

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,

Petitioner,

v.

KEYNETIK, INC.,

Patent Owner.

IPR2018-00986

Patent 8,370,106 B2

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

BRANCH, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision on Remand
Determining All Challenged Claims Unpatentable
35 U.S.C. §§ 144, 318

I. INTRODUCTION

We address this case after a decision by the United States Court of Appeals for the Federal Circuit in *KEYnetik, Inc. v. Samsung Electronics Co., Ltd.*, 841 F. App’x 219 (Fed. Cir. 2021) (hereinafter “*KEYnetik*”), affirming in part and vacating in part our Final Written Decision and remanding for further proceedings.

A. Procedural History

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–20 of U.S. Patent No. 8,370,106 B2 (Ex. 1001, “the ’106 patent”). KEYnetik, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6. On November 7, 2018, we entered a Decision on Institution (Paper 7, “Inst. Dec.” or “Institution Decision”) instituting *inter partes* review of all challenged claims on all asserted grounds (Inst. Dec. 37), as summarized below:

Claims Challenged	35 U.S.C. §	References
1, 3, 6, 10–12, 14, 17	103 ¹	Linjama ² and Lehrman ³
2, 5, 8, 9, 13, 16, 19, 20	103	Linjama, Lehrman, Marvit ⁴

¹ The claims at issue have an effective filing date prior to March 16, 2013, the effective date of the revisions to 35 U.S.C. § 103 in the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA version of § 103.

² U.S. Patent Publication No. 2008/0229255 A1 to Linjama, *et al.*, published Sept. 18, 2008 (Ex. 1005, “Linjama”).

³ U.S. Patent No. 6,703,939 B2 to Lehrman, *et al.*, issued Mar. 9, 2004 (Ex. 1006, “Lehrman”).

⁴ U.S. Patent No. 7,180,500 B2 to Marvit, *et al.*, issued Feb. 20, 2007 (Ex. 1008, “Marvit”).

Claims Challenged	35 U.S.C. §	References
1, 3, 4, 6, 7, 10–12, 14, 15, 17, 18	103	Linjama, Lehrman, Tosaki ⁵
2, 5, 8, 9, 13, 16, 19, 20	103	Linjama, Lehrman, Tosaki, Marvit

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, “PO Resp.”), Petitioner filed a Reply (Paper 19, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 25, “PO Sur-Reply”). To support its arguments, Petitioner relied on the testimony of Dr. Gregory D. Abowd (*see* Exs. 1002, 1014); Patent Owner relied on testimony from Dr. Prasant Mohapatra (*see* Ex. 2005).

Oral argument was held on August 6, 2019, in Alexandria, Virginia, and a transcript of the hearing is included in the record. Paper 37.

On December 18, 2019, we issued a Final Written Decision (Paper 41, “Final Dec.”) finding that Petitioner had demonstrated by a preponderance of the evidence that all challenged claims are unpatentable on at least one asserted ground. On December 6, 2019, Petitioner filed a Notice of Appeal (*see* Paper 40).

The Federal Circuit affirmed our claim construction, determination of motivation to combine *Linjama* and *Tosaki*, and obviousness determination as to claims 1–3, 5–6, 8–14, 16–17, and 19–20. *KEYnetik*, 841 F. App’x at 228. It also vacated the portion of our decision regarding reasonable expectation of success and our obviousness determination as to claims 4, 7, 15, and 18. *Id.* In light of those determinations, the Federal Circuit

⁵ U.S. Patent No. 6,312,335 B1 to Tosaki, *et al.*, issued Nov. 6, 2001 (Ex. 1009, “Tosaki”).

remanded this proceeding to the Board to make a determination of reasonable expectation of success as to the combination of *Linjama* and *Tosaki*. *Id.*

On April 20, 2021, the parties sent an email to the Board jointly requesting a briefing schedule to address the issues on remand. Ex. 3004. We agreed that additional briefing was warranted and authorized Petitioner to file a 5-page Opening Brief and Patent Owner to file a 5-page Response, the briefs addressing whether there would have been a reasonable expectation of success in combining *Linjama* and *Tosaki*. Paper 42. Petitioner filed its Opening Brief on July 7, 2021 (Paper 43, “Pet. Remand Br.”), and Patent Owner filed its Response on August 3, 2021 (Paper 44, “PO Remand Br.”).

Having analyzed the record anew in light of our reviewing court’s directives, we conclude that Petitioner has shown by a preponderance of the evidence that there would have been a reasonable expectation of success in combining the teachings of *Linjama* and *Tosaki*. As such, Petitioner has shown by a preponderance of the evidence that claims 4, 7, 15, and 18 of the ’106 patent, the only claims at issue at this point in the proceeding, are unpatentable.

B. Related Proceedings

We have been informed that the ’106 patent is asserted in *KEYnetik, Inc. v. Samsung Electronics Co., Ltd.*, No. 2-17-cv-02794 (D.N.J.). Pet. 1; Paper 4, 2.

C. The '106 Patent

The '106 patent involves a motion-based system that acquires movement and orientation data from sensors, maintains a sequence of detected conditions, produces a profile description based on the detected sequence, and outputs a corresponding event. Ex. 1001, Abstract. In an exemplary application, the system is usable in a hand-held mobile device, such as a mobile phone, wherein the system detects and processes a user's gestures as the user responds to an incoming call. *Id.* at 6:56–7:30. This sequence is depicted in Figure 3, reproduced below.

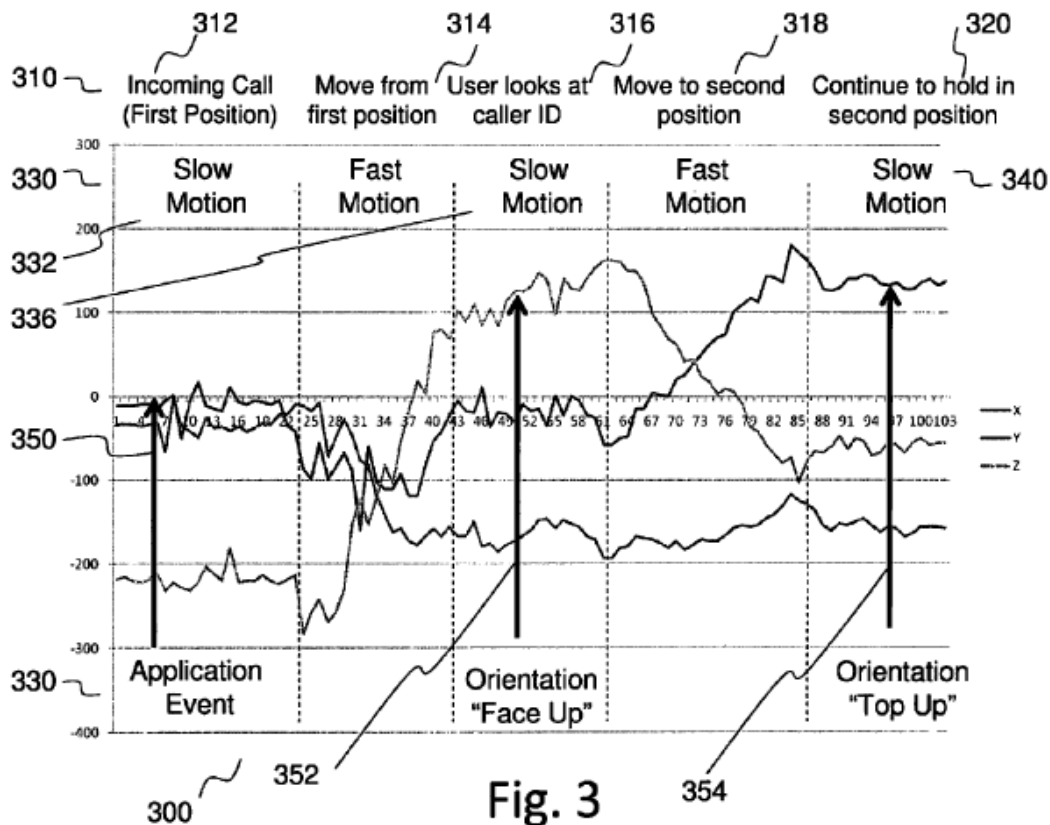
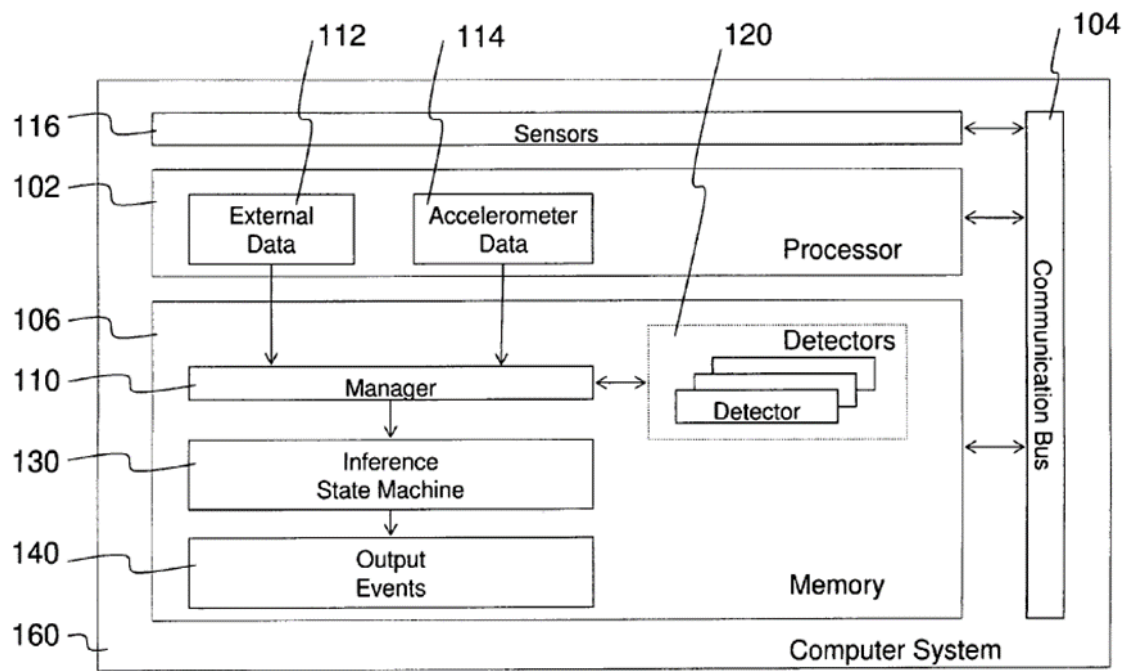


Figure 3 depicts a graph of detected motion along three axes—x, y, and z—against a timeline as a user responds to an incoming call. *Id.* At 312, the incoming call initiates the process as an application event (300). The system detects fast motion as the user moves the phone (314) to a

position to look at the caller ID (316). At 316, the system detects slow motion and a “Face Up” orientation as the user observes the caller ID. The system again detects fast motion (318) as the user positions the device to receive the incoming call. At 320, the system again detects slow motion and also detects that the device is oriented “Top Up.” This sequence of detected movement and orientation is interpreted as a user answering a call. *Id.*

Figure 1, reproduced below, depicts a block diagram of the system architecture.

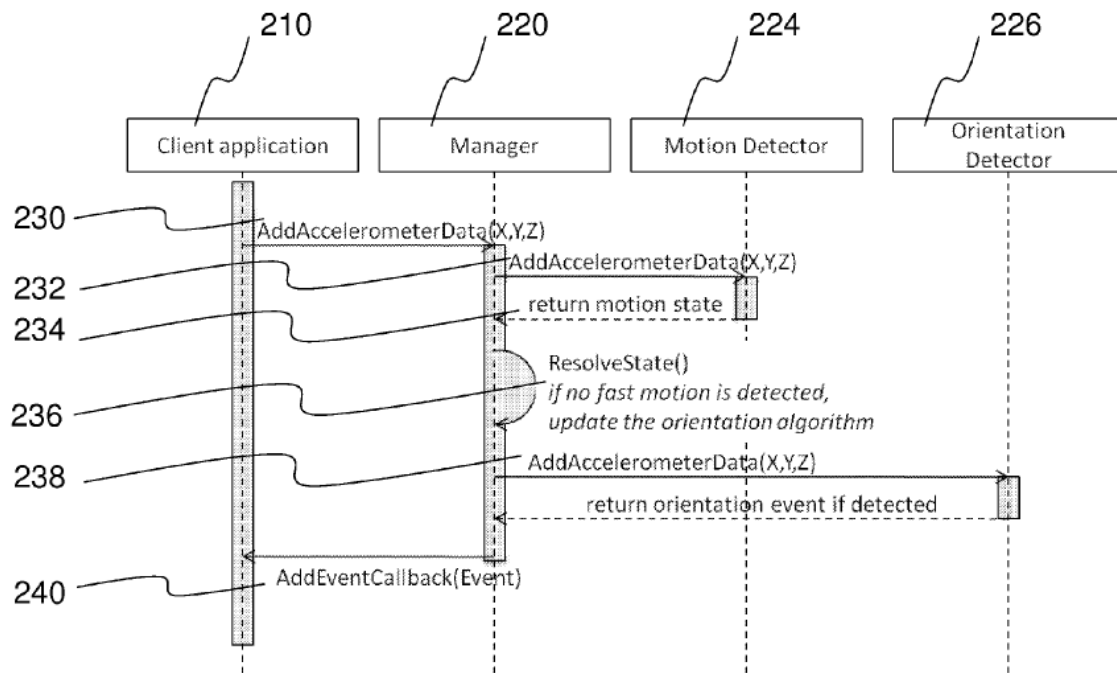


100 ~~~~~
Fig.1

As shown in Figure 1, processor (102), memory (106), and sensors (116) communicate over bus (104). Processor (102) provides data to manager (110) in memory (106), “including external data (112) received from one or more client applications, the operating system and one or more

non-motion sensors, and accelerometer data (114) received from one or more inertial motion sensors (116).” *Id.* at 4:40–56. “The manager (110) communicates the received data to an application detector (120) . . . for processing, and once processed, the manager (110) communicates the processed data to an inference state machine (130).” *Id.* at 4:56–60. “The inference state machine (130) maintains a sequence of the detected motion conditions[,] produces a profile description for the detected motion[, and, b]ased upon matching the profile description, the inference state machine (130) communicates an event (140) that corresponds to the profile description.” *Id.* at 4:66–5:4.

Figure 2, reproduced below, depicts state diagram (200) that shows client application (210) in communication with motion detector (224) and orientation detector (226) of manager (22).



200 Fig. 2

The Specification of the '106 patent describes Figure 2 as follows:

Initially, the manager (220) receives motion data and/or external data (230) from a client application (210), and communicates the received motion data (232) to the motion detector (224) for processing. The motion detector (224) processes the received data and returns motion state data (234) to the manager (220). If the motion detector (224) does not detect fast motion (236), the manager is sending the motion data (238) to the orientation detector (226). Similarly, if a fast motion is detected (240), the motion data is not communicated (and therefore not shown) to the orientation detector (226) for processing. In one embodiment, the manager (220) can communicate an output event (240) to the client application if such an event is programmed in the inference state machine (not shown).

Id. at 6:42–55.

D. The Decision of the Federal Circuit and Issue on Remand

With respect to the claims at issue on remand, namely claims 4, 7, 15, and 18 of the '106 patent, our Final Written Decision held that Petitioner had established, by a preponderance of the evidence, that these claims would have been obvious over *Linjama*, *Lehrman*, and *Tosaki*. See Final Dec. 59–69. Specifically, we determined that Petitioner had established a sufficient rationale to combine the teachings of *Linjama* and *Lehrman* with *Tosaki*, at least because Petitioner’s “power saving” motivation (Pet. 69–70) is unrebutted and Dr. Abowd’s testimony is convincing. Final Dec. 66; see generally PO Resp. 56–69; Pet. Reply 20; Ex. 1002 ¶ 153. The Federal Circuit affirmed our decision with respect to motivation to combine these references. *KEYnetik*, 841 F. App’x at 227–28.

In our Final Written Decision, we also rejected Patent Owner’s argument that “Petitioner ignore[d] its burden to show that a [person of ordinary skill in the art] POSITA ‘would have had a reasonable expectation of success in combining the references.’” PO Sur-Reply 25 (citing *Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017), *cert. denied*, 139 S. Ct. 143 (2018))). We concluded “Petitioner has no such ‘burden’ to show that a POSITA would have had a reasonable expectation of success in combining the references.” Final Dec. 67. The Federal Circuit rejected our conclusion, determining that we “erred in assigning no burden to Samsung and making no finding as to reasonable expectation of success in combining the contested references.” *KEYnetik*, 841 F. App’x at 227–28. The Federal Circuit vacated our final determination of obviousness as to claims 4, 7, 15, and 18, and remanded to

the Board to make a determination of whether there was reasonable expectation of success in combining *Linjama* and *Tosaki*. *Id.*

Accordingly, on remand, we are tasked with determining whether there would have been a reasonable expectation of success in combining *Linjama* and *Tosaki*, which is material to whether claims 4, 7, 15, and 18 would have been obvious.⁶ Whether the subject references teach or suggest the limitations of the claims and whether there would have been a motivation to combine the references have been resolved in the affirmative. *KEYnetik*, 841 F. App’x at 227–28.

E. Remanded Claims

Claims 4 and 7 depend from independent claim 1. Claims 15 and 18 depend from independent claim 12. Claims 1 and 4 are illustrative of the subject matter relevant to our task and are reproduced below:

1. A motion based input system comprising:
 - a processor in communication with a memory;
 - a motion sensor in communication with the processor;
 - the processor to acquire movement data from the motion sensor;
 - a manager configured to execute on the processor and to control motion and orientation detectors, including:
 - a motion detector to detect motion, including identification of a fast motion phase and a slow motion phase, wherein the motion is classified as slow and fast

⁶ *Lehrman* relates to detecting acceleration of a body and evaluating movement of a body relative to an environment. Ex. 1006, Abstract. *Lehrman* discloses identifying “dynamic acceleration” by comparing the combined acceleration of the accelerometers to one “g,” which is acceleration due to gravity. *Id.* at 14:58–15:3. The Federal Circuit did not disturb our findings with respect to *Lehrman*. *KEYnetik*, 841 F. App’x at 227–28.

based upon comparing a magnitude of a motion vector with a magnitude of gravity; and
an orientation detector to detect orientation towards gravity for each slow motion phase; and
an inference state machine in communication with the manager configured to:
maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase;
produce a profile description for the sequence of the detected orientations; and
output an event corresponding to the profile description.

Ex. 1001, 12:31–51.

4. The system of claim 1, further comprising instructions to avoid detecting orientation during a fast motion condition.

Id. at 12:61–62.

II. ANALYSIS

A. Person of Ordinary Skill in the Art

In our Final Written Decision, we determined

A [POSITA] relevant to the '106 Patent, in the 2007–2009 time frame, would have been someone 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.

Final Dec. 10–11. Because this determination remains uncontested, we apply it here.

B. Overview of *Linjama*

Linjama relates to “sens[ing] orientations or sequence of orientations, i.e., gestures, of mobile devices. The orientation or sequence of

orientations control components and/or functions of the mobile device.” Ex. 1005, Abstract. Figure 1 of *Linjama* is reproduced below.

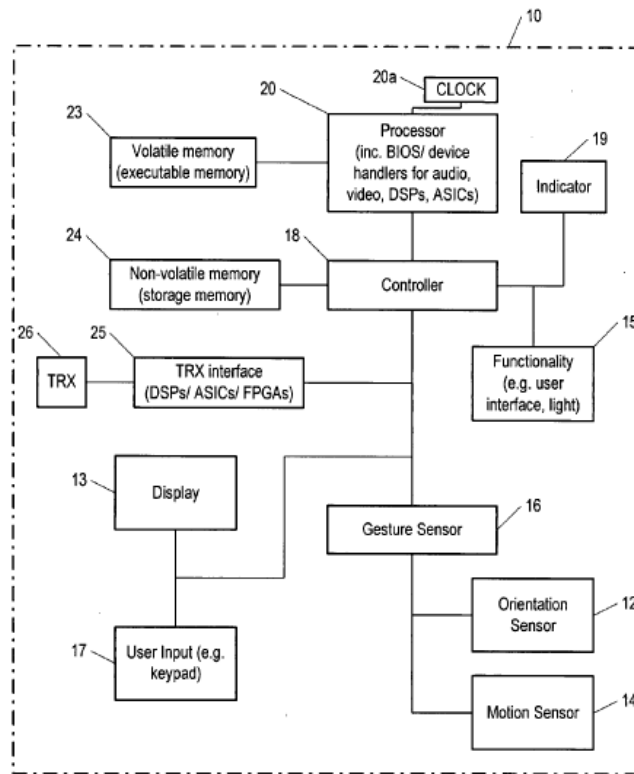


Fig. 1

Figure 1 of *Linjama* depicts mobile device 10 having motion, orientation, and gesture sensors 12, 14, and 16. *Linjama* discloses the following exemplary embodiment:

[T]he motion sensor 14 may determine that the mobile terminal is substantially stationary, and may provide a signal indicating that the mobile terminal is substantially stationary to the gesture detector 16. At approximately the same time, the gesture detector 16 receives from the orientation sensor 12 a signal or signals indicating that the mobile terminal is in a downward orientation. This combination of substantially stationary and downward orientation may correspond to a predefined gesture, and therefore the gesture detector 16 may provide a control signal indicating that the predefined gesture has occurred to the controller 18. For example, the predefined gesture may

correspond to a control signal activation or inactivating one or more of the components, i.e. functionalities of the mobile terminal 10. For example, the control signal for the predefined gesture discussed above may correspond to inactivating the audible sounds of the mobile terminal 10, by placing the mobile terminal 10 in a silent mode.

Id. ¶ 52.

C. Overview of *Tosaki*

Tosaki discloses “an input device used in a game which simulates fishing, or the like.” Ex. 1009, 1:8–9. *Tosaki*’s device includes an acceleration sensor, which selectably operates in two detection modes, detecting either strength of movement or orientation of the device. *Id.* at 7:11–20 (“[B]y selecting the program processing method for the game processing device 2, [the acceleration sensor] can be set to operate as movement detecting means which detects the strength of movement, or to operate as movement detecting means which detects the orientation of the input device.”). Figure 4 of *Tosaki* is reproduced below.

FIG.4

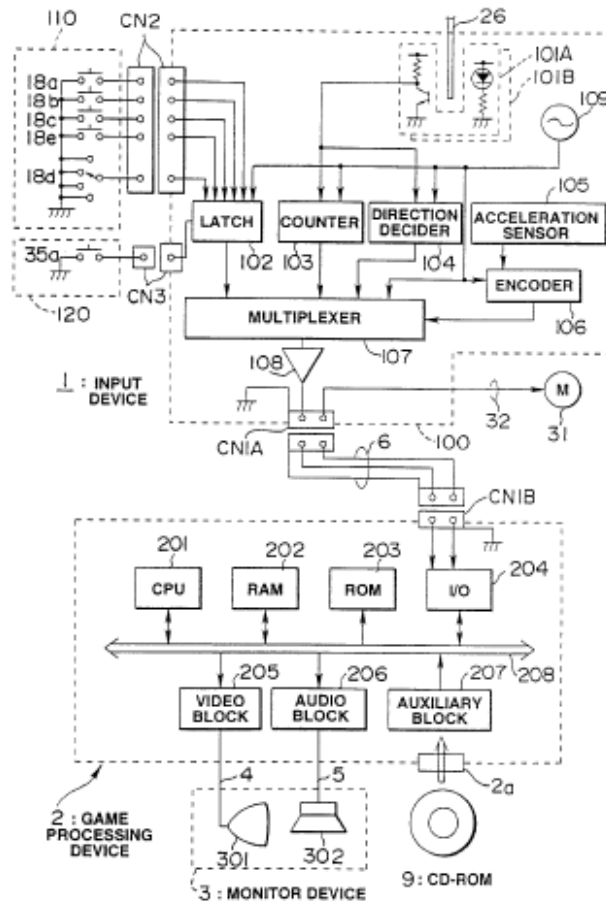


Figure 4 depicts a block diagram of input device 1 and game processing device 2, to which it is connected. Input device 1 contains acceleration sensor 105.

Notably, *Tosaki* discloses the following:

changing between the two detection modes can be set and altered according to the aims of the program. For example, it may be set such that whilst the trigger button is being depressed 35a, or for a prescribed period of time after the trigger button 35a has been depressed, the strength of movement is detected, and at other times, the inclination of the input device is detected. . . .

This clear distinction between an acceleration detection mode and an inclination detection mode is made in order to eliminate the instability arising when the system detects

inclination at all times, whereby even the smallest movements made by the player holding the rod are detected and these are reflected in the game processing, leading to processing [] that is not intended by the player.

Id. at 7:20–39.

D. Discussion

Our reviewing court has tasked us with making a finding as to whether Petitioner has properly established a reasonable expectation of success in combining the teachings of *Linjama* and *Tosaki*. *KEYnetik*, 841 F. App’x at 228. The reasonable expectation of success requirement “refers to the likelihood of success in combining references to meet the limitations of the claimed invention.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016); *see also Allergan, Inc. v. Sandoz, Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013) (“[T]he person of ordinary skill need only have a reasonable expectation of success of developing the claimed invention.”). Moreover, a reasonable expectation of success does not require “an absolute certainty for success.” *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1198 (Fed. Cir. 2014). “[O]bviousness cannot be avoided simply by a showing of some degree of unpredictability in the art so long as there was a reasonable probability of success.” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364 (Fed. Cir. 2007). A reasonable expectation of success is to be assessed from the perspective of one of ordinary skill in the art at the time the invention was made. *Life Techs., Inc. v. Clontech Labs., Inc.*, 224 F.3d 1320, 1326 (Fed. Cir. 2000).

Petitioner argues that we made an “implicit finding of reasonable expectation of success [and that implicit finding] should be maintained for two independently sufficient reasons.” Pet. Remand Br. 1. First, Petitioner

contends that Dr. Abowd's uncontested testimony is that only "simple software changes" would have been required to modify *Linjama* in light of the teachings of *Tosaki*. *Id.* Second, Petitioner asserts that Patent Owner "waived any argument as to lack of reasonable expectation of success by not raising it in the Patent Owner's Response." *Id.* We are persuaded by Petitioner's first argument so we need not address the argument concerning waiver.

According to Petitioner, the "proposed modifications of *Linjama*'s mobile terminal 10 [required] to arrive at claims 4, 7, 15, and 18 involve changes to software code of *Linjama*'s mobile terminal 10." Pet. Remand Br. 2. Dr. Abowd testified as follows in support of Petitioner's challenges:

A POSITA would have also recognized that detecting orientation in only a slow motion phase would have allowed the mobile terminal 10 to save power because the orientation detection would not be conducted all the time. The power savings motivation is consistent with *Linjama*'s discussion in ¶ [46] where *Linjama* explains reducing signaling to reduce power consumption. (Ex. 1005 ¶ [46].)

Ex. 1002 ¶ 153.

Dr. Abowd then testified that

[s]uch a modification of the combined *Linjama-Lehrman* system based on *Tosaki* would have been straightforward for a POSITA to implement. For instance, simple modifications would have been made to the software code for gesture detector 16 such that the orientation of mobile terminal 10 is only detected when the mobile terminal 10 is substantially stationary.

Id. at ¶ 154.

We are persuaded by Dr. Abowd's testimony that a POSITA as defined herein—"someone familiar with the various motion-sensing

technologies . . . hav[ing] earned a bachelor’s degree in electrical engineering, computer science . . . , and hav[ing] at least two years of experience with motion-sensing technologies”—would have found “simple modifications . . . to the software code for gesture detect[ion]” “straightforward . . . to implement.” Ex. 1002 ¶ 154; Pet. 70.

Patent Owner’s argument and evidence on the issue does not overcome Petitioner’s persuasive showing, including Dr. Abowd’s testimony. *See, e.g.*, PO Remand Br.; Ex. 2005 ¶¶ 117–126; Ex. 1015, 93–97. For instance, Patent Owner’s expert, Dr. Mohapatra, did not dispute Dr. Abowd’s testimony that simple modifications to the software code would have been the only necessary changes. Ex. 2005 ¶¶ 117–126. Dr. Mohapatra did not testify that a POSITA would have been incapable of making such modifications, or that the modifications would have been problematic to implement. *Id.*

We also disagree with Patent Owner’s argument that Petitioner’s evidence is unavailing. *See generally* PO Remand Br. For instance, we disagree with Patent Owner that Petitioner’s evidence is “vague and conclusory.” *Id.* at 2. An expert opinion is conclusory if it “cannot reasonably be assessed for reliability.” Comm. Note to Fed. R. Evid. 702 (2000). Dr. Abowd provided an explanation as to the knowledge base of the person of ordinary skill in the art (Ex. 1002 ¶¶ 16–17), he gave a sufficient explanation as to his background to allow us to assess whether he would be able to reliably testify as to the knowledge of that ordinarily skilled artisan (*id.* ¶¶ 3–11), and he explained how one of ordinary skill in the art would have understood the teachings of the references in question (*see e.g.*, *id.* ¶¶ 46–48, 61–64). Thus, on the record before us, we are persuaded that

we have a sufficient basis to assess whether Dr. Abowd could provide credible testimony as to what one of ordinary skill in the art would have found to be a “simple” and “straightforward” implementation. Further, we are persuaded that “simple modifications . . . to the software code for gesture detect[ion]” (Ex. 1002 ¶ 154) is at least as clear as the ’106 patent with respect to software (*see, e.g.*, Ex. 1015, 93–97 (Patent Owner’s expert testifying that software instructions are “obvious” in the ’106 patent, even in the absence of a reference to code or instructions)).

We also disagree with Patent Owner’s logic that the Federal Circuit “rejected” the substance of Petitioner’s evidence in refusing to find harmless our failure to apply it to the question of reasonable expectation of success. PO Remand Br. 1. We see no such “rejection” in the decision of our reviewing court. We also do not find reason to believe that “Dr. Abowd copied his conclusory assertion verbatim from the Petition” rather than testify as to his opinion. *Id.*; *see* Ex. 1002 ¶ 12. Patent Owner points to no evidence in the record to support this assertion. Further, upon questioning from Patent Owner’s counsel, Dr. Abowd testified that the opinions expressed in the declaration were his own. Ex. 2061, 6:3–5 (“Q. Did you form the opinions in the declaration yourself? A. Yes.”).

Thus, based on the complete record, we conclude Petitioner has demonstrated by a preponderance of the evidence that a POSITA would have had a reasonable expectation of success combining *Linjama* and *Tosaki* and that Petitioner has met its burden to show that claims 4, 7, 15, and 18, of the ’106 patent are unpatentable as obvious over *Linjama*, *Lehrman*, and *Tosaki*.

III. CONCLUSION

Based on the arguments in the Petition, Patent Owner Response, Reply, Sur-Reply, Petitioner's Opening Brief on Remand, and Patent Owner's Response Brief on Remand, as well as the evidence of record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 4, 7, 15, and 18, of the '106 patent would have been obvious. The following table summarizes our determinations.

Claims	35 U.S.C §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
4, 7, 15, 18	103(a)	Linjama, Lerhman, Tosaki	4, 7, 15, 18	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has proved by a preponderance of the evidence that claims 4, 7, 15, and 18 of the '106 patent are unpatentable; and

FURTHER ORDERED that, because this is a final written 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.

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