United States Court of Appeals for the Federal Circuit

APPLE INC.,
Appellant

LG ELECTRONICS INC., LG ELECTRONICS USA, INC., GOOGLE LLC,
Appellees

v.

GESTURE TECHNOLOGY PARTNERS, LLC,
Cross-Appellant

2023-1475, 2023-1533

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2021-00920, IPR2022-00091, IPR2022-00359.

Decided: March 4, 2025

MELANIE L. BOSTWICK, Orrick, Herrington & Sutcliffe LLP, Washington, DC, argued for appellant Apple, and appellees LG Electronics Inc., LG Electronics USA, Inc., and Google LLC. Apple also represented by ABIGAIL COLELLA, JONAS WANG; ELIZABETH MOULTON, San Francisco, CA; CLIFFORD T. BRAZEN, ADAM PRESCOTT SEITZ, Erise IP, P.A., Overland Park, KS; PAUL R. HART, Denver, CO.

JOHN WITTENZELLNER, Williams, Simons, and Landis PLLC, Philadelphia, PA, argued for cross-appellant. Also represented by ERIC CARR, MARK JOHN EDWARD MCCARTHY, FRED WILLIAMS, Austin, TX.

ERIKA ARNER, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Washington, DC, for appellee Google LLC. Also represented by DANIEL COOLEY, Reston, VA.

STANLEY JOSEPH PANIKOWSKI, III, DLA Piper LLP (US), San Diego, CA, for appellees LG Electronics Inc., LG Electronics USA, Inc. Also represented by MATTHEW D. SATCHWELL, Chicago, IL.

Before MOORE, *Chief Judge*, PROST and STOLL, *Circuit Judges*.

PROST, *Circuit Judge*.

Apple Inc. ("Apple"), LG Electronics Inc., LG Electronics USA Inc.,[1] and Google LLC ("Google") filed petitions for inter partes review ("IPR") of U.S. Patent No. 7,933,431 ("the '431 patent"). The Patent Trial and Appeal Board ("Board") joined the petitions and issued a final written decision, holding claims 1–10, 12, and 14–31 unpatentable and claims 11 and 13 not unpatentable. *Apple Inc. v. Gesture Tech. Partners, LLC*, Nos. IPR2021-00920, IPR2022-00091, IPR2022-00359, 2022 WL 17364390, at *16 (P.T.A.B. Nov. 30, 2022) ("*Final Written Decision*"). Apple appeals the Board's holding that claims 11 and 13 were not shown to be unpatentable. Gesture Technology Partners, LLC ("Gesture") cross-appeals the Board's holding that claims 1, 7, 12, and 14 are unpatentable and argues that by extension all claims that depend from these claims are

---

[1] LG Electronics Inc., LG Electronics USA Inc. are collectively referred to as LG Electronics.

also not unpatentable. We affirm the Board's holding as to all claims.

BACKGROUND

I

The '431 patent is titled "Camera Based Sensing in Handheld, Mobile, Gaming, or Other Devices." '431 patent title. "The invention relates to simple input devices for computers, particularly, but not necessarily, intended for use with 3-D graphically intensive activities, and operating by optically sensing a human input to a display screen or other object and/or the sensing of human positions or orientations." *Id.* at col. 2 ll. 7–11. "The invention uses single or multiple TV cameras whose output is analyzed and used as input to a computer, such as a home PC, to typically provide data concerning the location of parts of, or objects held by, a person or persons." *Id.* at col. 2 ll. 20–23.

For example, in one embodiment, cameras (100 and 101) are located on top of a monitor (102) and are connected to a computer (106). *See id.* at Fig. 1A (below); *id.* at col. 3 ll. 23–30. The cameras also have associated light sources (111 and 112), e.g. LEDs, that "illuminate targets associated with any of the fingers, hand, feet and head of the user, or objects such as 131 held by a user." *Id.* at col. 3 ll. 34–36. The cameras sense the illuminated targets, *id.* at col. 3 ll. 34–52, and the resulting image information is then used by a computer "to provide various position and orientation related functions of use," *id.* at col. 11 ll. 57–58.

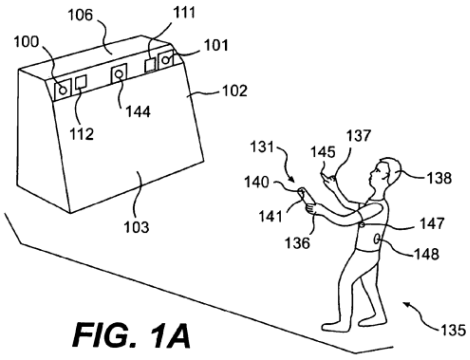

FIG. 1A

The '431 patent expired in July 2020. *See* Cross-Appellant's Br. 57.

II

In February 2021, Gesture sued several companies, including Apple, LG Electronics, and Google, of infringing the '431 patent. On May 21, 2021, Apple filed an IPR ("Apple IPR") challenging the patentability of all claims of the '431 patent. LG Electronics and Google also filed "nearly identical" petitions for IPR of the '431 patent, and the three IPRs were joined. *See* No. IPR2021-00920, Paper 16 (P.T.A.B. Mar. 17, 2022); No. IPR2021-00920, Paper 18 (P.T.A.B. May 6, 2022). The petitions raised four grounds of unpatentability under 35 U.S.C. § 103. Each of the four grounds relied on U.S. Patent No. 6,144,366 ("Numazaki"), J.A. 657–803, and the knowledge of a person of ordinary skill in the art and/or at least one prior-art reference. *See Final Written Decision*, 2022 WL 17364390, at *2. The Board held all claims unpatentable except for claims 11 and 13. *Id.* at *16.

Also relevant to this appeal is another IPR, filed by Unified Patents, LLC ("Unified Patents") on May 14, 2021, seven days before Apple filed its IPR. *See* J.A. 2026–88 (*Unified Patents, LLC v. Gesture Tech. Partners, LLC*, No. IPR2021-00917, Paper 1 (P.T.A.B. May 14, 2021)

("Unified Patents IPR")). Unified Patents is a multi-member organization; Apple is one of its members. J.A. 2090 (*Unified Patents, LLC v. Gesture Tech. Partners, LLC*, No. IPR2021-00917, Paper 7, at 1 n.2 (P.T.A.B. Sept. 22, 2021)).

Both the Unified Patents IPR and Apple IPR appealed here challenged the same patent—the '431 patent—and some of the same claims. On November 21, 2022, the Board issued a final written decision in the Unified Patents IPR, holding claims 7–9 and 12 unpatentable and holding claims 10, 11, and 13 were not unpatentable. *Unified Patents, LLC v. Gesture Tech. Partners, LLC*, No. IPR2021-00917, 2022 WL 17096296, at *20 (P.T.A.B. Nov. 21, 2022).[2] The final written decision in Apple's IPR (IPR2021-00920) issued nine days later on November 30, 2022. *Final Written Decision*, 2022 WL 17364390.

Apple appeals the *Final Written Decision* as to claims 11 and 13, and Gesture cross-appeals as to the remaining claims. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

"We review claim construction de novo and review any subsidiary factual findings based on extrinsic evidence for substantial evidence." *ParkerVision, Inc. v. Vidal*, 88 F.4th 969, 975 (Fed. Cir. 2023) (internal citation omitted). "We review the Board's legal determination of obviousness de novo and its factual findings for substantial evidence." *Outdry Techs. Corp. v. Geox S.p.A.*, 859 F.3d 1364, 1367 (Fed. Cir. 2017) (internal citation omitted). "Substantial evidence is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Intel*

---

[2] Gesture appealed the Board's determination as to claims 7–9 and 12 in *Gesture Technology Partners, LLC v. Unified Patents LLC*, No. 23-1444 (Fed. Cir. 2025).

Corp. v. PACT XPP Schweiz AG, 61 F.4th 1373, 1378 (Fed. Cir. 2023) (internal citation omitted).

Apple challenges the Board's holding that claims 11 and 13 were not shown to be unpatentable, alleging that the Board applied the wrong legal standard for obviousness and ignored Apple's arguments. Gesture responds that Apple has no standing to appeal under the estoppel provision of 35 U.S.C. § 315(e)(1), but even if it did, the Board's findings as to claims 11 and 13 were supported by substantial evidence.

Gesture argues in its cross-appeal that substantial evidence does not support the Board's finding that Numazaki teaches claims 1, 7, 12, and 14 and that the Board misconstrued a limitation in claim 12. Gesture also argues that the Board does not have jurisdiction over expired patents, such as the '431 patent, and thus the Board has no authority to cancel the '431 patent claims in an IPR. We address each argument in turn.

I

As to Apple's appeal, we begin with Gesture's argument that Apple has no standing to appeal under 35 U.S.C. § 315(e)(1).[3] If Apple has no standing, then its appeal must

---

[3] Apple's appeal pertains only to claims 11 and 13. In our proceedings, an appellee may only respond to arguments related to an appeal in the appellee's response brief. Absent unusual circumstances, which are not present here, an appellee is not permitted a sur-reply. When a cross-appeal is filed, four briefs are submitted to this court: appellant's brief, cross-appellant's brief, appellant's reply brief, and cross-appellant's reply brief. The issues raised in the appellant's brief must be contained to the first three briefs filed—i.e., issues related to the main appeal should not be argued in the fourth brief because it is effectively a sur-

be dismissed. If, however, Apple has standing, we must decide the merits of Apple's appeal.

A

"The petitioner in an inter partes review of a claim in a patent . . . that results in a final written decision . . . , or the real party in interest or privy of the petitioner, may not . . . maintain a proceeding before the [Patent] Office with respect to that claim on any ground that the petitioner raised or reasonably could have raised during that inter partes review." 35 U.S.C. § 315(e)(1).

Gesture argues that Apple has no standing to appeal because § 315(e)(1)'s statutory estoppel provision bars Apple's appeal. According to Gesture, once the final written decision issued in the Unified Patents IPR, Apple could not "maintain a proceeding" before the Patent Office or an appeal before this court because Apple is a real party in interest or privy of Unified Patents. *See* Cross-Appellant's Br. 25. Apple counters that Gesture forfeited this estoppel argument because "Gesture . . . never argued before the Board that Apple was a real party in interest or privy of Unified [Patents], or that Apple should be estopped from petitioning for inter partes review of the '431 patent on that basis." Appellant's Reply Br. 24. Additionally, Apple asserts that it is not a real party in interest or privy of Unified Patents. As explained below, we agree with Apple that Gesture's argument that Apple is a real party in interest or privy of Unified Patents was forfeited.

"Whether a party is [a real party in interest] or privy is a question of fact . . . ." *Uniloc 2017 LLC v. Facebook Inc.*,

---

reply. Yet here, Gesture responded to Apple's arguments related to claims 11 and 13 in both its cross-appellant brief and its cross-appellant reply brief. As such, we view Gesture's arguments related to claims 11 and 13 in its cross-appellant reply brief as an improper sur-reply.

989 F.3d 1018, 1028 (Fed. Cir. 2021); *see also Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1351 (Fed. Cir. 2018) (explaining the nature of the inquiry is "fact-dependent"). As an appellate court, we may not decide questions of fact in the first instance on appeal. *Middleton v. Dep't of Def.*, 185 F.3d 1374, 1383 (Fed. Cir. 1999) ("[A]s an appellate court, we may not find facts."). Indeed, we have rejected similar patent owner arguments raising factual questions as to real party in interest or privy status for the first time on appeal. *See Acoustic Tech., Inc. v. Itron Networked Sols., Inc.*, 949 F.3d 1360, 1364 (Fed. Cir. 2020).

In *Acoustic Technology*, Acoustic sued Itron for infringement of U.S. Patent No. 5,986,574 ("the '574 patent") in March 2010. *Id.* at 1362. Six years later, Acoustic sued Silver Spring for alleged infringement of the same patent. *Id.* "In response, on March 3, 2017, Silver Spring timely filed two IPR petitions that challenge[d] the '574 patent . . . ." *Id.* Both IPRs were instituted on September 8, 2017. *Id.* at 1361. Nine days later, Silver Spring agreed to merge with Itron. *Id.* The merger was completed in January 2018, and the Board entered final written decisions in both IPRs in August 2018, holding all challenged claims unpatentable. *Id.* at 1363. Acoustic appealed the merits of that decision and argued that the "final written decisions should be vacated because the underlying IPR proceedings are time-barred under 35 U.S.C. § 315(b)." *Id.* Section 315(b) provides:

> An inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, *real party in interest, or privy of the petitioner* is served with a complaint alleging infringement of the patent.

35 U.S.C. § 315(b) (emphasis added). On appeal, for the first time, Acoustic alleged that Itron was a real party in interest to the Silver Spring IPRs and was therefore time-

barred based on the March 2010 complaint that Acoustic filed against Itron. "We [held] that Acoustic ha[d] waived its time-bar challenge to the IPRs because it failed to present those arguments before the Board." *Acoustic Tech.*, 949 F.3d at 1364.[4]

While *Acoustic Technology* involved a question under § 315(b) and the case before us involves a question under § 315(e)(1), both statutory provisions involve a question of whether a nonparty to an IPR is a real party in interest or privy of the petitioner under the same statute, 35 U.S.C. § 315—i.e., both statutory provisions involve the same question of fact. In both *Acoustic Technology* and here, the patent owner was aware of the relationship between the IPR petitioner and the alleged real party in interest/privy many months before the final written decision issued. In *Acoustic Technology*, "Acoustic became aware of the merger as of January 8, 2018, more than seven months before the Board issued its final written decisions." 949 F.3d at 1364. And here Gesture admits that "[d]uring the course of IPR2021-00917, Unified Patents admitted that Apple, Inc. (i.e., Petitioner here) was a member when Unified Patents filed the Unified IPR Petition." Cross-Appellant's Br. 15 (citing J.A. 2090). The evidence that Gesture relies on for this assertion is from an admission by Unified Patents in September 2021—more than a year before the final written decisions issued in either the Unified Patent IPR or Apple IPR. Therefore, like *Acoustic Technology*, we hold that Gesture has forfeited its real party in interest/privy

---

[4] While *Acoustic Technology* used the term "waived," we understand it to have been referring to the doctrine of forfeiture. *See In re Google Tech. Holdings LLC*, 980 F.3d 858, 862 (Fed. Cir. 2020). We therefore use "forfeiture" or "forfeited" instead of "waiver" or "waived" in this opinion.

argument "because it failed to present those arguments before the Board." *Acoustic Tech.*, 949 F.3d at 1364.[5]

B

Having determined that Gesture forfeited its argument under § 315(e) for failure to raise the factual dispute before the Board, we turn to the merits of Apple's appeal which relates to claims 11 and 13 of the '431 patent, which recite:

> Apparatus according to claim 7, further including means for transmitting information.

'431 patent claim 11.

> Apparatus according to claim 7, wherein said apparatus is a cellular phone.

Id. at claim 13.

Apple argues that these claims are unpatentable as obvious in view of Numazaki and the knowledge of person of ordinary skill in the art. Specifically, Apple contends that Numazaki's fifth embodiment teaches a conference record system or TV telephone, and Numazaki's eighth embodiment teaches a portable device. Apple argues that a person of ordinary skill in the art would be motivated to combine these two embodiments—i.e., the modification from a TV telephone to a cellphone would have been obvious based on the knowledge of a person of ordinary skill in the art. Appellant's Br. 26; *see also id.* at 28–29 ("[A] person of

---

[5] While we maintain that Gesture's cross-appellant's reply brief was an improper sur-reply, we note that its argument raised there, that standing may never be waived, is not correct. *See* Cross-Appellant's Reply Br. 4. While Article III standing may not be waived, statutory standing arguments like those raised here are subject to different rules of waiver and forfeiture. *See Brooklyn Brewery Corp. v. Brooklyn Brew Shop*, 17 F.4th 129, 140 (Fed. Cir. 2021).

ordinary skill in July 1999 would have interpreted Numazaki's disclosure of a 'TV telephone' as a cellular phone (with a cellular transceiver) based on the state of the art at the time."). But the Board disagreed.

The Board began its analysis of these claims with Apple's argument that "means for transmitting information" in claim 11 is subject to 35 U.S.C. § 112 ¶ 6 "and that the structure corresponding to the claimed function is 'at least a wireless cellular transceiver.'" *Final Written Decision*, 2022 WL 17364390, at *13. The Board accepted that "construction as consistent with the current record." *Id.* at *5. But Apple's petition in addressing claim 11 "include[d] no analysis regarding whether the transmission functionality included in Numazaki[] . . . is an equivalent of 'a wireless cellular transceiver' or a cell phone." *Id.* at *14. In other words, despite Apple's argument for a specific claim construction, the petition presented no argument as to how Numazaki, alone or in view of the knowledge of a person of ordinary skill in the art, would meet this claim construction. *See* J.A. 165–66.

With respect to claim 13, the Board concluded that Apple's expert testimony did not support the idea that "videoconference telephones were also known as cellular videophones." *Final Written Decision*, 2022 WL 17364390, at *14 (internal citations omitted). Apple's expert had admitted that "videophones were not prevalent in the marketplace at the time." J.A. 167; *see also id.* ("researchers were *working on* this technology" (emphasis added)). Indeed, Apple's expert instead relied on a New York Times newspaper article "discussing the global efforts *preceding the launch* of a market leading cellular videophone." *See* J.A. 906 (emphasis added); *see also* J.A. 1026–32. And the Board found that this article "[did] not discuss videoconference telephones or equate videoconference telephones with cellular videophones." *Final Written Decision*, 2022 WL 17364390, at *14.

According to Apple, the Board erred by (1) misapplying the legal standard for obviousness by only looking to the explicit disclosures of Numazaki instead of Numazaki in view of the knowledge of a person of ordinary skill in the art and (2) failing to engage in reasoned decision making in violation of the Administrative Procedure Act ("APA"). Appellant's Br. 26. We disagree. While it is correct that the Board's decision first addressed whether Numazaki explicitly discloses wireless cellular transceivers or cell phones, the Board did not stop there. As explained above, the Board also rested on the petition's lack of analysis about how Numazaki (with or without the knowledge of a person of ordinary skill in the art) would apply to the claim construction that Apple had advocated for—i.e., "[t]he Petition includes no analysis . . . ." *Final Written Decision*, 2022 WL 17364390, at *14. "Ultimately, it is the petitioner's burden to present a clear argument." *See Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1377 (Fed. Cir. 2023); *see also Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) ("It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.'" (quoting 35 U.S.C. § 312(a)(3) (2012))). And with respect to claim 13, the Board simply found the evidence did not support Apple's argument. *Final Written Decision*, 2022 WL 17364390, at *14. This is not a misapplication of the obviousness standard.

We likewise disagree with Apple's APA argument, which alleges that the Board "ignore[d] much of its evidence." Appellant's Br. 39. According to Apple, the Board ignored Apple's argument that Numazaki's fifth embodiment in view of the knowledge of a person of ordinary skill in the art teaches a cellular phone, which was allegedly supported by the New York Times article and discussions in Numazaki about low-cost communications. But Apple

overstates what the Board ignored. Indeed, the Board did consider these arguments. *Final Written Decision*, 2022 WL 17364390, at *14. And it applied a reasoned analysis for rejecting those arguments. *Id.* While we agree that the Board did not expressly explain its thoughts on the relevance of low-cost communications, "there is no requirement that the Board expressly discuss each and every negative and positive piece of evidence lurking in the record to evaluate a cursory argument." *Novartis AG v. Torrent Pharms. Ltd.*, 853 F.3d 1316, 1328 (Fed. Cir. 2017); *see also Yeda Rsch. and Dev. Co. v. Mylan Pharms. Inc.*, 906 F.3d 1031, 1046 (Fed. Cir. 2018) (The Board "is not required . . . to address every argument raised by a party or explain every possible reason supporting its conclusion." (cleaned up)). In sum, we disagree that the Board "utterly 'failed to . . . evaluate [Apple's] primary argument.'" Appellant's Br. 42 (quoting *Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1325 (Fed. Cir. 2015)). The Board did not commit an APA violation.

For the reasons above, we affirm the Board's determination that claims 11 and 13 were not shown to have been unpatentable.

II

Gesture argues in its cross-appeal that the Board erred in determining that Numazaki renders obvious claims 1, 7, 12, and 14. We disagree.

A

Claim 1 recites:

> A method for controlling a handheld computing device comprising the steps of:
>
> holding said device in one hand;
>
> moving at least one finger in space in order to signal a command to said device;

> *electro-optically sensing light reflected from said at least one finger using a sensing means associated with said device*;
>
> determining from said sensed light the movement of said finger, and
>
> using said sensed finger movement information, controlling said device in accordance with said command.

'431 patent claim 1 (emphasis added). Before the Board, Apple argued that Numazaki's eighth embodiment, depicted in Figure 78, "depicts a portable version of the basic information input generation apparatus described in [Numazaki's] first embodiment." Appellant's Reply Br. 37; *see* J.A. 150–52. According to Apple, together Numazaki's first and eighth embodiments render claim 1 obvious. The Board agreed.

Gesture argues that substantial evidence does not support that view because Numazaki does not teach or suggest "electro-optically sensing light reflected from said at least one finger using a sensing means associated with said device." Cross-Appellant's Br. 52. Specifically, Gesture disputes that Numazaki's "photo-detection sensor unit" is the claimed "sensing means," *id.*, because there is no "photo-detection sensor unit" in the first seven embodiments and the first embodiment cannot be combined with the eighth embodiment. *Id.* at 53–54. The Board properly rejected this argument, explaining that "the position of Patent Owner and Patent Owner's declarant is inconsistent with the express disclosure of Numazaki that makes clear that the photo-detection section of the eighth embodiment, including the 'photodetection sensor unit' of Figure 78, incorporates the disclosure of the photodetection section of the prior embodiments, including Figure 2." *Final Written Decision*, 2022 WL 17364390, at *9; *see also* Numazaki col. 50 ll. 21–24 ("This eighth embodiment is directed to a system configuration incorporating the information input

generation apparatus of the present invention as described in the above embodiments.").

Gesture also contends that the Board improperly "mapped Numazaki's 'reflected light extraction unit' to the claimed 'sensing means.'" Cross-Appellant's Br. 54. Gesture bases this argument on an incomplete quotation from the *Final Written Decision* that, according to Gesture, says "Numazaki's reflected light extraction unit . . . teach[es] a camera/sensing unit." Cross-Appellant's Br. 54 (quoting *Final Written Decision*, 2022 WL 17364390, at *9). The full quote, however, states: "Thus, we determine that one of skill in the art would have understood Numazaki to teach that the 'photo-detection sensor unit' in Fig. 78 is or at least includes a camera/sensing means, just as Numazaki's reflected light extraction unit, with its two photo detection units in Figure 2, teach a camera/sensing means." *Final Written Decision*, 2022 WL 17364390, at *9. Based on the full quote, we agree with Apple that "the Board was consistently mapping the sensing means to the photo-detection units, but pointing out that those components are housed within the reflected light extraction unit." Appellant's Reply Br. 46. In this quotation, discussing both Figure 78 and Figure 2, the Board specifically pointed to the "photo-detection sensor unit" and "photo detection unit"[6] in identifying the "sensing means."

---

[6] Throughout Gesture's briefs, it contends that it is unclear whether Numazaki's "photo-detection sensor unit" in Figure 78 is different from the "photo-detection units" in Figure 2. This argument is unpersuasive. Both components perform the same functionality as described in the specification, both discuss the components as "photo-detection sections," and both have nearly identical names. *Compare* Numazaki col. 10 ll. 40–46; *id.* at col. 11 ll. 20–25, *with id.* at col. 53 ll. 20–25.

Additionally, Gesture argues that Numazaki's "feature data generation unit" does not "determine[] . . . the movement of said finger" from the light sensed by Numazaki's "photo-detection sensor unit." Cross-Appellant's Br. 52–53. Claim 1 requires "*sensing light* . . . using a sensing means [and] determining from said *sensed light* the movement of said finger." As we concluded above, the Board properly found that the "sensing means" is Numazaki's "photo-detection sensor unit." Therefore, to meet the limitation of claim 1, Numazaki's "photo-detection sensor unit" must sense light, and Numazaki's computing device must determine from the sensed light the movement of the finger. Gesture alleges that Numazaki does meet this limitation because there is no drawing or express disclosure in Numazaki that shows a relationship between the "photo-detection sensor unit" and Numazaki's computing device (i.e., "the feature data generation unit"). As a preliminary point, Gesture's argument assumes that express disclosure is required, but Apple's argument is grounded in obviousness, which does not require an express disclosure. *See, e.g.*, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) ("[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). Regardless, Gesture does not appear to have raised this argument before the Board, and we therefore conclude it was forfeited. *See* J.A. 247–49; J.A. 341–45; Cross-Appellant's Reply Br. 8–10 (providing no reply to Apple's contention that this argument was forfeited).

For the reasons above, we conclude that substantial evidence supports the Board's finding that Numazaki teaches the disputed "electro-optical sensing" limitation.

B

Gesture's next set of arguments relates to independent claims 7 and 14. In particular, Gesture argues that the Board erred by (1) mapping the claimed "camera means" in claim 7 and "camera" in claim 14 to Numazaki's "photo-detection sensor unit"; (2) finding that Numazaki teaches claims 7 and 14's limitation that a "computer means" "analyz[es] said image"; and (3) finding that Numazaki teaches a "computer means" as construed by the Board under 35 U.S.C. § 112, ¶ 6. We address each of these arguments in turn, below. The relevant portions of claims 7 and 14 recite:

> Handheld computer apparatus comprising:
>
> . . .
>
> a camera means associated with said housing for obtaining an image using reflected light of at least one object positioned by a user operating said object;
>
> computer means within said housing for analyzing said image to determine information concerning a position or movement of said object; and
>
> . . . .

'431 patent claim 7.

> A method for controlling a handheld computing device comprising the steps of:
>
> . . .
>
> associating a camera with said device, said camera viewing at least a portion of the body of a user operating said device or an object held by said user, in order provide image data concerning said portion or object;

> using said computer, analyzing said image data to determine information concerning a user input command; and
>
> . . . .

Id. at claim 14.

1

The Board found that Numazaki's "camera" / "camera means" is its "reflected light extraction unit, with its two photo detection units in Figure 2 teach a camera." *Final Written Decision*, 2022 WL 17364390, at *8. In disputing this finding, Gesture repeats the same arguments it made with respect to claim 1—i.e., that Numazaki is unclear as to the difference between its "photo-detection sensor unit" and "photo-detection units" and that the Board erred in mapping Numazaki's "reflected light extraction unit" to the "camera means." *See* Cross-Appellant's Br. 49–50. For the same reasons explained above with respect to claim 1, we also reject these arguments in the context of claim 7. *See* Discussion II.A., *supra* at 15, 16 n.6.

2

Next, Gesture disputes that Numazaki teaches a "computer means . . . for analyzing said image to determine information concerning a position or movement of said object." Cross-Appellant's Br. 41. So the argument goes, "the image" must be obtained from the "camera means," and according to Gesture, there is no relationship between the identified "computer means" and "camera means" in Numazaki. Cross-Appellant's Br. 41. Specifically, Gesture argues that there is no relationship between the "feature data generation unit" (i.e., the Board-identified "computer means") and Numazaki's "photo-detection sensor unit" (i.e., the Board-identified "camera means") and that the Board erred by instead equating Numazaki's "photo-

detection sensor unit" with its "reflected light extraction unit." Cross-Appellant's Br. 42.[7]

As explained above, express disclosures are not required when a petitioner is arguing obviousness. *KSR*, 550 U.S. at 418. Additionally, substantial evidence supports the Board's finding that Numazaki teaches a relationship between Numazaki's "feature data generation unit" and Numazaki's "photo-detection sensor unit." Indeed, Gesture admits that Numazaki's "feature data generation unit" has a relationship with its "reflected light extraction unit." Cross-Appellant's Br. 42; *see also* Numazaki, Fig. 1 (showing a relationship between the "reflected light extraction unit" and "the feature data generation unit"). Figure 2 further shows that the "photo-detection units" are a part of the "reflected light extraction unit." *See id.* at Fig. 2. If the "reflected light extraction unit" has a relationship with the "feature data generation unit," then so do the "reflected light extraction unit's" components—i.e., the "photo-detection units" / "photo-detection sensor units."

For the same reasons, we disagree that the Board equated Numazaki's "photo-detection sensor unit" with its "reflected light extraction unit." *See* Discussion II.A, *supra* at 15. As explained above, the Board's statement that "Numazaki's reflected light extraction unit, with its two photo detection units in Figure 2, teach a camera/sensing means," *Final Written Decision*, 2022 WL 17364390, at *9, reflects that the Board consistently mapped the camera

---

[7] Gesture again argues that it is unclear whether the "photo-detection sensor unit" in Numazaki's eighth embodiment is incorporated in Numazaki's embodiments 1–7. Cross-Appellant's Br. 43. As explained above, we find this argument unpersuasive in light of Numazaki's express disclosure that the eighth embodiment may be incorporated with the earlier embodiments. *See* Numazaki col. 50 ll. 21–24.

means to the photo-detection units. *See* Appellant's Reply Br. 46.

Likewise, we are unpersuaded by Gesture's argument that because the "reflected light extraction unit" contains additional functionality (e.g., the "difference calculation unit"), that somehow undermines that Numazaki "photo-detection units" in Numazaki's "reflected light extraction unit" disclose a "camera means." *See* Cross-Appellant's Br. 44–45. Indeed, the Board rejected the argument that "photo-detection unit" does not specifically teach or suggest a camera and concluded that "[t]he disclosure of Numazaki when discussing photo-detecting is directed to taking images; and according to Patent Owner obtaining images 'is what cameras do.'" *Final Written Decision*, 2022 WL 17364390, at *11 (citing J.A. 339 (Patent Owner Response)); *see also* Numazaki col. 11 ll. 20–31 (describing the photo-detection unit "detects the optical image"); *id.* at col. 11 ll. 38–52. That finding is supported by substantial evidence.

Finally, we reject Gesture's argument that Numazaki does not teach analyzing images obtained from the "photo-detection units." Cross-Appellant's Br. 46. Gesture contends that the function of "analyzing an image 'to determine positioning or movement of an object" is missing from Numazaki because Numazaki requires subtracting one image from another image and this subtraction process does not involve determining information about the position of movement of the imaged object. *Id.* But Apple did not rely on this subtraction process as the embodiment of Numazaki that teaches this limitation. *See Final Written Decision*, 2022 WL 17364390, at *13 n.14. Thus, we agree with the Board that this argument is "not relevant." *Id.*

3

The Board determined that claim 7's limitation that reads "computer means within said housing for analyzing said image to determine information concerning a position

or movement of said object" is a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. Gesture primarily argues that Numazaki does not teach the claimed structure that "includes a computer/processor programmed (1) to identify either natural or artificial features on an object as described . . . or (2) to track the movement using one of the disclosed methods." *Final Written Decision*, 2022 WL 17364390, at *12; *see* Cross-Appellant's Br. 46–49. Under the Board's mapping of Numazaki to the '431 patent claim limitations, this would require Numazaki's "compact portable information device" (i.e., the claimed "handheld computer apparatus") to incorporate Numazaki's "feature data generation unit" (i.e. computer means) software. *Final Written Decision*, 2022 WL 17364390, at *13. Despite Gesture's arguments here focused on hardware, Gesture admitted before the Board that Numazaki discloses this structure—i.e. Gesture admitted that "Numazaki discloses that 'it is also possible to realize this operation of the feature data generation unit in a form of software.'" *See id.* (quoting J.A. 426 (Gesture's IPR sur-reply)). This admission was supported by Numazaki and expert testimony. *See* Numazaki col. 27 ll. 41–56; J.A. 903–04. We therefore conclude that the Board's determination that Numazaki teaches the claimed structure is supported by substantial evidence. To the extent Gesture's argument is a criticism of Numazaki's "silence on how" this was implemented, this court has repeatedly held "in general, a prior art reference asserted under § 103 does not necessarily have to enable its own disclosure, i.e., be 'self-enabling,' to be relevant to the obviousness inquiry." *Raytheon Techs. Corp. v. General Elec. Co.*, 993 F.3d 1374, 1380 (Fed. Cir. 2021) (citing *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991)). Gesture provides no reason for why we should deviate from that general rule here.

For the reasons above, substantial evidence supports the Board's findings that Numazaki teaches claims 7 and 14.

C

With respect to claim 12, Gesture argues that the Board misconstrued the term "light source for illuminating said object" and that Numazaki does not render claim 12 obvious. Cross-Appellant's Br. 37–41. We disagree.

1

As to claim construction, the Board gave the term its plain and ordinary meaning. But Gesture argues this is incorrect. *See* Cross-Appellant's Br. 37 (criticizing the Board for concluding that "'a light source for illuminating said object,' simply means exactly what it says"). Gesture instead argues that "the most straightforward meaning of claim 12 is that the light source of the handheld computer apparatus illuminates the object while the 'camera means' obtains an imagine of the object." *Id.* at 38. Gesture bases its construction on reading claims 7 and 12 together:

> Handheld computer apparatus comprising:
>
> . . .
>
> a camera means associated with said housing for obtaining an image using reflected light of at least one object positioned by a user operating said object; . . . .

'431 patent claim 7

> Apparatus according to claim 7, further including a light source for illuminating said object.

Id. at claim 12. According to Gesture, because claim 7 includes a "camera means . . . using reflected light," then the *light source* in claim 12 must be turned on when the "camera means" obtains the image.

"[T]he words of a claim 'are generally given their ordinary and customary meaning.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

"[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314. This includes reading a dependent claim in the context of a claim on which it depends. Thus, we agree with Gesture that claims 7 and 12 should be read together. But read together, we agree with the Board that claim 12 should be read according to its plain and ordinary meaning. In contrast to the plain and ordinary meaning, Gesture's claim construction appears to add a temporal limitation to the claims that is simply not there and relies on an argument that claim 7's "reflected light" implicitly provides an antecedent basis for claim 12's "light source." We disagree that claim 7 provides such an antecedent basis. *See Final Written Decision*, 2022 WL 17364390, at *5.

2

We further disagree with Gesture's argument that substantial evidence does not support the Board's finding that Numazaki teaches claim 12. While not entirely clear, Gesture appears to argue that the "light source" in claim 12 is turned off during photo detection and therefore it is not "illuminating said object." *See* Cross-Appellant's Br. 39–40 ("[e]ach of the first photo-detection unit 109 and the second photo-detection unit 110 [of the reflected light extraction unit] detects the optical image [of the object] formed on the photo-detection plane . . . the lighting unit 101 emits the light when the first photo-detection unit 109 is in a photo-detecting state, whereas the lighting unit 101 *does not emit the light* when the second photo-detection unit 110 is in a photo-detecting state." (quoting Numazaki col. 11 ll. 20-33) (alterations and emphasis in original)). Even if this is true, the problem for Gesture is that the light is only off when the second detection unit is in a photo-detecting state. The same is not true for unit 109. Indeed, Numazaki expressly states that "lighting unit 101 *emits the light* when the first photo-detection unit 109 is in a photo-detecting state." Numazaki col. 11 ll. 20-33 (emphasis added). Gesture does not dispute this. *See* Cross-Appellant's Br. 40 (stating the

"'lighting unit' . . . is *off* for at least half the time" (emphasis in original)). Because the light unit is also on for at least half the time, the Board's determination that Numazaki discloses claim 12 is supported by substantial evidence.

D

Gesture's final argument is that the Board does not have jurisdiction over IPRs involving expired patents, including the '431 patent at issue here. *See* Cross-Appellant's Br. 55–57. We rejected this same argument in *Apple Inc. v. Gesture Technology Partners, LLC*, 127 F.4th 364, 368–69 (Fed. Cir. 2025) and confirmed that "the Board has jurisdiction over IPRs concerning expired patents." *Id.* at 368. For the same reasons, we reject this argument here.

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm the Board's holding that claims 1–10, 12, and 14–31 of the '431 patent are unpatentable and claims 11 and 13 were not shown to be unpatentable.

AFFIRMED

COSTS

No costs.