

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON WEB SERVICES, INC. and
AMAZON.COM SERVICES LLC,
Petitioner,

v.

ZENTIAN LIMITED,
Patent Owner.

IPR2023-01193
Patent 7,979,277 B2

Before KEVIN F. TURNER, JEFFREY S. SMITH, and
CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

DECISION

Granting Institution of *Inter Partes* Review

35 U.S.C. § 314

Granting Motion for Joinder

35 U.S.C. § 315(c); 37 C.F.R. § 42.122

I. INTRODUCTION

Petitioners Amazon Web Services, Inc. and Amazon.com Services LLC (“Amazon”) filed a Petition (Paper 2, “Pet.”) under 35 U.S.C. §§ 311–319 requesting *inter partes* review of claims 1, 4, 5, 7, 9, 10, 12, and 14–16 of U.S. Patent No. 7,979,277 B2 (Ex. 1001, “the ’277 patent”). Amazon also submits a Motion for Joinder (Paper 3, “Mot.”) to *Apple Inc. v. Zentian Ltd.*, IPR2023-00034 (“the Apple IPR”), to which the Board instituted *inter partes* review. IPR2023-00034, Paper 10 (PTAB June 12, 2023).

Patent Owner Zentian Limited (“Zentian”) filed a Preliminary Response and Contingent Joinder Opposition (Paper 7, “Prelim. Resp.”). To this, Amazon submitted a preliminary Reply (Paper 8, “Prelim. Reply”), and Zentian submitted a preliminary Sur-reply (Paper 9, “Prelim. Sur-reply”).

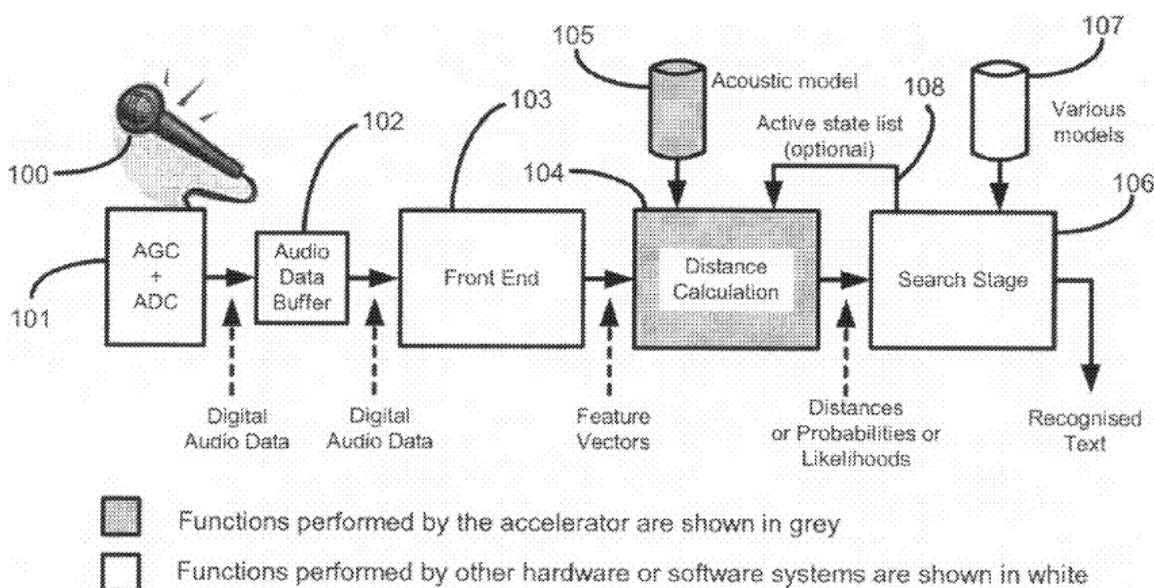
Each party alleges that it is the sole real party in interest, and this is not contested on the preliminary record. *See* Pet. 76; Paper 5, 1.

Under the authority delegated to us under 37 C.F.R. § 42.4(a) by the Director of the USPTO, we may institute an *inter partes* review when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see also* 37 C.F.R. § 42.108(c) (2023). Applying that standard, we institute an *inter partes* review of all the challenged claims of the ’277 patent for the reasons explained below. This is a preliminary decision, and we will base our final written decision on the full trial record. We also grant Amazon’s Motion for Joinder.

II. BACKGROUND

A. THE '277 PATENT (EX. 1001)

The '277 patent is directed to a speech recognition circuit comprising multiple parts that perform different steps of the recognition process. Ex. 1001, code (57), 5:58–6:3, 6:17–26. Figure 16, reproduced below, illustrates one embodiment comprising a front end 103, distance calculation engine 104, and search stage 106, including data flow between these components:



Ex. 1001, 8:38–40, 23:33–34. As shown above, a speech signal from microphone 100 is converted to digital audio data and sent to front end 103, where it “is split into spectral components to generate a feature vector” capturing key features of the audio input. *Id.* at 23:34–53. Front end 103 does this by dividing the digital audio signal into time frames (e.g., 10 millisecond periods) and, for each time frame, “splitting the audio signal into spectral components” (e.g., a 39-component vector with twelve frequency

bands, one energy band, plus the first and second derivative for each band).
Id. at 12:1–10.

Front end 103 then sends these feature vectors to distance calculation engine 104, which may take place on a separate speech accelerator to reduce the computational load on the primary CPU. Ex. 1001, 3:35–50, 5:18–33, 24:6–11. Using a hidden Markov model (“HMM”) or a neural network, distance calculation engine 104 compares each feature vector with all possible states within a predetermined acoustic model stored in memory 105. *Id.* at 4:15–18, 12:12–14, 23:58–61. That comparison is in the form of a “distance” (such as a Mahalanobis distance¹) to possible states within the acoustic model, which indicates “the probability or likelihood that a feature vector corresponds to a particular state” within the acoustic model. *Id.* at 4:13–15.

Finally, distance calculation engine 104 sends the calculated distances to search stage 106, which uses word or language models stored in memory 107 “to generate and output recognized text.” Ex. 1001, 23:61–67. Search stage 106 uses the “calculated distances to identify words within a lexical tree, the lexical tree comprising a model of words.” *Id.* at 5:65–67.

In one optional embodiment, search stage 106 sends active state list 108 back to distance calculation engine 104 as “an optimization that may

¹ The Mahalanobis distance “is a distance between two N-dimensional points, scaled by the statistical variation in each component.” Ex. 1001, 12:27–29. In this context, it is “the distance in the N-dimensional space from the [f]eature [v]ector to the probability distribution for each state.” *Id.* at 12:42–44; *see also id.* at 12:51–63 (noting that the Mahalanobis distance “is extensively described in the literature,” and providing a formula).

reduce computation time and/or power consumption.” Ex. 1001, 24:25–30. Alternatively, in the preferred embodiment, “the front end 103, distance calculation engine 104 and the search stage 106 operate in a pipelined manner.” *Id.* at 24:31–33. According to the ’277 patent, “[w]hen operating in a pipelined manner it is unlikely that the search stage 106 will be able to provide the active state list 1[08] early enough for the distance calculation engine 104 to implement the optimization of computing only the distances that will be required by the search stage 106.” *Id.* at 24:33–38. Thus, “distance calculation circuit 104 may calculate the [Mahalanobis distance] values for every state in the lexicon, per frame, whether it is subsequently required by the search stage or not,” which “allows the accelerator and software system to operate in a concurrent pipelined manner, which maximizes the system throughput. *Id.* at 24:38–43.

B. CHALLENGED CLAIMS AND GROUNDS

Representative claim 1 is as follows:

1. A speech recognition circuit comprising:
 - [a] an audio front end for calculating a feature vector from an audio signal,
 - [b] wherein the feature vector comprises a plurality of extracted and/or derived quantities from said audio signal during a defined audio time frame;
 - [c] a calculating circuit for calculating distances indicating the similarity between a feature vector and a plurality of predetermined acoustic states of an acoustic model; and
 - [d] a search stage for using said calculated distances to identify words within a lexical tree, the lexical tree comprising a model of words;
 - [e] wherein said audio front end and said search stage are implemented using a first processor, and said calculating circuit is implemented using a second processor, and
 - [f] wherein data is pipelined from the front end to the calculating circuit to the search stage.

Ex. 1001, 38:12–27 (Amazon’s reference letters added).

Amazon argues four grounds for *inter partes* review, as summarized in the following table:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 5, 7, 12, 14–16	103(a) ²	Jiang, ³ Baumgartner, ⁴ Brown ⁵
4	103(a)	Jiang, Baumgartner, Brown, Kazeroonian ⁶
9, 10	103(a)	Jiang, Baumgartner, Brown, Vensko ⁷
1, 5, 7, 12, 14–16	103(a)	Jiang, Baumgartner, Brown, Smyth ⁸
4	103(a)	Jiang, Baumgartner, Brown, Smyth, Kazeroonian
9, 10	103(a)	Jiang, Baumgartner, Brown, Smyth, Vensko

Pet. 5.

² 35 U.S.C. § 103(a) (2006), *amended by* Leahy–Smith America Invents Act, Pub. L. No. 112-29 § 103, sec. (n)(1), 125 Stat. 284, 287, 293 (2011) (effective Mar. 16, 2013). This version of § 103 applies because the '277 patent issued from an international application filed on September 14, 2005, which is before the effective date of the AIA amendments. *See* Ex. 1001, code (22).

³ Jiang, US 6,374,219 B1 (issued Apr. 16, 2002) (Ex. 1004).

⁴ Baumgartner et al., US 2002/0049582 A1 (published Apr. 25, 2002) (Ex. 1007).

⁵ Brown et al., US 5,699,456 (issued Dec. 16, 1997) (Ex. 1036).

⁶ Kazeroonian et al., WO 99/41684 (published Aug. 19, 1999) (Ex. 1037).

⁷ Vensko et al., US 4,567,606 (issued Jan. 28, 1986) (Ex. 1038).

⁸ Smyth et al., US 5,819,222 (issued Oct. 6, 1998) (Ex. 1005).

C. DECLARATORY TESTIMONY

Amazon submits a declaration by Dr. Les Atlas. Ex. 1062. Dr. Atlas agrees with and adopts as his own the testimony of Christopher Schmandt, who submitted a declaration in the Apple IPR (Ex. 1003). *See* Ex. 1062 ¶ 26. Although Zentian submitted preliminary declaratory testimony in the Apple IPR, Zentian has not submitted declaratory testimony at this stage in this proceeding.

D. RELATED PROCEEDINGS

As related matters, the parties identify *Zentian Ltd. v. Amazon.com*, No. 6:22-cv-00123-ADA (W.D. Tex. filed Feb. 2, 2022) (“parallel district court proceeding”) and *Zentian Ltd. v. Apple Inc.*, No. 6:22-cv-00122-ADA (W.D. Tex. filed Feb. 2, 2022), as well as the Apple IPR. Pet. 76; Paper 5, 1.

III. DISCRETIONARY GROUND FOR DENYING INSTITUTION

Under 35 U.S.C. § 314(a), institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016); *see also* 35 U.S.C. § 314(a). In *Amazon Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential), the Board set forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Id.* at 6. These factors are as follows:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;

3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating these factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has also issued interim guidance to the Board on applying the factors. *See* Katherine K. Vidal, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022) 9, https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf (“Interim Procedure”).

Zentian argues that “*Fintiv* factors 1–5 here warrant non-institution and denial of joinder” because in the parallel district court proceeding, (1) Amazon has served invalidity contentions presenting “many of the same art and arguments raised in its Petition,” including reliance on Jiang, Baumgartner, Smyth, and Brown; (2) the proceeding has not been stayed; (3) the proceeding “is set for trial on September 23, 2024”; (4) “Amazon’s invalidity expert report is due by May 2, 2024”; and (5) “Zentian’s rebuttal report is due on May 30, 2024.” Prelim. Resp. 1–2 & n.1 (citing Ex. 2001, 8–10; Ex. 2002, 3); *see also* Prelim. Sur-reply 1–2.

Amazon argues that *Fintiv* factor 2 weighs against discretionary denial because trial in the parallel case would be “more than three months *after* the

expected date of the final written decision.” Prelim. Reply 1. Amazon also contends, as to factor 3, that under the district court’s current schedule, major invalidity-related work is not due until after our institution decision (e.g., final invalidity contentions are not due until February 22, 2024 and the parties do not narrow their prior art assertions until March 14, 2024). *Id.* Amazon also argues that under *Fintiv* factor 4, “there is little risk of overlap or conflicting decisions because [Amazon] will be subject to estoppel well before trial” in the district court case. *Id.* at 1–2.

Of the first five *Fintiv* factors, we consider factor 2 (proximity to trial in the parallel case) most significant under these circumstances. According to Zentian, trial is scheduled for September 23, 2024. Prelim. Resp. 1. However, a final written decision in the instituted Apple IPR (and in the combined proceeding after joinder) will be due on June 12, 2024, more than three months before the trial date in district court. Thus, factor 2 weighs heavily against discretionary denial.

The other factors do not outweigh the second factor. As to factor 1, there is no evidence as to whether there will be a stay in the parallel case, so we regard this factor as neutral. As to factor 3, there has been some preliminary activity in the parallel case, but overall, the proceeding is in its early stages, so we do not regard this factor as weighing substantially in favor of discretionary denial. As to factor 4, the district court may ultimately consider Jiang, Baumgartner, Smyth, and Brown, but not necessarily in the same combinations as asserted in the Petition. *See* Ex. 2001, 8–10. So factor 4 weighs in favor of discretionary denial, but not so much as to outweigh factor 2. As to factor 5, the parties in the parallel proceeding are not different from the parties here, so we regard this factor as neutral.

Next, we turn to *Fintiv* factor 6. According to Zentian, this factor “warrants non-institution unless the Board requires Amazon to enter the same *Sotera* stipulation to which Apple agreed, and on which the Board relied, in underlying proceeding IPR2023-00034, which Amazon seeks to join.” Prelim. Resp. 2.

The Interim Procedure states that, “[c]onsistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.” Interim Procedure 3 (footnote omitted) (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A)). The Interim Procedure explains that a *Sotera* stipulation “mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB . . . and allows the PTAB to review grounds that the parallel district court litigation will not resolve.” *Id.* at 7–8.

In the Apple IPR, the Board declined to deny institution under 35 U.S.C. § 314(a) because Apple offered a *Sotera* stipulation that it “will not pursue in the parallel district court proceeding the same grounds as in the Petition or any grounds that could have reasonably been raised in the pending Petition.” IPR2023-00034, Paper 10 at 8–9 (PTAB June 12, 2023) (quoting IPR2023-00034, Paper 9 at 1).

Unlike Apple, Amazon has not offered a *Sotera* stipulation. Zentian contends that Amazon would be time-barred absent its ability to join the Apple IPR and “Amazon effectively seeks to enjoy the benefits of joining Apple’s instituted proceeding on the same terms and conditions through

which Apple obtained institution.” Prelim. Resp. 3. Thus, according to Zentian, “it would be unfair and prejudicial to Zentian if Amazon were permitted to join without being bound by the same *Sotera* stipulation to which Apple has agreed, and on which the Board’s institution decision relied.” *Id.*; *see also* Prelim. Sur-reply 2–3 (asserting that factors 1–5 weigh in favor of discretionary denial and arguing that by submitting a *Sotera* stipulation, Apple avoided the necessity of showing “compelling merits” under factor 6).

In its Preliminary Reply, Amazon contends that Apple entered its *Sotera* stipulation under different circumstances because “the operative trial date in its case was two months *before* the expected written decision date,” but here, the “trial date is three months *after* the Board is expected to render its final written decisions.” Prelim. Reply 2–3 (citing Exs. 1061, 2002). Amazon also argues that as a subordinate petitioner in the combined proceeding with Apple, Amazon’s estoppel would be evaluated differently than Apple’s. *Id.* at 3 (citing *Network-1 Techs., Inc. v. Hewlett-Packard Co.*, 981 F.3d 1015, 1027 (Fed. Cir. 2020)). Given the different circumstances, Amazon argues that it would be unfair to require Amazon to enter the same stipulation as Apple. *Id.* Amazon also argues that under prior Board practice, “a *Sotera*-style stipulation [is not] a prerequisite for institution.” *Id.* at 2 (alteration in original) (quoting *Zhuhai Cosmx Battery Co., Ltd. v. Maxell, Ltd.*, IPR2022-00984, Paper 8 at 4 (Sept. 29, 2022)).

In its Preliminary Sur-reply, Zentian argues that, unlike the petitioner in *Zhuhai*, Amazon would be time-barred absent joinder. Prelim. Sur-reply 2.

We disagree with Zentian that, under the circumstances, we should deny institution in the absence of a *Sotera* stipulation from Amazon. First,

we find no unfairness or prejudice in the fact that Apple has submitted a *Sotera* stipulation but Amazon has not. In this proceeding, *Fintiv* factors 1–5, as a whole, weigh heavily against discretionary denial even without Amazon offering a *Sotera* stipulation and without any showing of compelling merits. Most significantly, the Board will be deciding the patentability issues raised in the Petition well before the scheduled trial date in the parallel district court proceeding. Thus, even if Amazon had submitted a *Sotera* stipulation, this would not change our decision to institute an *inter partes* review and join this case to the Apple IPR. Although a petitioner has the option to submit a *Sotera* stipulation, no such stipulation is required where the *Fintiv* factors as a whole do not otherwise weigh in favor of discretionary denial.

For the above reasons, we determine that the efficiency and integrity of the patent system are best served by instituting *inter partes* review, and we decline to deny institution discretionarily under 35 U.S.C. § 314(a).

IV. INSTITUTION OF *INTER PARTES* REVIEW

We instituted *inter partes* review in the Apple IPR on all challenged claims and all asserted grounds of unpatentability. IPR2023-00034, Paper 10. Amazon’s Petition challenges the same claims and asserts the same grounds of unpatentability as those on which we instituted the Apple IPR, relying on substantially the same testimonial evidence. *See* Mot. 2 (“The Instant Petition is intentionally identical in substance to the Apple Petition.”); Ex. 1062 ¶ 26 (adopting the opinions set forth in the declaration of Christopher Schmandt (Ex. 1003) that Apple relied on in Apple IPR).

Because the issues presented in Amazon’s Petition are identical to those in the Apple IPR, we determine for the same reasons that there is a reasonable likelihood that Amazon would prevail in showing that at least one of claims 1, 4, 5, 7, 9, 10, 12, and 14–16 is unpatentable under the grounds of the Petition. Therefore, we institute *inter partes* review for the same reasons stated in our Decision on Institution in the Apple IPR. *See* IPR2023-00034, Paper 10.

V. MOTION FOR JOINDER

Under authority delegated to us by the Director, we have the discretion, when warranted, to join as a party to an instituted *inter partes* review any other party who properly files a petition, after the patent owner has had the opportunity to file a preliminary response. 35 U.S.C. § 315(c). As the moving party, Amazon bears the burden of proving that it is entitled to the requested joinder. *See* 37 C.F.R. § 42.20(c). In deciding whether to join a case, we consider (1) the reasons why joinder is appropriate, (2) whether the petition raises any new grounds of unpatentability, (3) any impact that joinder would have on the cost and trial schedule for the existing review, and (4) whether joinder will add to the complexity of briefing or discovery. *Kyocera Corp. v. Softview LLC*, IPR2013-00004, Paper 15 at 4 (PTAB Apr. 24, 2013); Patent Trial and Appeal Board, Consolidated Trial Practice Guide, 76 (Nov. 2019), <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>.

Amazon’s Motion addresses each of these considerations. Mot. 1–6. According to Amazon, its “Petition is intentionally identical in substance to the Apple Petition.” Mot. 2; *see also* Mot. 4. Amazon also argues that the

schedule of the joined cases “would be unaffected, no additional briefing or discovery would be required, and no additional burdens would be placed on [Zentian].” Mot. 3; *see also* Mot. 4. Further, Amazon “agree[s] to take an ‘understudy’ role as long as Apple remains a party to the Apple IPR,” and that it “will not make any substantive filings and shall be bound by the filings of Apple,” and will not pursue its own arguments, evidence, or discovery unless the matter of termination or settlement arises or there are issues involving only Amazon. Mot. 5–6. Thus, according to Amazon, Zentian would not suffer prejudice if the two proceedings are joined. Mot. 6.

Apart from its arguments discussed above in the context of discretionary denial, Zentian does not dispute the above contentions by Amazon and does not point to any particular prejudice relating to joining the two proceedings. In light of these considerations, Amazon has shown that joinder to the Apple IPR is appropriate in this case. Therefore, we grant Amazon’s Motion for Joinder.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1, 4, 5, 7, 9, 10, 12, and 14–16 of the ’277 patent is instituted with respect to all the grounds set forth in the Petition;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, *inter partes* review of the ’277 patent commences on the entry date of this Order, and the Board hereby gives notice of the institution of a trial;

FURTHER ORDERED that Amazon's Motion for Joinder is granted and Amazon Web Services, Inc. and Amazon.com Services LLC are joined as parties to IPR2023-00034;

FURTHER ORDERED that the grounds of unpatentability on which the Board instituted trial in IPR2023-00034 are unchanged and remain the only grounds on which trial has been instituted;

FURTHER ORDERED that the Scheduling Order and any of its modifications entered in IPR2023-00034 will govern the schedule of the joined proceedings;

FURTHER ORDERED that any filings by the petitioner parties in IPR2023-00034 will be consolidated, and that filings by Amazon, alone, are not permitted without the Board's prior approval;

FURTHER ORDERED that a copy of this Decision will be entered into the record of IPR2023-00034; and

FURTHER ORDERED that the case caption in IPR2023-00034 will be modified in accordance with the attached example to reflect joinder with this proceeding.

IPR2023-01193
Patent 7,979,277 B2

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Example Case Caption for Joined Proceeding

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¹ IPR2023-01193 has been joined with this proceeding.