

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC., META PLATFORMS TECHNOLOGIES, LLC, and
TWISTED PIXEL GAMES, LLC,
Petitioner,

v.

EIGHT KHZ, LLC,
Patent Owner.

IPR2023-01020
Patent 10,448,184 B1

PATENT OWNER'S SUR-REPLY UNDER 37 C.F.R. § 42.23

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2003	Memorandum from Katherine K. Vidal on Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022)
2004	Lex Machina, Patent Cases (All Judges) Time to Trial, U.S. District Court for the Western District of Texas, September 9, 2023
2005	Lex Machina, Patent Cases (Judge Alan D. Albright) Time to Trial, U.S. District Court for the Western District of Texas, September 9, 2023
2006	Declaration of Dr. Durand R. Begault regarding U.S. Patent Nos. 10,368,179 and 10,448,184
2007	Curriculum Vitae (CV) of Dr. Durand R. Begault
2008	Defendant's Final Invalidity Contentions, Ex. E-10, October 18, 2023
2009	Defendant's Final Invalidity Contentions, Ex. D-10, October 18, 2023
2010	Defendant's Final Invalidity Contentions, October 18, 2023
2011	Defendant's Final Invalidity Contentions, Ex. F-09, October 18, 2023
2012	Declaration of Dr. Durand R. Begault regarding U.S. Patent Nos. 10,368,179 and 10,448,184 in support of Patent Owner's Response (April 2, 2024) ("Begault Supp.")
2013	Curriculum Vitae (CV) of Dr. Durand R. Begault (updated)
2014	Deposition transcript of Dr. Agnieszka Roginska, taken on February 27, 2024 ("Roginska Depo.")
2015	Excerpt from Merriam Webster's Dictionary, available at https://www.merriam-webster.com/dictionary/environment , accessed March 11, 2024

I. INTRODUCTION

The challenged claims of the ‘184 Patent¹ are not rendered obvious by any of the Grounds in the Petition. Faced with PO’s positions, Petitioner resorts to fabricating non-existent disclosure in the prior art—“Relevance Signal” that appears nowhere in Sauk and “automatic determination of relevance” that appears nowhere in Clement—and fabricating a non-existent legal standard for written description—requiring a “that a POSITA would alter Figure 6 in the precise way PO proposes to try to match the claims” in contrast to the correct legal standard of whether the disclosure “reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” Petitioner’s arguments fail and thus the challenged claims should be upheld.

II. CLAIM CONSTRUCTIONS

The Board should adopt the claim constructions for the terms “environment” and “3D virtual environment” provided in the POR. POR 6-10. While Petitioner asserts that PO is “try[ing] to manufacture written description support,” no such manufacturing is required. Regardless of how “environment” and “3D virtual environment are construed,” the parent application provides ample written description support for generating a warning/alert based on when the user leaves the

¹ Patent Owner uses the same abbreviations as in the Response.

3D virtual environment, the physical environment, or the augmented reality environment, as discussed in additional detail in Section IV.A. below.

A. “Environment”

As established in the POR, the term “environment” in independent claims 7 and 14 and associated dependent claims should be construed to mean “physical surroundings in which a user operates.” POR 6-8. The intrinsic evidence and doctrine of claim differentiation supports this construction.

Petitioner erroneously suggests that Dr. Begault provides conflicting positions. Reply 4. As Dr. Begault described in his declaration, leaving the environment is an “external condition” “relative to the respective environment.” Ex. 2006PP13-14. In his deposition, Dr. Begault further clarified that the leaving operation of the user is in a physical environment, while there may also be an associated virtual environment. Ex. 1147:126 8-17. Indeed, that is precisely what is disclosed in the ‘184 Patent.

B. “3D virtual environment”

The term “3D virtual environment” in independent claim 1 and associated dependent claims should be construed to mean “three-dimensional perceived surroundings in which a user operates that incorporates a virtual image and/or sound.” POR 8-10. Petitioner erroneously states that PO suggests “a sound-only 3D environment.” Reply 6. However, PO has never suggested that the current

claims could be a “sound-only environment.” Indeed, claim 1 recites inclusion of a virtual image. Instead, PO’s construction acknowledges that the 3D virtual aspects of the environment may be a 3D binaural audio soundscape, as described in the specification and acknowledged by Petitioner’s expert. ‘184 Patent, 2:40-46; *see also* Roginska Depo. (Ex. 2014), 176:3-6 (acknowledging that a 3D soundscape could be a 3D virtual environment).²

Of course, as recited by claim 1, the virtual image is also included in the 3D virtual environment, but absent this recitation, the 3D virtual environment need not include any visual representation, let alone visual immersion, as previously suggested. Accordingly, while claim 1 does require inclusion of a virtual image, the 3D virtual nature of the 3D virtual environment may be wholly 3D audio virtually localizing to a virtual image.

² Petitioner misconstrues their own expert’s testimony, saying “Dr. Roginska testified that a 3D soundscape ‘could be *in* a virtual environment’” while omitting that Dr. Roginska also testified that, in response to the question of whether a 3D soundscape could be a 3D virtual environment, Petitioner’s expert answered: “It could be.” *Id.*

III. GROUND 1 – THE HYPOTHETICAL COMBINATION DOES NOT ESTABLISH A *PRIMA FACIE* CASE OF OBVIOUSNESS

A. A POSITA Would Not Have Combined Clement and Osman with Sauk

There is no motivation to combine Clement and Osman with Sauk because the combination would frustrate the purpose of Sauk, as already recognized by the Board. Faced with this deficiency, Petitioner fabricates disclosure in Sauk regarding a “Relevance Signal”—a phrase that does not appear anywhere in any reference at issue.

Petitioner *now* argues that Sauk teaches changing audio from binaural to mono/stereo signals a different level of relevancy or importance for such audio, such that the user can focus on more relevant sounds that do not include the audio from the environment that the user is leaving. Reply 7-8. Petitioner refers to a non-existent “Relevance Signal” to argue that Sauk teaches “switching sounds from binaural to mono/stereo as the user leaves the environment and the environment becomes less relevant to provide additional layers of warning and ensure user safety.” Reply 8-9. Sauk never mentions a “Relevance Signal;” Petitioner’s argument is based on disclosure that simply does not exist in either Clement or Sauk. Indeed, the “Selective Relevance Mode” of Sauk merely allows a user to *predefine* separate binaural audio environments for certain other users that the user considers relevant. Sauk (Ex. 1007), 11:25-66.

And, neither Clement nor Sauk teach that a user leaving an environment would “necessarily” render the audio experienced by the user in the environment as less relevant. *Cf.* Reply 8. Clement is silent regarding whether the virtual environment’s sound would be “less relevant” when a user leaves the environment and thus Petitioner’s reliance on “Clement’s disclosure of automatic determination of relevance by detecting that the user is leaving the environment” simply fails. Reply 12.

Petitioner mistakenly maintains that Sauk teaches a binaural to non-binaural shift “as certain sounds become less relevant to the user.” Pet. 10; *see also* Reply 7. As established in the POR, Sauk simply does not teach or suggest such dynamic relevancy resulting in dynamic transitions from formerly binaural audio to non-binaural audio. POR 15-17. As the mode’s name suggests, Sauk’s “Selective Relevance Mode” requires *pre-determined user selection* of relevant audio. Sauk 11:34-38 (“a *user* could change the less relevant audio”).³ There is no teaching or suggestion that relevancy dynamically changes based on the user’s position, resulting in formerly relevant audio (binaurally-presented) subsequently being presented in a non-binaural format. Instead, in Sauk’s example of how this mode works with groups of users, Sauk explains that “the binaural audio environments are

³ Unless otherwise noted, all emphasis is added.

defined for each *predetermined group of users*” and “[t]hereafter each BSS 400 can use received metadata to determine a group of a user from which enunciated data originated [where] Enunciated data received from various users within a user’s predetermined group *will be presented* in a binaural format.” Sauk 11:42-53. Sauk suggests that locations other than the user’s location could be extremely relevant. For example, Sauk discloses drawing a soldier on the street to a sniper’s location on the roof, using additive binaural virtual alerts. *Id.*, 13:13-26. There is simply no teaching or suggestion that a user leaving an environment would be determined to render the audio less relevant, much less how Sauk would handle such a scenario.

Petitioner’s position stacks a series of assumptions upon a faulty foundation, namely that to alert/warn the user that he/she is leaving the environment:

1. a POSITA would *ignore* the “Alert and Warnings”
section of Sauk, and, instead
2. look to Sauk’s Selective Relevance Mode that discloses
changing the audio format of the virtual audio into
stereo/mono *assuming*
3. the user predefines the event of leaving the environment
as being irrelevant, and
4. while also fading out the virtual audio and fading in the
ambient audio as described by Clement.

This is completely unsupported and Petitioner's argument fails.

In addition, a POSITA would not combine either the Selective Relevance mode or the Hazard Alerts of Sauk, alone or together, with Clement and Osman to arrive at the claimed limitations. Indeed, as established by Petitioner, Clement's "end" is to provide "a 'smooth, or graceful, transition... from the virtual world to the real world.'" Pet. 8 (citing Clement (Ex. 1005) at 2:43-63). Petitioner concedes that "Once the user completes the transition and is outside the virtual area, the *user will no longer see or hear images or sounds from the virtual environment and will be left with*, for instance a transparent display and *actual sounds from the real world*." *Id.*

Sauk's Selective Relevance Mode, however, retains less relevant audio, which clearly *teaches away* from Petitioner's conceded goals and solution of Clement to provide "a 'smooth, or graceful, transition... from the virtual world to the real world'" where the "user will no longer see or hear images or sounds from the virtual environment." Sauk, 11:29-31 ("a user may not want to eliminate all background audio information").

Thus, even if, as Petitioner alleges, when the user leaves the environment the environment's audio becomes necessarily less relevant (it does not) and, thus, Sauk's Selective Relevance Mode would result in the audio being dynamically switched to non-binaural audio (it would not), this modification would clearly frustrate

Clement’s stated purpose of transitioning “from the virtual world to the real world” because the transition would still retain presentation of the audio of the virtual environment. This would clearly provide a *worse* transition out of the environment than the one already provided by Clement.

Petitioner, for the first time, suggests that Sauk’s Selective Relevance Mode could be added to its Hazard Alert (which, as established, is a binaural alert that provides locational awareness), resulting in less relevant audio being switched to stereo or mono to remove distraction *and* an additive binaural alert to help the user focus on avoiding hazards.⁴ Reply 8-9. This additive binaural alert is not present in

⁴ Petitioner also asserts that PO conflates two discrete portions of Sauk to “fabricate conflict where none exists.” Reply 7. However, PO uses the *same portions of Sauk* (e.g., Sauk 11:26-40 and 12:33-51) Petitioner relied upon in its Petition to disingenuously assert that “Sauk teaches changing from binaural to stereo or monophonic sound to signal ‘relevancy or importance,’ such as warning of a ‘hazard.’” Pet.14. Sauk does not change audio from binaural to stereo or monophonic to signal a hazard, as Petitioner now acknowledges in its Reply, but instead provides an additive binaural alert for such hazards. POR 6. Thus, Petitioner’s characterization of Sauk in the Petition is clear error.

any of the claims, which each require altering the binaural audio experienced by the user, and is thus irrelevant.

Even if there were any suggestion in Sauk to add its Selective Relevance Mode with its Hazard Alert, it would frustrate the disclosure in Clement that all virtual world distractions are removed when the transition out of the virtual world is complete: “at or before the user electronic device reaches the boundary.” Clement 1:58-59; *see also* Pet.8. In contrast to Petitioner’s new position, retaining virtual sound via Sauk’s Selective Relevance Mode would actually result in less effective transition into the real world under Clement with potentially more distractions.

Accordingly, a POSITA would not combine Sauk with Clement and Osman to arrive at the current claim limitations. Indeed, both the Selective Relevance Mode (retaining less relevant sound) and the Hazard Alerts (providing additive binaural sound), either alone or in combination, are incompatible with the overall goal and technique of Clement to provide “a ‘smooth, or graceful, transition... from the virtual world to the real world as the user encounters a boundary of the virtual world[] may avoid the disorientation and motion sickness which may occur as a user continues to move in the real world[] while motion appears to have stopped upon reaching the boundary of the virtual world,” such that “[o]nce the user completes the transition and is outside the virtual area, the *user will no longer see or hear images*

or sounds from the virtual environment and will be left with, for instance a transparent display and *actual sounds from the real world.*” Pet. 8.

Therefore, Petitioner has failed to “articulate specific reasoning, *based on evidence of record*, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380-81 (Fed. Cir. 2016).

B. The Combined Art Fails to Disclose or Teach the Invention as Claimed

Further, even if the provided combination were proper (it is not), Petitioner has not met its burden to demonstrate unpatentability. Indeed, as established, the cited combination fails to disclose all limitations of the current claims and, thus, is clearly deficient.

1. Claims 1, 7, and 14

Each of the independent claims includes altering existing binaural audio, via volume reduction and an additional alteration of the binaural sound. Specifically, in claim 1, binaural sound is generated and played to the user and then, to warn that the user is leaving the 3D virtual environment, the binaural sound is filtered “to alter a spectral cue and lower a volume of the sound playing to the user.” In claim 7, after generation of the binaural sound that plays to the user, the user is alerted of leaving the environment by “altering processing of the sound ... to degrade a spatial cue and to lower a volume of the sound playing to the user.” In claim 14, the user is alerted

that the user is leaving a virtual image in the environment by “altering processing of the binaural sound... and reducing a volume of the binaural sound that localizes to the user at the virtual image.” As established in the POR, the cited combination does not disclose these features.

a. Lower[ing]/reducing a volume of the binaural sound to warn

Under Petitioner’s new theory of modifying Clement to use the Selective Relevance Mode of Sauk, Petitioner submits “Sauk’s Relevance Signal would have been obvious to apply when users leave an environment/an image in the environment because the environment’s audio necessarily becomes less relevant.” Reply 8. Petitioner then submits that “lowering the volume of less relevant sound is consistent with Sauk’s goal of deemphasizing less relevant audio” and “changes less relevant sound to stereo/mono.” Reply 10.

In Sauk, however, more relevant sound is presented as binaural audio. Sauk 11:36-41. Such reduction in binaural sound is clearly the *opposite* of Sauk’s teachings, which emphasizes binaural over stereo/mono sound. *Id.* So, Petitioner’s assertion that “lowering/reducing volume of binaural sound... is exactly what the combination teaches” is clearly erroneous. Thus, this combination clearly does not disclose elements 14[d], 1[d], or 7[d].

b. Filtering, degrading, or altering processing to alert

Each of the filtering, degrading, and altering processing steps are applied to previously generated binaural sound. POR 21, 23-24; *see also* '184 Patent, 12:49-54. As established in the POR, Sauk's Selective Relevance Mode does not convert "binaural sound that plays to the user" into stereo or mono. POR 24. Instead, Sauk uses "predetermined" criteria to determine whether the sound "*will be presented* in a binaural format." Sauk, 11:43-48.

In rebuttal to PO's assertion that Sauk's Selective Relevance Mode relies on user selection with a static relevancy that does not change, Petitioner now suggests that the combination "does not rely on user selection; it relies on Clement's disclosure of automatic determination of relevance by detecting that the user is leaving the environment. Pet.22." Reply 12. However, this is an improper new argument raised for the first time in Petitioner's reply. The Petition does not contain any argument that Clement discloses an "automatic determination of relevance," perhaps because Clement does not once mention the term relevancy or any associated word. Indeed, in Clement the transition is not a function of determined relevancy to a user; instead it is based upon "discrepancies in the immersive experience and disorientation" that may be caused by user movement. Clement 2:50-55. Faced with the failures of Clement and Sauk, Petitioner resorts to an after-the-fact fabrication of non-existent disclosure.

Petitioner continues to misconstrue Sauk's Selective Relevance Mode as disclosing changing binaural sound playing to the user to stereo or mono. Reply 13. While Sauk discloses that the *user* could change the less relevant audio to a monophonic or stereophonic dimension (Sauk 11:34-36), any such change does not occur in real-time with binaural audio playing to the user. Instead, as discussed in the POR, relevancy is "predetermined" and "thereafter" a determination is made as to whether a "signal originated" from a source associated with the predetermined relevancy, and only then resulting in enunciated data being "reproduced" in the proper relevancy format (e.g., binaural for relevant, stereo or mono for less relevant). Sauk, 11:42-56; POR 24, 27, 29-30.

2. Claims 8, 10, 15-19

In Petitioner's reply, Petitioner misconstrues PO's assertions, saying that PO asserts "Sauk... does not teach removing/degrading binaural sound." Reply 14. PO's assertion is more specific: specifically, "in Sauk's Selective Relevance Mode, Sauk does not disclose changing the *existing binaural audio that is provided to the user* to a different format. Instead, at best, Sauk reproduces listener-specified formats of audio from received enunciation data." POR 33. Thus, Sauk does not disclose the altered processing "of the binaural sound" that "externally localizes to the user at the virtual image in the environment," let alone by the particular

techniques described in claims 8, 10, and 15-19. Therefore neither Sauk, nor Sauk applied to Clement and/or Osman, render these claims obvious.

3. Claims 4, 6, 9

With regard to claims 4, 6, and 9, Petitioner appears to rely on automatic determination of relevancy from head movements that are not provided in any of the cited references. In the POR, PO illustrated examples in both Osman and Sauk of purposeful relevant binauralization of audio, even when sources were out of view. POR 35-36. Now Petitioner tries to rely on a distinction between Sauk’s real world team members and a video game’s character, saying that the real world objects would be relevant because they still exist in contrast to a video game character that “no longer exist[s].” Reply 15. This is a logical fallacy.

To force-fit Sauk’s Selective Relevance mode to these claims, the *binaural audio* would need to be less relevant as opposed to the virtual image. To the extent that the combination of both the virtual image and the binaural audio would become less relevant if the video game character “no longer exist[ed]”, there would be no binaural audio to switch to stereo. Accordingly, Petitioner’s assertions are clearly erroneous and the combined art does not disclose the features of claims 4, 6, or 9.

4. Claim 3

Jang is not cited by Petitioner as art relied upon for Ground 1, and as such, Petitioner’s reliance on Jang is improper. 37 C.F.R. § 42.104(b)(2). POR 36-37. In

the Petition, Petitioner asserts that Clement and Osman teaches “wherein the warning occurs when the user leaves a virtual room while remaining in the 3D virtual environment” for the same reasons as Element 1[d]. Pet.32. As explained in the POR, Petitioner’s reliance on Clement is misplaced because Clement’s fade-out does not apply to movement within the virtual world, as there is no transition to the real world. POR 37. Instead, Clement’s fade out transition is based upon a theoretical zone surrounding *the user* in the user’s physical space, when the theoretical zone encroaches the boundary of the tracking area 320. Clement, 5:17-19; 5:40-54. POR 37. Petitioner asserts that “POSAs understood that the same technique was used for transition in between rooms within a 3D virtual environment” (Reply 16), which is clearly erroneous. As discussed throughout Clement, Clement’s fade out is particularly focused on creating a smooth transition from the virtual world to the real world. Further, Osman and Sauk do not remedy this deficiency and Petitioner has provided no indication of where such features are found in any of these references. Therefore, the combination does not render the current claim obvious.

Thus, Petitioner has failed to “articulate specific reasoning, *based on evidence of record*, to support the legal conclusion of obviousness” of any of the challenged claims. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d at 1380-81.

IV. GROUND 2 – LYREN IS INVALID PRIOR ART

Petitioner’s Ground 2 position that the ‘140 Application lacks any teaching of claim limitations 1[d], 7[d], and 14[d], in particular the alerting or warning the user that the user is leaving the environment/virtual image in the environment/3D virtual environment by reducing the binaural sound’s volume and also otherwise altering it, relies on disingenuous interpretations of caselaw and is belied by the clear disclosure in the specification. Pet.37; POR 36-52.

A. All Claims Are Supported by the ‘140 Application

While Petitioner makes much of “implicit” disclosure, asserting that it is insufficient “as a matter of law” (Reply 18), the Manual of Patent Examining Procedure clearly states that there is no *in haec verba* requirement for written description, and the claims may be supported in the specification “through express, implicit, or inherent disclosure.” M.P.E.P. 2163.I.B. *Novartis*, relied upon by Petitioner, does not conflict with this standard, and indeed repeats that a limitation “need not be recited in the specification *in haec verba*.” *Novartis Pharms. Corp. v. Accord Healthcare, Inc.*, 38 F.4th 1013, 1017 (Fed. Cir. 2022). In *Novartis*, the claim limitation at issue was a negative claim limitation: “absent an immediately preceding loading dose.” *Id.* at 1015. The court held that because the specification did not mention loading doses, much less the absence of a loading dose, and because a skilled artisan would not have understood a negative limitation to be present in the

disclosure, the claims were invalid for inadequate written description. *Id.* at 1015, 1020. In its analysis, the court recognized that the “written description requirement may be satisfied” by inherent disclosure, even silence: “For example, if the record established that in a particular field, the absence of mention of a limitation necessarily excluded that limitation, written description could be satisfied despite the specification’s silence.” *Id.* at 1017. In contrast, here, the claims involve positive limitations, not negative, where both express and inherent disclosure clearly “reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351–52 (Fed. Cir. 2010).

1. Warning the User that the User is Leaving the Environment/Virtual Image in the Environment/3D Virtual Environment

As established, the ‘140 Application provides multiple examples and disclosures in which a POSITA would recognize a description of the claimed subject matter related to alerting or warning the user that the user is leaving the environment/3D virtual environment by reducing the binaural sound’s volume and also otherwise altering it. POR 39-52. When describing Figure 6, the ‘140 Application expressly states that, at block 600, the user starts in an environment where “sound [is localized] to a sound localization point that is away from but proximate to the person,” or a 3D virtual environment. Ex. 1028, 119:21-23. When

the user moves into a restricted area, or “an area, location, or a point that prohibits SLPs,” an event is detected, which causes the audio to alter the 3D sound being experienced by the user. *Id.*, 119:21-32. Thus, when the user leaves one physical environment (i.e., the non-restricted area) and moves into another physical environment (i.e., the restricted area) the user is alerted by the change in the 3D sound being provided by the user. Begault Supp. (Ex. 2012), ¶52.

Petitioner now asserts that “a change in the ability to detect ... position in a physical or virtual environment” encompasses detecting a difference in position within the virtual environment and not necessarily a user leaving a virtual environment. Reply 22. Based on the plain meaning of the respective disclosure, the change in the ability to detect a position in a virtual environment occurs when a user leaves the virtual environment, contrary to Petitioner’s assertion. Indeed, if the virtual environment was previously detectable and a change occurs in which the virtual environment is no longer detectable, a POSITA would understand that this change in detectability includes the user leaving the virtual environment.

In the same manner, the ‘140 Application’s disclosure that a “degradation in the visibility of a user’s physical or virtual environment” corresponding to “a change in the user’s ability to associate visual cues or images with the associated audio cues” includes when a user leaves the virtual environment. Ex. 1028, 50:15-20. That is, as a user leaves the virtual environment and the view of the virtual environment

degrades, the user's ability to associate visual cues that are degrading with audio cues would change due to the change in the virtual environment. This event causes an action of altering/reducing binaural sound as described with respect to FIG. 6.

The '140 Application also discloses that "[e]xamples herein can take place in physical spaces, in computer rendered spaces (VR), in partially computer rendered spaces (AR), and in combinations thereof." *Id.* at 168:15-16; *see also* POR 48. In light of this clear disclosure regarding the examples disclosed in the '140 Application, Petitioner's assertion that "none of these examples disclose alerting the user he/she is leaving an environment that includes a virtual image, or leaving a virtual image in that environment" (Reply 24) is simply wrong. Petitioner also asserts "there is no suggestion of the specific claimed combination nor that a POSITA would alter Figure 6 in the precise way PO proposes to match the claims." Reply 22. This, however, is not the legal standard for written description. The legal standard is whether the disclosure "reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms.*, 598 F.3d 1336 at 1351-52.

Faced with this, Petitioner attempts to dismiss this disclosure, equating it to boilerplate language. Reply 22. Petitioner's attempt fails, however, because the language in the '140 Application is not boilerplate, unlike the generic, non-substantive elements provided in *D Three Enters., LLC v. SunModo Corp.*, 890 F.3d

1042 (Fed. Cir. 2018). The language in *D Three* is clearly non-specific boilerplate: “[PHOSITAs] will recognize certain modifications, permutations, additions and sub-combinations therefore. It is therefore intended that the following appended claims hereinafter introduced re interpreted to include all such modifications, permutations, additions and sub-combinations are within their true sprit [sic] and scope.” *Id.* at 1050-51. This language does not provide any actual alternatives to be applied. In contrast, the language in the ‘140 Application provides particular alternative environments (e.g., physical, VR, and AR) in which the examples extensively described throughout the specification can be applied.

The Federal Circuit has distinguished broadening statements like the one in the ‘140 Application from boilerplate and found such statements sufficient for written description support. For example, in *Northrup Grumman Corp. v. Intel Corp.*, 325 F.2d 1346, 1356 (Fed. Cir. 2003), the Federal Circuit rejected defendant’s argument that patentee was relying upon mere boilerplate that “the present invention may be made to conform to any one of a variety of data transfer algorithms” and instead found that the patent did more than rest upon a mere “boilerplate” suggestion of broad application by providing “substantive, albeit general, support for the declared intention” of a broad application. And, in *Honeywell Int’l., Inc. v. U.S.*, 609 F.3d 1292, 1301 (Fed. Cir. 2010), the court found the specification sufficiently disclosed the claimed subject matter regarding cockpit displays, citing language in

the original application that expressly included CRTs “or other display transducers” and a broadening statement that “[w]hile specific configurations of the local display . . . have been described, it is understood that the present invention can be applied to a wide variety of display and vision aid devices.” Based on this language, which addresses an identified element of the invention and suggests alternatives and variations, the court held that “while original figure 3 may have disclosed a CRT, there is no reason, in light of the other statements in the specification, to limit the disclosure to only CRTs” and thus the written description requirement was satisfied. *Id.*; see also *DealerTrack, Inc. v. Huber*, 674 F.3d 1315, 1321 (Fed. Cir. 2012) (relying on a statement in the specification providing specific examples of communications media tailored to the claimed invention as sufficient to support a claim construction of “communications media” that included the internet: “Although illustrated as a wide area network [in FIG. 1], it should be appreciated that the communications medium could take a variety of other forms, for example, a local area network, a satellite communications network, a commercial value added network (VAN) ordinary telephone lines, or private leased lines”); *Honeywell Int’l, Inc. v. Nikon Corp.*, 589 F. Supp. 2d 433, 442 (D. Del. 2008) (distinguishing specification language from being boilerplate and finding it supported written description: “Indeed, the language in the ’371 specification referring to other embodiments is not boilerplate ‘catch-all’ legalese, but rather reflects a deliberate

effort by the patentee to use an example to help describe the invention and its embodiments.”)

Here, the statement that “[e]xamples herein can take place in physical spaces, in computer rendered spaces (VR), in partially computer rendered spaces (AR), and in combinations thereof” is a broadening statement that provides specific applications for the examples disclosed in the ‘140 Application. A POSITA would recognize this statement as disclosing that the examples provided in the ‘140 Application could take place in any of these environments and thus is substantive disclosure, not meaningless boilerplate that can be ignored. *Begault Supp.*, ¶55.

Thus, while Petitioner makes much of its claim construction issue, it is a red herring: the claim language is supported regardless of whether the term “environment” in claims 7 and 14 is interpreted to mean “physical environment” or “physical environment and 3D virtual environment.” For the same reason, the claim language in claim 1 that the user is leaving a “3D virtual environment” is likewise supported.

2. Warning/Alerting the User by Altering Binaural Sound and Reducing/Lowering the Volume of Sound

Further, the ‘140 Application explicitly discloses that the warning/alert may occur by altering binaural sound and reducing/lowering the volume of such sound. The ‘140 Application discloses that “example actions include, but are not limited to,

one or more of switch the sound from binaural sound to stereo sound, switch the sound from binaural sound to mono sound, ... lower a volume of the sound” (Ex. 1028, 115:31-116-1;116:4) and that “different volumes” of the sound may accompany the binaural switching (Ex. 1028, 108:14). Thus, contrary to Petitioner’s argument, there is express disclosure of lowering/reducing the volume in combination with an alteration to binaural sound. *Cf.* Reply 19.

In addition, PO has already established that lowering/reducing the volume in combination with an alteration to binaural sound would alert or warn the user that the user is leaving the environment/3D virtual environment. POR 50-52; Begault Supp., ¶¶33, 51, 59-60; 62. The ‘140 Application discloses that an “alert is an audible alert and/or a visual alert to a person” and “include, but are not limited to, one or more of displaying a visual warning, providing an audible sound ... displaying a visual or perceivable indication or warning ... and providing another indication that notifies a user.” Ex. 1028, 136:3-10; *see also id.*, 138:24-27; POR 51-52. Petitioner’s citation to Dr. Begault’s deposition (Reply 19) mischaracterizes his testimony and takes it out of context. In his declaration, Dr. Begault testified that the “adjustments in binaural sound ... would implicitly alert or warn the user that the user is leaving the physical environment ... or 3D virtual environment” and described how a POSITA would understand how the changes in the sound would “effect an alert” to the user. Begault Supp. ¶59, ¶¶64-80.

In sum, the ‘140 Application discloses that the event (user leaving the environment/virtual image in the environment/3D virtual environment) causes the action (binaural and volume audio adjustment), which alerts/warns the user of the event. Begault Supp., ¶¶34, 59, 62

Thus, in contrast to Petitioner’s assertion that the ‘140 Application “lacks any disclosure” to support the claim language, the cited examples and portions of the ‘140 Application “reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms.*, 598 F.3d 1336 at 1351-52; Begault Supp., ¶¶62, 70.

Accordingly, the ‘184 Patent maintains the priority chain to the ‘140 Application, which includes the same specification as Lyren. Therefore, the ‘184 Patent maintains the priority chain to Lyren, and Lyren is not valid prior art with respect to the ‘184 Patent. Thus, Ground 2 fails.

V. CONCLUSION

For the reasons above, Petitioner’s proposed grounds of unpatentability fail. Thus, Patent Owner asks the Board to find all of the challenged claims patentable.

Date: August 7, 2024

Respectfully submitted,

/Erick Robinson/

Erick Robinson, Esq. (Reg. No. 51,354)

Patrick M. Dunn (Reg. No. 70,474)

Jayne Partridge (Reg. No. 39,011)

BOCHNER PLLC

24 Greenway Plaza, Suite 1800

Houston, TX 77046

Tel: (646) 971-0685

Fax: (646) 343-9672

erobinson@bochner.law

pdunn@bochner.law

jpartridge@bochner.law

Jayne C. Piana (Reg. No. 48,424)

Lance G. Wimmer (Reg. No. 71,156)

Jim Thomas (Reg. No. 71,611)

FLETCHER YODER, P.C.

11450 Compaq Center Drive West

Building 9, Suite 300

Houston, TX 77070

Tel: (281) 970-4545

Fax: (281) 970-4503

piana@fyiplaw.com

wimmer@fyiplaw.com

thomas@fyiplaw.com

Attorneys for Eight KHZ, LLC

CERTIFICATE OF WORD COUNT

Pursuant to 37 CFR §42.24(d), the undersigned hereby certifies that the foregoing Patent Owner's Sur-Reply Under 37 C.F.R. § 42.23 contains 5,373 words using the word count feature of Microsoft Word.

Date: August 7, 2024

/Erick Robinson/
Erick Robinson, Esq. (Reg. No. 51,354)
Attorney for Eight KHZ, LLC

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §42.6(e), the undersigned hereby certifies that the above-captioned Patent Owner's Sur-Reply Under 37 C.F.R. § 42.23, and its cited exhibits, were served via electronic mail, as authorized by Petitioner's Mandatory Notices, on August 7, 2024 at the following email correspondence addresses of record:

Inge A. Osman
Steven Peters
Lathan & Watkins LLP
555 Eleventh Street, NW, Ste. 1000
Washington, DC 20004-1304
Inge.osman@lw.com
Steven.peters@lw.com

Christopher W. Henry
Kimberly Q. Li
Latham & Watkins LLP
200 Clarendon Street
Boston, Massachusetts 02116
christopher.henry@lw.com
Kimberly.li@lw.com

Linfong Tzeng
Lantham & Watkins LLP
140 Scott Drive
Menlo Park, California 94025
Linfong.tzeng@lw.com

Date: August 7, 2024

Respectfully submitted,

/Erick Robinson/
Erick Robinson, Esq. (Reg. No. 51,354)
BOCHNER PLLC
24 Greenway Plaza, Suite 1800
Houston, TX 77046
Tel: (646) 971-0685
Fax: (646) 343-9672

Attorneys for Eight KHZ, LLC