to be executed after the termination of the sleep period. PO Resp. 27. Patent Owner's Declarant, Dr. Prasant Mohapatra, testifies that one of ordinary skill in the art would have understood that allowing calculations to continue in the background "merely allows the motion sensor to remain active." Ex. 2001 ¶ 100. The motion sensor, however, is not the portion of the system that performs calculations. As described in the specification, the motion sensor is an accelerometer and its output "include[s] a component corresponding to gravitational force that is the same for each accelerometer in the arrangement. *Logic circuitry in communication with the accelerometer arrangement couples accelerometer signals to a processor to* *compute motion variables*." Ex. 1001, abstract (emphasis added). The specification further notes that calculations are performed in order "[t]o 'interpret' a user's motion input as a pattern." Ex. 1001, 2:24–25. Thus, the motion sensor outputs raw data and a logic circuit receives that data and forwards it on to a processor, which performs computations to interpret that data. Dr. Mohapatra, however, does not explain why it would be necessary for the processor to perform such calculations in order to keep the sensor active.

Petitioner asserts that nothing in the claims or the specification precludes using data sensed during the sleep period in commands that are executed after the system is reactivated. Reply 7. According to Petitioner, "the specification only precludes new commands during the sleep state." *Id.* Petitioner points out that the specification states that "[t]he sleep command blocks any new commands from the motion input algorithm," but it does not describe any prohibitions on commands to be issued once the system is reactivated. *Id.* (quoting Ex. 1001, 14:22–25).

Our review of the claims also supports Petitioner's view of the scope of this claim language. Claim 22 recites, in relevant part, "a motion input algorithm configured to translate the sensed movement received from the at least one accelerometer into a command." Ex. 1001, 18:15–17. Further, a sleep command is sent "to the motion input algorithm" and then after a period of time has elapsed the motion sensing algorithm is re-activated. *Id.* at 18:21–25. In other words, the algorithm that translates the sensed movement into a command is put to sleep. This supports Petitioner's view that no new commands are executed during the sleep period, but that no prohibitions are placed on the collection and use of sensed data after the expiration of the sleep period. This is true because the claim language merely requires sleeping or pausing the algorithm that creates commands from the sensed data, but does not include language limiting which data is to be used as input to the algorithm.

For the foregoing reasons, we are persuaded by Petitioner's view as to the scope of the sleep command. As such, we agree with Petitioner that "under the [broadest reasonable interpretation] standard, the claim language merely recites that the sleep command temporarily deactivates the motion input algorithm from translating sensed movement into a command for a defined period of time." *See* Reply 6.

2. Scope of "After the Command Is Executed"

Claim 22 recites, in relevant part, sending the sleep command "after the command is executed." According to Patent Owner, one of ordinary skill in the art would have understood this to require "a command **<u>within the step motion algorithm</u> that is sent after the executed motion input algorithm command**." PO Resp. 29. Thus, Patent Owner argues that the executed command and sleep command must have a logical association with each other. *Id.* "In other words, the algorithmic steps must be part of the same algorithm – not merely disassociated, independent functions that can occur within the same device." *Id.* at 32. Petitioner points out that the text of the '146 patent merely describes the sleep command as "[f]ollowing execution of the command" and "does not identify any logical association or conditioning between the 'sleep command' and the 'command [that] is executed.'" Reply 8–9 (quoting Ex. 1001, 14:22–24). We agree with Petitioner that the claim term "after" indicates a temporal relationship between the executed command and the sleep command that requires the executed command to occur and then at some point later in time the sleep command is issued. The claims provide no limit as to intervening acts that could occur between the executed command and the sending of the sleep command. The claims also do not describe any further relationship between the executed command and the sleep command.

B. Level of Ordinary Skill in the Art

We consider the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id*. In addition, the level of ordinary skill in the art is reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *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.").

In the Institution Decision, we adopted Patent Owner's description of a person of ordinary skill in the art as a person "familiar with the various motion-sensing technologies by way of experience and/or schooling. That person would likely have earned a bachelor's degree in electrical engineering, computer science or another related field, and have at least two years of experience with motion-sensing technologies. More education can substitute for practical experience and vice versa." Dec. 7; *see* PO Resp. 16 ("Patent Owner and its expert, Dr. Mohapatra, agree with the Board's findings concerning the level of ordinary skill in the art."). Based on the full record, including the testimony of Dr. Abowd, the subject matter at issue, and the prior art of record, we maintain our previously adopted description of the level of ordinary skill.

C. Asserted Obviousness over Noguera and Liberty

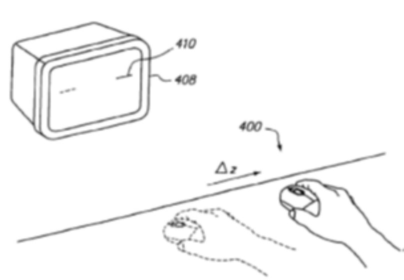
Petitioner asserts that claims 22 and 23 would have been obvious over Noguera and Liberty. Pet. 48–72. Petitioner explains how Noguera and Liberty allegedly teach the claimed subject matter and relies upon the testimony of Dr. Abowd to support its positions. *Id.*; Ex. 1002.

1. Overview of Liberty

Liberty is directed to removing unintentional movement from detected motion of a three-dimensional ("3D") pointing device. Ex. 1005, code(54). As described in Liberty, "[3D pointing] devices enable the translation of movement, e.g., gestures, into commands to a user interface." *Id.* at 6:55–56. "[U]ser movement of the 3D pointing can be defined, for example, in terms of a combination of X-axis attitude (roll), y-axis elevation (pitch) and/or Z-axis heading (yaw) motion of the 3D pointing device 400." *Id.* at 6:58–62. The 3D pointing device's motion will be translated into output which is usable to interact with the information displayed on a visual display and may, for example, move the cursor on the visual display or cause the display to zoom in or out. *Id.* at 7:5–11, 7:18–22. Figures 6A–6B are reproduced below.

FIG. 6A

FIG. 6B



Figures 6A–6B provide an exemplary embodiment of Liberty. *Id.* at 11:7–9. In Figure 6A, the user moves the handheld device and that movement is detected by the rotational sensors. *Id.* at 11:9–19. Figure 6B shows the corresponding cursor movement translated from the movement sensed in Figure 6A. *Id.* at 11:20–24.

Figure 9 of Liberty is reproduced below.

FIG. 9

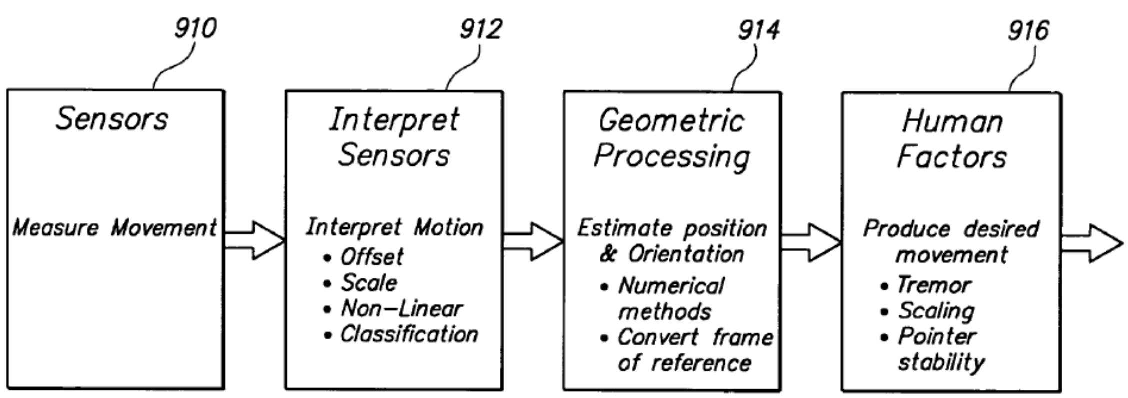


Figure 9 illustrates the removal of unintentional movement from detected motion. *Id.* at 5:25–27. As shown in block 910, the input to this technique is human movement of the handheld 3D pointing device, which is processed in block 912. *Id.* at 16:5–9. In block 914, the motion is converted into a meaningful representation. *Id.* at 16:15–16. Human Factors processing is applied in block 916 and that block outputs data that can be used to control on-screen pointer movement. *Id.* at 16:17–23.

Button presses may be processed by using this technique. *Id.* at 16:24–27. "When a button press is detected by the hand held device, the output pointer movement from 916 is suppressed until either the distance exceeds a distance threshold or the amount of elapsed time exceeds a time threshold." *Id.* at 16:34–38. After a button press, the device can return to the state before that press "by deleting data samples taken from the motion sensor(s) during/after the button actuation occurred. Therefore, the errant movement that occurred during the button press will be ignored and 'erased.'" *Id.* at 16:65–17:2.

Liberty describes two types of button actuations, fine mode clicking and coarse mode clicking. *Id.* at 17:12–18. In fine mode, "the user intends precise actuation over a small target and carefully aligns the device, stops movement, and then presses the button." *Id.* at 17:14–16. In coarse mode, "the target is large and the user anticipates the next action." *Id.* at 17:16–18. In fine mode clicking, the "technique operates to accurately remove unintentional motion data from the combined data output stream from the motion sensor(s) in the handheld device." *Id.* at 17:20–24. The human factors processing function 916

> provide[s] a classifier to switch between the techniques. For example, when the first, precise type of button click is detected, the first technique can be used. When the second, less precise type of button click is detected, the second technique can be used. One classifier for switching between techniques can use the velocity of the handheld device at the time of button

> actuation or at the time just before button actuation. For example, if (a) the velocity of the handheld device is below a predetermined velocity threshold then the first technique is employed which discards motion data generated subsequent to a detected event until either motion sensed by the motion sensor(s) indicates that the handheld device has moved more than a predetermined distance threshold or a predetermined time has expired, otherwise, (b) if the velocity of the handheld device is above the predetermined velocity, then the second technique is employed which instead filters the motion data generated subsequent to a detected event.

Id. at 18:21–38.

2. Overview of Noguera

Noguera describes "a hand-held device pointer positioning scheme (systems and methods) that allows a user to control where a pointer is displayed on a display screen simply by changing the orientation of the hand-held device, while automatically adjusting to different preferred orientations of the hand-held device." Ex. 1006, 2:14–19. This system "dynamically filters out unintentional device orientation changes, such as periodic device orientation changes that might be caused by carrying the hand-held device while, for example, walking or driving." *Id.* at 2:20–23. Figure 3 of Noguera is reproduced below.

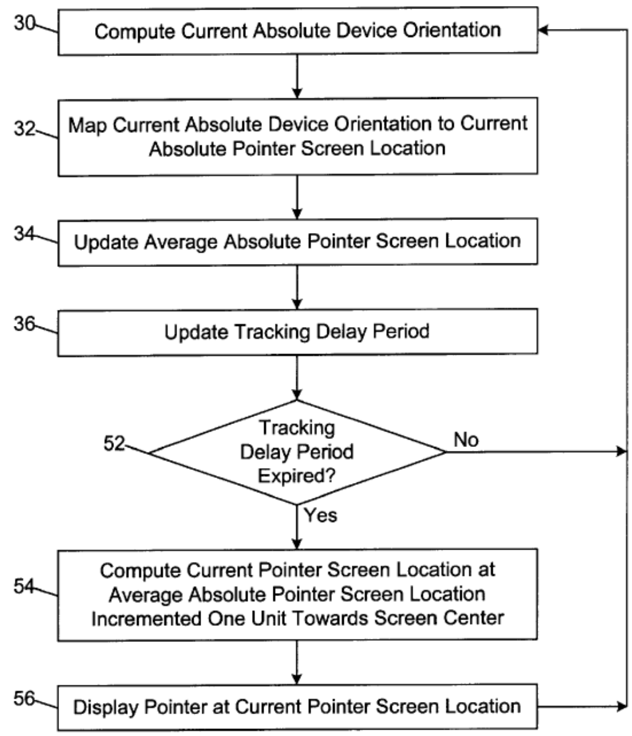


FIG. 3

Figure 3 is a flow diagram, which depicts controlling the position of a pointer on a handheld device's display screen. *Id.* at 3:33–35. The orientation of the handheld device is computed and mapped to a pointer screen location. *Id.* at 4:49–63. An average pointer location is computed for a particular sampling period. *Id.* at 5:10–16. The delay tracking period is updated based upon the computed screen location. *Id.* at 5:49–51. The controller updates the pointer screen location once every sampling period or once every delay period (which is at least as long as the sampling period). *Id.* at 2:49–54. The length of the delay period may be responsive to changes in the device's tilt direction from one sampling period to another. *Id.* at 5:52–6:1. Figure 4 is reproduced below.

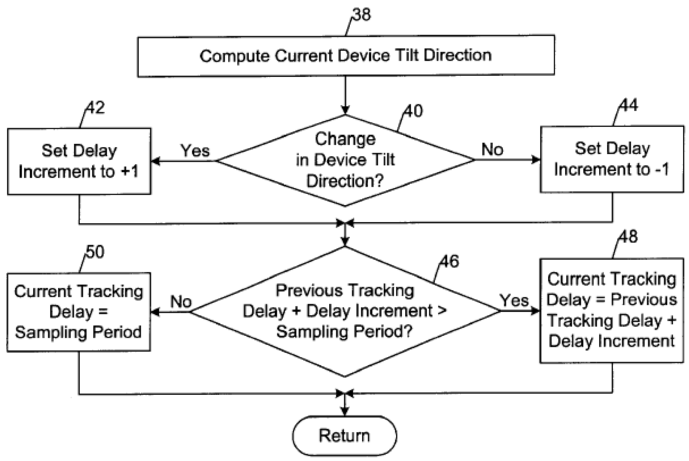


FIG. 4

Figure 4 is a flow diagram that depicts the method for updating the tracking delay period based on changes in the tilt direction. *Id.* at 3:37–39. As shown in Figure 4, the controller increases delay increment in response to a determination that the device tilt direction is changed. *Id.* at 6:7–9. The controller decreases the delay increment in response to a determination that the device tilt direction is unchanged. *Id.* at 6:10–12. The delay increment is then added to the previous delay and that sum is compared to the sampling period. If the sum is greater than the sampling period then that sum is used as the new delay period. Otherwise, the delay period is set to be equal to the sampling period. *Id.* at 6:13–15. This process allows the device to dynamically filter out unintentional orientation changes by sampling average movement over a longer time period when the device has unintentional orientation changes. *Id.* at 6:1–6, 4:6–14.

3. Analysis

We have reviewed Petitioner's assertions and supporting evidence and in light of Patent Owner's arguments and evidence and we find Petitioner to have demonstrated by a preponderance of the evidence the unpatentability of claims 22 and 23 over Noguera and Liberty. Petitioner's arguments are summarized as follows: Petitioner relies on Noguera to teach the recited "article" of claim 22. According to Petitioner "*Noguera* describes a 'hand-held device 10,' which includes a 'display screen 12 that is configured to display a graphical user interface, which may present one or more user commands or options for controlling the operation of hand-held device 10.'" Pet. 48 (citing Ex. 1006, 3:52–56, 2:28–31). As to the "body having at least one mounted accelerometer," Petitioner directs us to Figures 1 and 5 of Noguera, which depict device 10's components arranged within a single body structure, including an accelerometer. *Id.* at 51.

Petitioner argues that Noguera teaches the recited "computer readable carrier including a motion input algorithm" through its discussion of device 10 and its memory 74. *Id.* at 53. According to Petitioner, "device 10 includes a 'controller' (e.g., controller 64 in Figure 5), which includes an algorithm to translate sensed movement received from device 10's tilt sensor into a command to control where pointer 14 is positioned on display screen 12." *Id.* at 55 (citing Ex. 1006, 2:33–37, 2:40–3:17, 3:52–67, 4:19–31, 4:47–7:55). Noguera's "controller preferably is implemented in a high level procedural or object oriented programming language; however, the algorithms may be implemented in assembly or machine language." Ex. 1006, 9:5–9. Petitioner contends that the details of the motion input algorithm are described in relation to Figures 3 and 4 of Noguera. Pet. 55.

As to the recited "step motion algorithm to process the command," Petitioner argues that "device 10's controller translates device orientation indications provided by the orientation sensor into the current pointer screen location, which discloses the claimed '***command***.'" *Id.* at 58 (citing Ex. 1006, 2:33–37, 2:40–3:17, 3:52–67, 4:19–31, 4:47–7:55). "Additionally, *Noguera*'s memory 74 ('***computer readable carrier***') includes the algorithm performed by the controller to process / execute the computed current pointer screen location ("***step motion algorithm***")." *Id.* at 57 (citing Ex. 1002 ¶ 116).

Petitioner relies on the combination of Noguera and Liberty to teach the recited "instructions to send a sleep command . . . after the command is executed." *Id.* at 62. Petitioner first directs us to Noguera's discussion of dynamically filtering out unintentional device orientation changes. *Id.* Noguera uses a defined "delay period" during which an orientation sensor is sampled and the current orientation is computed. *Id.* According to Petitioner, during this delay period Noguera's algorithm, which translates device orientation into screen position, "is in a sleep state/deactivated because the controller does not compute current pointer screen locations ('commands') during the delay period." *Id.* at 62–63.

Petitioner asserts that Noguera's disclosure is not explicit as to whether the sleep state is initiated by a sleep command sent after the command is executed. *Id.* at 63. Petitioner looks to Liberty's discussion of motion sensing techniques to teach this portion of the limitation. *Id.* Petitioner directs us to Liberty's discussion of fine and coarse button click techniques. *Id.* Petitioner notes that in the fine clicking technique, the process "remove[s] unintentional motion data from the combined data output stream from the motion sensor(s) in the handheld device." *Id.* at 63–64 (quoting Ex. 1005, 17:20–24). Petitioner asserts that "distance and time thresholds 'are employed to process movement information generated by the motion sensor(s) . . . after a user action, e.g., a button click, has occurred.'" *Id.* at 64 (citing Ex. 1005, 16:24–33). According to Petitioner, Liberty teaches sending the sleep command to the motion input algorithm via its discussion of a classifier being used to switch between the fine and coarse clicking techniques. *Id.* at 65. Petitioner asserts that Liberty teaches sending the sleep command after the command is executed via its discussion of switching to fine clicking mode because the velocity of the handheld device has slowed from a velocity indicative of coarse clicking mode to a velocity more appropriate for clicking a small target. *Id.* at 66 (citing Ex. 1002 ¶¶ 129–130; Ex. 1005, 17:12–16, 18:25–34).

Finally, as to the claimed "instructions to re-activate the motion sensing algorithm from the sleep command after elapse of a defined period of time," Petitioner directs us to Liberty's block 916 suppressing motion output until an elapsed amount of time exceeds a time threshold. *Id.* at 67 (citing Ex. 1002 ¶ 131; Ex. 1005, 16:27–38, 18:28–34).

Claim 23 depends from claim 22 and further recites "wherein the sleep communication instructions temporarily block execution of a new command from the motion sensing algorithm." Petitioner asserts that this is disclosed by Liberty's discussion of suppressing motion data as discussed above in relation to claim 22. *Id.* at 71.

Petitioner asserts that one of skill in the art would have modified Noguera with Liberty's teachings in order to send a sleep command after the execution of the command. Pet. 67–70. Petitioner asserts that Noguera would have been improved by the addition of Liberty because "such a modification would have advantageously removed unintentional motion data during fine user interactions with device 10 that could have resulted in unwanted device inputs (e.g., unwanted cursor movement)." Pet. 68. Noguera describes a system in which the delay periods happen one right after the other as a series of sampling periods without any specific regard to the execution of commands. The modified system links the delay periods to the periods directly following a command.

Patent Owner asserts that the teachings of Liberty and Noguera do not teach the recited sleep command. PO Resp. 48. Patent Owner argues that "Liberty does not teach the Sleep Command Limitation because it does not require the 'switch' to 'fine mode clicking' (i.e., the alleged 'sleep command') to occur after the motion input command is executed." *Id.* Patent Owner further contends that Noguera cannot make up for this deficiency in Liberty because "Noguera does not 'disclose that the sleep state is initiated by a 'sleep command' sent 'after the command is executed.'" *Id.* Patent Owner's argument is not persuasive because it does not account for what would be learned from the combination of the cited references. "In determining obviousness, references are read not in isolation but for what they fairly teach in combination with the prior art as a whole." *Banner Eng'g Corp. v. Tri-Tronics Co.*, 11 F.3d 1071 (Fed. Cir. 1993) (citing *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986)).

As discussed above, Petitioner is asserting that Noguera would have been improved in light of the teachings of Liberty. Pet. 68. Specifically, Noguera's delay period (sleep period) is used to filter out certain movement. *Id.* at 62. According to Petitioner, one of ordinary skill in the art would have improved that filtering with Liberty's fine and coarse clicking techniques. *Id.* at 68. Liberty's coarse mode is for large movements and the fine mode is for small carefully aligned movements. Ex. 1005, 17:12–18. "For fine mode clicking, the above-described processing technique operates to accurately remove unintentional motion data from the combined data output stream from the motion sensor(s) in the handheld device." *Id.* at 17:20–24. "When a button press is detected by the hand held device, the output pointer movement from 916 is suppressed until either the distance exceeds a distance threshold or the amount of elapsed time exceeds a time threshold." *Id.* at 16:34–38. Petitioner argues that Liberty teaches "rever[ting] to a prior state . . . 'by deleting data samples taken from the motion sensor(s) during/after' the user action. As such, the 'errant movement' that occurred during the user action is 'ignored and 'erased.''" Pet. 64 (quoting Ex. 1005, 16:65–17:2) (internal citations omitted). Additionally, Liberty "provide[s] a classifier to switch between the [coarse and fine] techniques." *Id.* at 18:21–22. Petitioner relies on Liberty's teaching of switching to fine clicking mode from coarse clicking mode based on a classifier that indicates the velocity of the handheld device has slowed from a velocity indicative of coarse clicking mode to a velocity more appropriate for clicking a small target. *Id.* at 66 (citing Ex. 1002 ¶¶ 129–130; Ex. 1005, 17:12–16, 18:25–34). Petitioner contends that "the instruction to switch to the first technique ('sleep command') is sent only after movement of the 3D pointing device is detected and translated into a command to position the cursor over a small target ('the command is executed') and then stopped." Pet. 42–43. Thus, the combination provides a classifier (sleep command) to begin Noguera's delay period (sleep state) after the execution of a command. We are persuaded by Petitioner's argument and that Petitioner has demonstrated that this disputed limitation would have been understood from the combined teachings of Liberty and Noguera.

Patent Owner also argues that the cited art does not teach a sleep period. Patent Owner asserts that Noguera's delay period is not a sleep period because movement sensed during the delay period is included in the commands executed after the end of the sleep period. PO Resp. 50 (citing Ex. 1006, 2:58–60). This argument is premised on Patent Owner's proposed construction as to the scope of the sleep command and as discussed above, we do not agree with Patent Owner's view as to the scope of the claim term. *See* § II.A.1. Thus, this argument is not persuasive because we have determined that the recited sleep command is broad enough to encompass a sleep command that allows data collected during the sleep period to be used to formulate commands that will be executed after the system has exited the sleep period.

Next, Patent Owner argues that Noguera does not teach the claimed "step motion algorithm" because Noguera does not have both a sleep and an awake period. PO Resp. 52. According to Patent Owner, "[t]he 'tracking delay period' of Noguera is the single, permanent state disclosed by the reference – not a temporary or limited condition with a corresponding 'awake' period, as in the '146 Patent." *Id.* (citing Ex. 1006, 2:53–54, 6:18–49). Petitioner correctly argues that the claims do not recite an "awake period" and a "sleep period," but rather sending a sleep command and instructions to re-activate the system after a sleep command. *See* Reply 19. Regardless, Petitioner asserts that Noguera has both a sleep and a non-sleep period. *Id.* In Noguera, the controller is "configured to update the computed pointer screen location once every sampling period," but that period may be extended by a delay period that is longer than the sampling period. Ex. 1006, 2:48–53. The tracking delay period may be longer than the sampling period if there a change in the direction of the movement. *Id.* at 2:54–55. This process allows the device to dynamically filter out unintentional orientation changes by sampling average movement over a longer time period when the device has unintentional orientation changes. *Id.* at 6:1–6, 4:6–14. Thus, the system is either in a sampling period (non-sleep) or a delay period (sleep). An extended delay period reduces the impact of movement because the movements are averaged over a larger set of data. *Id.* Thus, any movement (unintentional or otherwise) may be filtered out of the position data if this delay period is long enough. Noguera sets a floor for the length of the period (*id.* at 6:17–50 ("tracking delay period is always at least as long as the sampling period")), but no upper bound is provided for the sampling period (*id.* at 6:53–7:20). Thus, the sampling period can grow as large as it needs to in order to account for the tilting of the device. As shown in the pseudocode, the system accumulates sampled orientation data during the delay period, but the position calculation, which updates the location of the pointer, is executed only at the expiration of the delay period. *See id.* at 7:30–50. Thus, during the delay period no commands are executed as to the location of the pointer.

Finally, Patent Owner contends that Petitioner's proffered rationale to combine is insufficient. PO Resp. 56–66. Patent Owner argues that a person of ordinary skill in the art "would be unmotivated to combine *Noguera* and *Liberty* because neither reference considers the problem addressed by the Challenged Claims." *Id.* at 57. Specifically, Patent Owner asserts that the Challenged Claims are directed to filtering out intentional movements while Noguera and Liberty are directed to ignoring unintentional movements. *Id.* at 57–60. As a starting point, we note that problem sought to be solved by the ’146 patent is not strictly focused on the removal of intentional movement. The specification also discusses a need for a motion sensor system and method of calculation “that does not require tracking of the device orientation to filter out the gravity and other motion interference” and it also addresses the desire to “minimize the numerical calculations, thus reducing required processing power.” Ex. 1001, 2:47–53. Thus, the problem to be solved is not singularly focused on removal of intentional movement. Regardless, Petitioner correctly argues that the cited art in an obviousness ground need not be directed to the same problem that the inventor was trying to solve. *See* Reply 20–21. The Supreme Court stated that “[i]n determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). Therefore, whether the cited references are directed to the same problem that the inventor was trying to solve is not conclusive concerning the obviousness analysis.

Patent Owner also contends that an ordinarily skilled artisan “would not be motivated to combine the references because the combination of the *Noguera* ‘delay period’ with the *Liberty* ‘switch’ to ‘fine mode clicking’ would be, at best, redundant.” PO Resp. 61. For example, Patent Owner asserts that “if a button actuation caused ‘undesirable movement of the device,’ *Noguera* <u>alone</u> would ‘remove unintentional movement’ because it <u>always</u> operates on a ‘delay period.’” *Id.* at 62 (citing Ex. 2001 ¶ 186). Petitioner contends that this is a misstatement of the proposed combination because “*Noguera’s* delay period and *Liberty’s* classifier that switches to fine mode clicking are not the same . . . . For example, *Noguera’s* delay periods do not take into account execution of commands, much less commands relating to fine user interactions with *Noguera's* device." Reply 21 (citing Ex. 1006, FIGS. 3–4, 5:52–6:50). Petitioner points out that "the combined *Noguera-Liberty* system (unlike *Noguera* alone) links the delay periods to the periods directly following a command." *Id.* at 22. We agree with Petitioner's contention that this combination "would have advantageously removed unintentional motion data during fine user interactions with device 10 that could have resulted in unwanted device inputs (e.g., unwanted cursor movement)." *Id.* (quoting Pet. 68). This is true because Noguera operates on a system of continuous averaging and the addition of Liberty would allow for the periods to be timed based on the execution of command and Liberty provides for the filtering out of certain unwanted data which will allow more precision that the averaging scheme used in Noguera. We are persuaded that removing some undesirable movement would have allowed for more accurate calculations/commands because it would have improved the precision of the underlying data for the commands. As such, we find that Petitioner has shown sufficiently a rationale to combine the teachings of Noguera and Liberty.

Patent Owner also asserts that Petitioner's proposed combination would have the effect of contradicting Noguera's stated purpose of "accurately and reliably at any one of a plurality of pointer screen locations based upon changes in device orientation under a **wide variety of different usage conditions**." PO Resp. 63 (quoting Ex. 1006, 4:9–13). According to Patent Owner, "Petitioner's combination would only filter out unintentional device orientation changes for a period of time after a button actuation." *Id.*

This argument is premised upon an unnecessarily narrow view of the disclosures of Liberty. As stated in Liberty,

> Button clicks or presses as referred to in the foregoing exemplary embodiments include, but are not limited to, both button presses and button releases. All of the above techniques can be applied to any known device interaction that yields undesirable movement, and are not limited to button clicks. For example, the above techniques can be applied to scroll wheel actuation, touch pad usage, or capacitive strip usage. Thus, exemplary embodiments of the present invention describe methods and devices for canceling unwanted movement that occurs based upon activating or deactivating another event.

Ex. 1005, 18:39–49. Thus, this argument does not disturb our determination that Petitioner has articulated reasoning with sufficient rational underpinning to support the legal conclusion of obviousness.

For all of the foregoing reasons, we are persuaded by Petitioner's contentions and cited evidence, including the supporting testimony of Dr. Abowd, and agree with and adopt Petitioner's analysis regarding claims 22 and 23. Therefore, we determine that Petitioner has established by a preponderance of the evidence the unpatentability of claim 22 and 23 as obvious over Noguera and Liberty.

D. Asserted Anticipation by Liberty

Petitioner contends that claims 22 and 23 are anticipated by Liberty. Pet. 19–48. In light of our determination that claims 22 and 23 are unpatentable as obvious over Liberty and Noguera, we decline to address the unpatentability of claims 22 and 23 as anticipated by Liberty.

III. CONCLUSION

Based on the information presented and the record developed during trial, we conclude that Petitioner has shown by a preponderance of the evidence that claims 22 and 23 would have been obvious over Liberty and Noguera. In light of our determination of unpatentability, we decline to address whether claims 22 and 23 are unpatentable as anticipated by Liberty.

In summary:

Claims	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not shown Unpatentable**
22–23	102(b)[4]	Liberty		
22–23	103(a)	Noguera and Liberty	22–23	
Overall Outcome			22–23	

IV. ORDER

Accordingly, it is:

ORDERED that claims 22 and 23 of the ’146 patent have been shown to be unpatentable; and

This is a final decision. Parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

[4] As explained above, in light of our determination of unpatentability, we decline to address whether claims 22 and 23 are unpatentable as anticipated by Liberty.

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