

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TRIPADVISOR, LLC,
Petitioner,

v.

MIMZI, LLC,
Patent Owner.

IPR2019-01080
Patent 9,128,981 B1

Before JAMESON LEE, STACEY G. WHITE, and NABEEL U. KHAN,
Administrative Patent Judges.

KHAN, *Administrative Patent Judge.*

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Petitioner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background and Summary

TripAdvisor, LLC (“Petitioner”), filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–4 and 7–18 (the “challenged claims”) of U.S. Patent No. 9,128,981 B1 (Exhibit 1001, “the ’981 Patent”). Mimzi, LLC (“Patent Owner”), timely filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). On November 15, 2019, upon consideration of the Petition, Preliminary Response, and the evidence cited by the parties, we determined that Petitioner established a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition and instituted review to determine the patentability of the challenged claims on all grounds. Paper 10 (“Dec. Inst.”), 1.

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”). Petitioner filed a Reply (Paper 21, “Pet. Reply”) thereto, and Patent Owner filed a Sur-Reply (Paper 23, “PO Sur-Reply”). Petitioner supports its challenge with the Declaration of Adam A. Porter, Ph.D. Ex. 1004. Patent Owner supports its Response with the Declaration of Dr. Jose Luis Melendez. Ex. 2006.

Further, Petitioner filed a Motion to Exclude. Paper 27. Patent Owner filed a Response to Petitioner’s Motion to Exclude (Paper 29) and Petitioner filed a Reply in support of its Motion to Exclude (Paper 30). We address these papers below.

An oral hearing was held on August 21, 2020, and the hearing transcript is included in the record. Paper 32 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, addresses issues and evidence raised during the *inter partes* review. For the

reasons that follow, Petitioner demonstrates by a preponderance of the evidence that claims 1–4 and 7–18 of the '981 Patent are unpatentable.

B. Real Parties-in-Interest

Petitioner identifies TripAdvisor, LLC, and TripAdvisor, Inc., as real parties-in-interest. Pet. 4. Patent Owner identifies only itself as real parties-in-interests. Paper 3, 2.

C. Related Matters

The parties identify the following related matters: *Mimzi, LLC*, v. *TripAdvisor, Inc.*, No. 1:18-cv-01768 (D. Del.); *Mimzi, LLC* v. *Foursquare Labs, Inc.*, No. 1:18-cv-01767-LPS (D. Del.); *Mimzi, LLC* v. *Acer Inc.*, No. 1:19-cv-00272-LPS (D. Del.); *Mimzi, LLC* v. *ASUSTek Computer Inc.*, No. 1:19-cv-00273-LPS (D. Del.); *Mimzi, LLC* v. *HTC Corp.*, No. 1:19-cv-00274-LPS (D. Del.); *Foursquare Labs, Inc.*, v. *Mimzi, LLC*, IPR2019-01287 (PTAB); *Microsoft Corp. et al. v. Mimzi, LLC*, IPR2019-01516 (PTAB). Pet. 4–5; Paper 15, 2–3.¹

D. The '981 Patent

The '981 Patent, titled “Phone Assisted ‘Photographic Memory,’” is directed “to using a phone to record phone calls, meeting and dictation, and for storing the metadata, audio and/or speech recognition text into a centralized content searchable repository, so that all or most of all conversations and near everything seen or read can be searched with a single query” Ex. 1001, 1:14–19. The '981 Patent describes using the phone to collect a variety of types of information, including recording phone calls, recording the audio of a face-to-face meeting, recording an audio description

¹ Both IPR2019-01287 and IPR2019-01516 involve the '981 patent.

of pictures and video taken from the camera of a phone (e.g. of notes on a notepad, whiteboard, and article). *Id.* at 3:23–36. Speech recognition is applied to the audio of the phone calls, meetings, and descriptions of pictures and videos to create transcripts so that these sources of information can be searched. *Id.* at 3:25–28. In addition to recording the above information, the phone also records metadata, such as the date, time, name, or location information of the recorded information. *Id.* at 2:31–34. For example, the phone can record the date and location of the phone when a picture is taken. *Id.* at 3:40–50. In this way, conversations, pictures and video can be searched by date, time, and location, as well as by the speech-recognized text of the recorded audio. *Id.* at 3:46–50.

The '981 Patent describes an embodiment where the text transcripts may contain timestamps. *Id.* at 5:58–60. For applications where the actual time spoken for each word is important, the start date and start time of the call or dictation may be read from the metadata, and the start date, start time, and relative timestamp may be added for each word in the transcript. *Id.* at 7:23–32. In addition, location coordinates also may be added next to each timestamp for each word in the transcript. *Id.* at 7:39–47.

E. Illustrative Claims

Of the challenged claims, claims 1, 10, and 16 are independent. Claims 2–4 and 7–9 depend from independent claim 1; claims 11–15 depend from independent claim 10; and claims 17 and 18 depend from independent claim 16.

Claim 1, reproduced below with bracketed annotations added, is illustrative:

1. A system for presenting social-network-provided outputs to a mobile-electronic-device user at a location

associated with the user in response to the user's spoken request, comprising:

[1.1] a data input port configured to receive speech information from the mobile-electronic-device user;

[1.2] a memory configured to store a transcript of the spoken request and metadata associated with the spoken request comprising at least the location during the spoken request;

[1.3] an interface port to a social network database, configured to transmit a request to mine information of the social network database based on the transcript and the metadata, and to receive social network information from the social network database based on the transmitted request;

[1.4] at least one processor configured to transmit the request through the interface port dependent on at least the transcript and the metadata, to receive the social network information from the interface port; and

[1.5] a communication port configured to communicate at least a portion of the social-network information to the user,

[1.6] wherein the social network database comprises a plurality of social network records, the at least one processor being further configured to rank the received social network information comprising a plurality of received social network records dependent on at least one social network ranking factor, the communication port being further configured to output at least a portion of the social network records in a manner dependent on the at least one social network ranking factor.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–4 and 7–18 would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–4, 7–18	103	Roth ² , Fortescue ³
1–4, 7–18	103	Roth, Ng ⁴
1, 10, 16	103	Roth

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner argues that a person of ordinary skill in the art at the time of the invention, “would have (i) had a bachelor’s degree in Computer Science, Electrical Engineering, Computer Engineering, or a closely related field, and about 1–2 years of practical experience in that field; or (ii) had a master’s degree in Computer Science, Electrical Engineering, Computer Engineering or a closely related field.” Pet. 12 (citing Ex. 1004 ¶ 55). Patent Owner argues “POSITA must have some familiarity with social network databases (the technology at issue) in addition to Petitioner’s proposed general experience in Computer Science, Electrical Engineering, or Computer Engineering.” PO Resp. 15.

On this record, we agree with Petitioner’s proposed definition of person of ordinary skill in the art, and adopt it for purposes of this Decision. Although the claims of the ’981 Patent recite searching a social network database, we find the fields of Computer Science, Electrical Engineering, and Computer Engineering would provide knowledge related to social networks and database search at a level commensurate with the disclosure of the ’981 Patent, and, thus, we adopt Petitioner’s proposed definition of the level of ordinary skill in the art. We note, however, that our analysis below

² Roth, US 2007/0099636 A1, May 3, 2007 (Ex. 1005, “Roth”)

³ Fortescue, US 2008/0102856 A1, May 1, 2008 (Ex. 1006, “Fortescue”)

⁴ Ng, US 2006/0123014 A1, June 8, 2006 (Ex. 1007, “Ng”)

would be unaffected were we to expressly require that the level of ordinary skill in the art include knowledge of social network databases, as Patent Owner proposes.

B. Claim Construction

In *inter partes* reviews, we interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.* Only claim terms that are in controversy need to be construed and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

1. Metadata Associated with the Spoken Request

Patent Owner proposes the term “metadata associated with the spoken request” be construed as “information related to the spoken request attached to the request, such as time and location.” PO Resp. 15 (citing Ex. 2006 ¶¶ 38–43). Patent Owner argues that “[t]he word ‘associated’ signifies a tighter integration than being merely ‘related.’”⁵ *Id.* Patent Owner argues

⁵ Patent Owner provides a link to a webpage with a definition for the word “associated” that Patent Owner contends supports their proposed construction. PO Resp. 16. Patent Owner did not, however, file an exhibit of the linked webpage so that the definition would be entered into the record.

that a person of ordinary skill in the art “would understand that metadata associated with the spoken request requires a greater connection between the metadata and the spoken request (association) than the mere fact that a transcript and location metadata may exist or be used contemporaneously, without association.” *Id.* at 16 (citing Ex. 2006 ¶¶ 38–43). Patent Owner argues that subsequent claim limitations in claim 1, such as those that recite “transmit[ing] a request to mine information . . . based on the transcript and the metadata, and to receive social network information . . . based on the transmitted request” indicate that the metadata must be associated with the spoken request in order for these limitations to make sense. PO Resp. 16–17. Patent Owner argues that Figures 1 and 2 of the ’981 Patent show time and location metadata “are associated with the spoken request by association of the corresponding metadata with the transcript of the speech at the ‘Add Absolute Time,’ and ‘Add location’ steps indicated.” *Id.* at 17 (citing Ex. 2006 ¶¶ 38–43). Patent Owner contends that the “metadata is associated with the spoken request when the metadata is joined or connected together with it.” *Id.* (citing Ex. 2006 ¶¶ 38–43).

Petitioner argues “[t]he claim language is clear that the metadata only needs to be ‘associated’ with (*i.e.*, related to) the request and does not mention the metadata being attached to the request.” Pet. Reply 4. Petitioner further alleges that Patent Owner’s expert “admitted that metadata could be ‘associated’ with a request in ways other than attaching it to the request.” Pet. Reply 4–5 (citing Ex. 1011, 33–34). Petitioner argues that the example from the Specification on which Patent Owner relies “describes an

Because the definition is not in the record, we do not consider it in our analysis.

optional feature that associates a time stamp specifically to each line of the transcript” but that “the specification indicates that this is just one embodiment of the claimed invention.” Pet. Reply 5 (citing Dec. Inst., 9). Petitioner points out that the claim requires the metadata to be associated with the spoken request, but Patent Owner relies on passages of the Specification that describe metadata being attached to the transcript. Pet. Reply 5.

Having considered the parties’ arguments and the fully developed trial record, we do not agree with Patent Owner’s proposed construction. The ’981 Patent describes metadata as data that includes “date data, time data, name data or location data.” Ex. 1001, 2:31–32. Figures 1 and 2 of the ’981 Patent list several examples of metadata, including, “Date of call, dictation or message,” “Start time,” “End Time,” Duration,” “Phone #,” “Phone # other party,” “Name,” “Name of other party,” “Date of Synopsis,” “Start time of Synopsis,” “End time of Synopsis,” “Duration of Synopsis,” “Location start,” “Location time 1,” “Location at end,” “Loc. Start synopsis,” and “Loc. End synopsis.” As can be seen, the ’981 Patent describes metadata broadly as encompassing a variety of data associated with various uses of the mobile device, such as calls, texts, dictation, photos, and the like.

Patent Owner does not provide sufficient evidence that the word “associated” means “attached” in the context of the claim. The ’981 Patent does not use the term “attached” anywhere to describe the metadata associated with the spoken request, nor has Patent Owner identified the use of the term anywhere in the intrinsic evidence. Patent Owner cites Figures 1 and 2 of the ’981 Patent as supporting its construction but Figures 1 and 2 show that a time offset and location may be added to the transcript for each

word in the transcript. In these embodiments the transcript itself includes the time and location information. The claim, however, recites that metadata be associated with the *spoken request*, not that it be added to the transcript. Ultimately, we fail to see how these embodiments show that time and location are attached to the spoken request.

In light of the parties' arguments regarding unpatentability, we determine that we need not further construe the term "metadata associated with the spoken request."

2. *Social Network Database*

Patent Owner proposes that "social network database" should be construed as "a centralized database that stores the interpersonal relationships among multiple members of the community and the content they contributed to the database." PO Resp. 19 (Ex. 1001, 15:28–42; Ex. 2006 ¶¶ 45–56). Patent Owner argues "social network database" cannot be construed as inclusive of any database and that the term "social network" should be given due regard. *Id.* at 18. According to Patent Owner, a "social network" is a community of individuals connected by interpersonal relationships. *Id.* at 19.⁶ Patent Owner also argues that the '981 Patent "unambiguously defines a social network database as 'a centralized community search database.'" *Id.* (citing Ex. 1001, Abstract). Thus, according to Patent Owner, a social network database may be understood to

⁶ Patent Owner again provides a link to a webpage with a definition for the term "social network" that Patent Owner contends supports their proposed construction. PO Resp. 19. Patent Owner did not, however, file an exhibit of the linked webpage so that the definition would be entered into the record. Because the definition is not in the record, we do not consider it in our analysis.

be a centralized database that stores the interpersonal relationships among multiple members of the community. *Id.* (citing Ex. 1001, 15:28–42; Ex. 2006 ¶¶ 45–56).

Patent Owner further argues that the term “social network” is not directed to the content of information, but rather to limitations regarding contributions by multiple members, accessibility by multiple members, and the relationships between. *Id.* at 19. (citing Ex. 2006 ¶¶ 45–56). According to Patent Owner, the term “social network database” identifies a specific structure for the database, which necessarily includes a set of relational tables comprising very specific types of data and links between individuals and tables. *Id.* at 20–21. The structure is “dynamic and two-way.” *Id.* at 21.

Patent Owner argues that the phrase “social network” must be given weight because there is a functional relationship between “social network database” and “social network ranking factors” in that the “entire point of the claim invention is to seek data from a restricted body of information, where the data is composed and ranked on the basis of the relationships defined by the membership and rules of the particular network.” *Id.*

Petitioner argues, “Determining the precise contours of the term ‘social network’ in the Challenged Claims is unnecessary” because whatever those precise contours may be, the ’981 Patent makes clear that “social network” encompasses user reviews, user ratings, and popularity. Pet. 10–11. Further, Petitioner argues that the Specification never describes any database storing interpersonal relationships among members of the community. Pet. Reply 6. Petitioner notes that the only mention of a social network database in the ’981 Patent describes those databases as “open to

anyone via the Internet” and describes sharing Location Blogs with anyone on the Internet. Pet. Reply (citing Ex. 1001, 15:1–9, 27–32).

Moreover, Petitioner argues “the ‘social network’ descriptor should not be given any patentable weight because they are directed to the content of information and lack any functional relationship.” Pet. 12 (citing *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1032 (Fed. Cir. 2018)). Specifically, with regard to the term “social network database” Petitioner argues that the data in a database is printed matter and, therefore, not entitled to patentable weight. Pet. Reply 10 (citing *Ex Parte Shaya*, No. 2014-001008, 2016 WL 406833, at *3 (PTAB Jan. 28, 2016); *Ex Parte Nehls*, 88 U.S.P.Q.2d 1883, at *8 (BPAI 2008)).

Having considered the parties’ arguments and evidence and the fully developed trial record, we do not agree with Patent Owner’s construction. The ’981 Patent states that it discloses “[a] system and method for providing social-network (Centralized Community Search database)—provided outputs to a mobile-electronic-device user in response to the user’s spoken request.” Ex. 1001, Abstract. The ’981 Patent explains that a user may wish to transmit their “text messages, photos, videos, call and voice annotations or synopsis (with speech-recognized text and location data), to a Centralized Community Search database” and that the user may designate this content to be public and “be shared with anyone via the Internet.” Ex. 1001, 14:64–15:6. The ’981 Patent calls the public sharing of information as “Location Blogging.” See Ex. 1001, 15:1–6. The ’981 Patent explains that the publicly shared content contributed to the Centralized Community Search database may include information such as “a review of a restaurant or business.” Ex. 1001, 15:7–15. The Centralized Community Search database “may be searched or mined based on social network or type of information,

such as ‘Urgent Road Warning’ when driving or ‘Best Menu Choice’ at a restaurant location.” Ex. 1001, 15:22–26.

Although the ’981 Patent describes information being stored in a centralized community search database, it does not restrict the community in any way nor does it describe the database as storing interpersonal relationships between community members. We find insufficient support in the ’981 Patent for such a limitation. Moreover, we find no support for Patent Owner’s argument that a social network database has a specific structure with relational tables and links between tables and between individuals, nor any support for the database being dynamic and two-way. We therefore decline to import such limitations into the claim.

For purposes of this Decision, we do not consider whether the term “social network” should be given patentable weight. As explained below, even if we give the term patentable weight, when properly construed, the relied upon references teach a social network database.

The ’981 Patent describes a centralized database that stores information, such as text messages, photos, videos, road warnings and restaurant reviews, accessible by anyone on the Internet, without disclosing or requiring the storage of interpersonal relationships. In light of the parties’ arguments regarding unpatentability, we need not further construe the term “social network database.”

3. Social Network Ranking Factor

Patent Owner proposes that “social network ranking factor” should be construed as “an interpersonal metric, based upon relationships between members, that is derived from a social network database.” PO Resp. 22 (citing Ex. 2006 ¶¶ 45–56). Patent Owner argues that the term should not be

construed as encompassing any ranking factor, rather the claims require the ranking factor to be derived from the social network database. PO Resp. 23.

Petitioner points to dependent claim 4 which describes social network records as comprising user reviews of restaurants and social network ranking factors as comprising user review ratings of those restaurants, as indicating that the term “social network,” when applied to records, databases and ranking factors, includes user contributed reviews of restaurants. Pet Reply. 7. Petitioner argues that this reading is also consistent with the ’981 Patent’s description of a centralized community search database that would allow for searching for the Best Menu Choice and describes ranking restaurants based on rating. Pet. Reply 7 (citing Ex. 1001, 15:22–26, 33–37).

Patent Owner responds that the reference to “social network ranking factor” in claim 4 refers to a ranking factor such as “social network credibility” or “social network popularity” and that claim 4 then adds that this ranking must include “user reviews.” PO Resp. 23–24. In other words, Patent Owner argues that user reviews on their own do not constitute a social network ranking factor and claim 4 refers to them only in addition to another social network ranking factor. PO Resp. 23–24.

Having reviewed the arguments and evidence presented by the parties, we do not agree with Patent Owner’s proposed construction. The ’981 Patent describe several “ranking factors” such as “distance from the Phone user’s current location and the location of the original Location Blog poster,” “reverse chronological order, social network credibility or social network popularity of the Location Blog poster, and type of data (e.g. Urgent Road Warning versus restaurant ratings).” Ex. 1001, 15:27–37.

The term “social network ranking factor” appears at least in claims 2, 3 and 4. Claims 2 and 3, for example, depend from claim 1 and recite that

the “social network ranking factor comprises” a “social network credibility” and a “social network popularity” respectively. Claim 4 depends from claim 1 and recites the “social network ranking factor comprising user review ratings of respective restaurants.” These claims make clear that social network credibility, social network popularity, and user review ratings of restaurants are each encompassed by the term “social network ranking factor.”

Patent Owner provides insufficient evidence to support its argument that the social network ranking factor must be an interpersonal metric, based upon relationships between members. The '981 Patent is devoid of any such description. Moreover, we are persuaded by Petitioner that claim 4 shows that “social network ranking factor” must encompass user review ratings. Patent Owner’s argument that the user review rating must be accompanied by another social network ranking factor is contradicted by the language of claim 4 itself which explicitly states that “the social network ranking factor comprising user review ratings of respective restaurants.” Claim 4 is directly dependent on claim 1 and no other ranking factors are required by either claim other than the user review ratings. Thus, we disagree with Patent Owner’s argument that claim 4 requires some other social network ranking factor in addition to user review ratings, or that the user review ratings must somehow include or be dependent on interpersonal metrics.

For the foregoing reasons, we determine “social network ranking factor” is not limited to an interpersonal metric, based upon relationships between members. Instead, based on the Specification and claim language, “social network ranking factor” encompasses social network credibility, social network popularity, and user review ratings. In light of the parties’

arguments regarding unpatentability, we determine that we need not further construe the “social network ranking factor.”

4. *Transcript*

Patent Owner argues that “the ’981 Patent requires that ‘transcript’ be searchable electronically and capable of being generated as a conversion of speech by a speech recognition engine, where speech is received through the data input port.” PO Resp. 18. According to Patent Owner this is distinct from “any mere text representation of speech.” *Id.* Patent Owner, however, does not provide an explicit construction for the term in its Patent Owner Response.

Petitioner also does not propose a construction for this term but argues that Patent Owner seeks to “add extraneous limitations to this well-understood word.” Pet. Reply. 9. Petitioner argues that “[c]laim 1 has no requirement for how the spoken request becomes a transcript.” Ultimately, however, Petitioner argues that Patent Owner does not argue validity based on its own construction and therefore, the term does not require construction.

We agree with Petitioner that Patent Owner does not base its arguments for patentability on the construction of the term “transcript.” Although Patent Owner argues that “‘transcript’ warrants construction because Roth does not disclose or suggest the claimed ‘transcript’ under the correct construction” (PO Sur-Reply 4 (citing PO Resp., 29, 45)) the arguments it cites to do not show any dispute as to whether Roth discloses a transcript based on Patent Owner’s construction. For example, Patent Owner argues for claim 1 that the buffer in Roth would be temporary, and that Roth does not store information sufficient to associate that data with the transcript or spoken request. *See* PO Resp. 29. Patent Owner’s arguments

for claim 10 rely on its arguments for claim 1. *See* PO Resp. 45. These arguments do not depend on Patent Owner’s proposed construction.

Because we find that the term “transcript” does not need express construction to resolve the disputes presented before us we decline to construe the term.

C. Obviousness over Roth Alone, Roth with Fortescue, or Roth with Ng

Petitioner argues claims 1, 10, and 16 would have been obvious over Roth alone, and that claims 1–4 and 7–18 would have been obvious over the combination of Roth with Fortescue or Roth with Ng. Pet. 22–60. To support its contentions, Petitioner relies on the declaration of Dr. Porter (Ex. 1004).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Below we analyze the objective indicia of nonobviousness, summarize the content of the prior art, determine whether Petitioner has provided a sufficient motivation to combine the references, and analyze whether the references teach the limitations of the challenged claims. We then weigh these *Graham* factors together in determining whether Petitioner

has demonstrated by a preponderance of the evidence that the subject matter of the challenged claims is obvious over the prior art.

1. Objective Indicia of Non-Obviousness

Patent Owner argues that “the alleged obviousness of the invention is further undercut by several objective indicia of nonobviousness, including satisfaction of a long-felt need and praise by the industry.” PO Resp. 50.

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham*, 383 U.S. at 17. Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the claimed invention would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–1472 (Fed. Cir. 1984).

Patent Owner relies on two pieces of evidence as establishing long felt need and industry praise for its invention: (1) a blog post, dated September 10, 2008, by Google’s then-Vice President of Search Products & User Experience, Marissa Mayer, (“Google Blog Post”) and (2) a 2011 Apple product presentation in which Apple demonstrated its Siri functionality (“Apple Presentation”).

As to the Google blog post, Patent Owner relies on statements that Patent Owner argues show “the search industry needed exactly what was provided by the ’981 Patent Invention.” PO Resp. 50 (quoting Ex. 2001, 3). Below we quote portions of the Google Blog Post that Patent Owner relies upon:

[W]hy couldn’t I do these searches right then, when I needed to?
Because search still isn’t accessible enough or easy enough.

Search needs to be more mobile—it should be available and easy to use in cell phones and cars and on handheld . . .

one far-fetched idea: how about a [device] that does searches in the background based on the words it picks up from conversations . . .

Why can't I capture a snippet of audio and have the search engine identify and analyze it and tell me any relevant information about it? Services that do parts of that are available today, but not in an easy-to-use, integrated way . . .

Ex. 2001, 3. Patent Owner further relies on the following statements as evidence that the Google Blog Post “identified location data in context (such as part of the metadata of the spoken query) as pivotal to increasing relevancy and ease of search.”

Your location is one potentially useful facet of personalization information. Looking at my questions, the answers to a number of them . . . require the search engine to know that I was in Yankton, South Dakota and Crofton, Nebraska when I asked. Since location is relevant to a lot of searches, incorporating user location and context will be pivotal in increasing the relevance and ease of search in the future.

Ex. 2001, 5. Patent Owner also relies upon statements that it contends show search of a social network database as important for making search efficient and relevant. For example, Patent Owner relies on the following statement from the Google Blog Post:

Another element of personalization is social context. Who am I friends with, and how do I relate to them? How can I harness their knowledge more efficiently? . . . There's a lot of expertise, knowledge, and context in user's social graphs, so putting tools in place to make “friend-augmented” search easy could make search more efficient and more relevant.

PO Resp. 51 (quoting Ex. 2001, 5–6).

Turning to the Apple Presentation, Patent Owner focuses on a part of the presentation where Scott Forstall, an Apple Senior Vice President, demonstrated “the ability to speak into an iPhone and get social network reviews of a nearby Greek restaurant.” PO Resp. 52. Patent Owner relies on the following statements by Mr. Forstall:

I’ve been in the AI field for a long time, and this still blows me away, the fact that it understands the words, the concepts, and even now ranks it by Yelp’s ordering.

PO Resp. 53 (quoting Ex. 2004, 11). Patent Owner argues “*three years after* the ’981 patent application was filed, Apple presented the invention with pride and it was met with praise by the tech-savvy audience.”

a) Long Felt but Unmet Need

In order to show a long-felt but unmet need for the claimed invention, the objective evidence must show that the need was a persistent one that was recognized by those of ordinary skill in the art at the time of the invention. *In re Gershon*, 372 F.2d 535, 538 (CCPA 1967). Google’s Blog post is dated September 2008, several weeks after the application which ultimately resulted in the ’981 Patent was filed. Thus, the date of the blog post itself cannot establish a long felt persistent but unmet need. Moreover, the blog post does not provide any evidence of how long the needs expressed by Ms. Mayer existed.

Patent Owner argues that Ms. Mayer’s comments show a need for the invention and that this need was “encountered extensively *over nine-years* of experience at Google.” PO Resp. 51. In support, Patent Owner relies on Ms. Mayer’s statement that “I’ve worked at Google on search for the past 9 years and 3 months. . . . I’m very proud that Google in its first 10 years has changed expectations around information and how quickly and easily it

should be able to be retrieved. But I'm even more excited about what Google search can achieve in the future." PO resp. 52 (quoting Ex. 2001, 2, 10). Patent Owner argues that these statements "clearly suggests the challenges she describes are challenges she has attempted to address but had not yet succeeded." PO Resp. 52.

We disagree. Nothing in the Google Blog Post shows that the ideas Ms. Mayer was describing were ones she or others at Google had been persistently trying to achieve for long period of time. The only statements mentioning a time period are Ms. Mayer's statement that, at the time of the blog post, she had worked at Google for nine years, and a statement at the end of the post stating that she was very proud of what Google had achieved over that time period. *See* Ex. 2001, 2, 10. These statements are too general and disconnected to show sufficiently a long felt and persistent need. Instead, when read in the context of the blog post, Ms. Mayer's statement that she had worked at Google for nine years, was more likely intended as an introductory statement showing that she has a strong interest in search technology. *See* Ex. 2001, 2 ("I am a search addict. I'm naturally inquisitive – I've always liked finding things out. Plus, I've worked at Google on search for the past 9 years and 3 months. Of course I search a lot.")

The Apple Presentation, which occurred roughly three years after the '981 Patent application was filed, suffers from similar problems in that its date alone cannot be used to establish long-felt but unmet need. As before, Patent Owner does not present any evidence relating to this presentation indicating that the need was long felt and persistent. Patent Owner relies on a statement during the presentation that "for decades, technologists have teased us with this dream that you're going to be able to talk to technology,

and it'll do things for us. Haven't we seen this before, over and over? But it never comes true." PO Resp. 53 (quoting Ex. 2004, 11). Like the statements in the Google Blog Post, this statement is simply too general to sufficiently show a long felt persistent need. Other than mention the desire to "talk to technology," the statement fails to provide any information regarding specific needs identified by Apple, what they wanted the technology to deliver (other than "it'll do things for us") and when such needs were specifically identified.

Based on the evidence and arguments presented in the current record, we give little weight to Patent Owner's evidence of long-felt need as supporting non-obviousness.

b) Industry Praise

Praise in the industry for a patented invention, and specifically praise from a competitor, tends to indicate that the invention was not obvious. *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1370 (Fed. Cir. 2012). Industry praise for an invention may provide evidence of nonobviousness where the industry praise is linked to the claimed invention. *See Geo. M. Martin Co. v. Alliance Mach. Sys. Intern. LLC*, 618 F.3d 1294, 1305 (Fed. Cir. 2010); *Asyst Tech'n, Inc., v. Emtrak, Inc.*, 544 F.3d 1310, 1316 (Fed. Cir. 2008). "[T]o be accorded substantial weight in the obviousness analysis, the evidence of secondary considerations must have a 'nexus' to the claims, i.e., there must be 'a legally and factually sufficient connection' between the evidence and the patented invention." *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019).

Patent Owner points to comments by Mr. Forstall at the Apple Presentation praising Apple's own Siri functionality. Mr. Forstall noted,

“We’ve also partnered with Yelp, and so you can ask questions about businesses or restaurants, something like, ‘Find me a great Greek restaurant in Palo Alto.’ . . . Now I’ve been in the AI field for a long time, and this still blows me away, the fact that it understands the words, the concepts, and even now ranks it by Yelp’s ordering.” Ex. 2004, 40: 22–23. Patent Owner uses these statements as a basis for arguing that there was a nexus to their claimed invention because these statements show (1) speech recognition on a mobile device; (2) location awareness; (3) social networks; and (4) social network ranking factors. PO Resp. 53–56.

Even assuming Patent Owner’s claimed invention can be generalized to the aforementioned four categories, Mr. Forstall’s comments are simply insufficient to show a nexus to the claims of the ’981 Patent. For example, Patent Owner argues that Mr. Forstall’s comments show that Siri was location aware because it found restaurants in Palo Alto. But as can be seen, Mr. Forstall asked Siri to search for Greek restaurants in Palo Alto as part of the spoken search request. Because a location was provided as part of the search request, these comments alone do not indicate that the mobile device was location aware.

Further, Mr. Forstall’s comments also appear to be directed at features that may go beyond the ’981 Patent’s invention, such as Siri’s AI capabilities of being able to understand the words and concepts being spoken, and not just its ability to transcribe them. Thus, at least to the extent the comments by Apple’s Vice President are based on the ability of Apple’s products to “understand[] the words, the concepts” being spoken, we note that, without further evidence or explanation, such comments have a tenuous nexus with the claimed invention.

As to speech recognition, the '981 Patent describes that transcribing the spoken request was a process that was performed by prior art speech recognition engines, “such as the Nuance Communications speech recognition engine.” Ex 1001 7:3–4. In order to establish a nexus, the evidence relied upon must trace its basis to a novel element in the claim, not to something in the prior art. *Institut Pasteur & Universite Pierre et Marie Curie v. Focarino*, 738 F.3d 1337, 1347 (Fed. Cir. 2013). Objective evidence that results from something that is not “both claimed and novel in the claim,” lacks a nexus to the merits of the invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). Thus, because the '981 Patent acknowledges that speech recognition was known in the art at the time of the invention, and to the extent Apple’s comments are directed to its products’ ability to convert speech to text, such praise does not provide the required nexus to the claimed invention.

Patent Owner argues that even if speech recognition was well known, “the novelty is the **combination** of speech recognition, location metadata, and social network data. It is the novel combination that has received praise in the industry” As we explained above however, Mr. Forstall’s comments do not establish location awareness. We therefore do not find his comments sufficient to establish a nexus to the claimed invention.

Even if we were to assume a nexus between Mr. Forstall’s comments and the '981 Patent, we still find the comments to be fairly weak support for industry praise. Mr. Forstall comments fail to show, for example, that any praise for the concepts described, was shared industry wide, rather than by Mr. Forstall or Apple themselves. Further, Mr. Forstall praise for Apple’s own products, at Apple’s own product launch event, is self-congratulatory and insufficiently persuasive of industry praise for the invention claimed in

the '981 Patent. *See Bayer Healthcare v. Watson Pharms.*, 713 F.3d 1369, 1377 (Fed. Cir. 2013) (explaining that bare journal citations and self-referential commendation fall short of demonstrating industry praise).

To the extent Patent Owner relies on the Google Blog Post as evidence of industry praise, we find such evidence unpersuasive. We find no evidence of industry praise in the relied upon sections of the Google Blog Post. The Google Blog Post is one person's description of the possible future direction of Google's search technology, rather than praise, let alone industry praise, for advances in that technology as described in the '981 Patent.

Accordingly, based on the evidence and arguments presented, we do not weigh Patent Owner's evidence of alleged industry praise as significantly supportive of Patent Owner's position in the obviousness analysis.

2. *Overview of Roth*

Roth is directed to a system in which "a wireless mobile device takes a vocally entered query and transmits it in a text message format over a wireless network to a search engine; receives search results based on the query from the search engine over the wireless network; and displays the search results." Ex. 1005, Abstract. Roth was filed in October 2005, and explains that navigating through web pages on a mobile device with a small screen was difficult at that time. *Id.* ¶ 2. For this reason, text messaging based information retrieval systems, such as Google's Short Message Service (SMS), which allowed users to send queries as text messages, eliminated the need for web pages and browsers on a mobile device. *Id.* ¶ 3. However, text messaging was also inconvenient because of the lack of a full

keyboard on mobile devices. *Id.* Roth addresses this problem by providing a means for querying by spoken query. *Id.* ¶¶ 4–5. Roth describes a method of obtaining query results on a mobile device verbally using speech recognition software. *Id.* ¶ 6. The user’s verbal input is converted automatically to SMS format and transmitted to a search engine. *Id.* Search results are sent back in SMS format from the search engine and are displayed on the screen of the mobile device. *Id.*

3. *Overview of Fortescue*

Fortescue is directed towards “updating location information for the social network and/or to providing the location information from the social network.” Ex. 1006 ¶ 35. In Fortescue: “A request for the location information associated with a GPS coordinate is received from a client device associated with a member of the social network. In response to the request, a location name associated with another member of the social network is provided to the client device based on the GPS coordinate.” Ex. 1006 ¶ 35. The other location name may be associated with the GPS coordinate and with the member in the social network. Fortescue, therefore, describes that the GPS coordinate and/or member may be associated with a plurality of location names, and that a location description may also be received and associated with the location name and with the member in the social network. *Id.*

Figure 12 of Fortescue, reproduced below, shows a display for providing search results of a search for location information from a social network. Ex. 1006 ¶ 198. The display shows search results for a search of “Restaurants within 500 metres” and includes a map of the searched area. Ex. 1006 ¶ 199. Each of the points 1204–1208 correspond with a different

one of the returned search results. *Id.* Fortescue explains that the search results may be ordered, such that some of the points are more relevant to the user than others. Ex. 1006 ¶ 200. Location names, ratings, and other tags related to the search results are also displayed. Ex. 1006 ¶ 202.

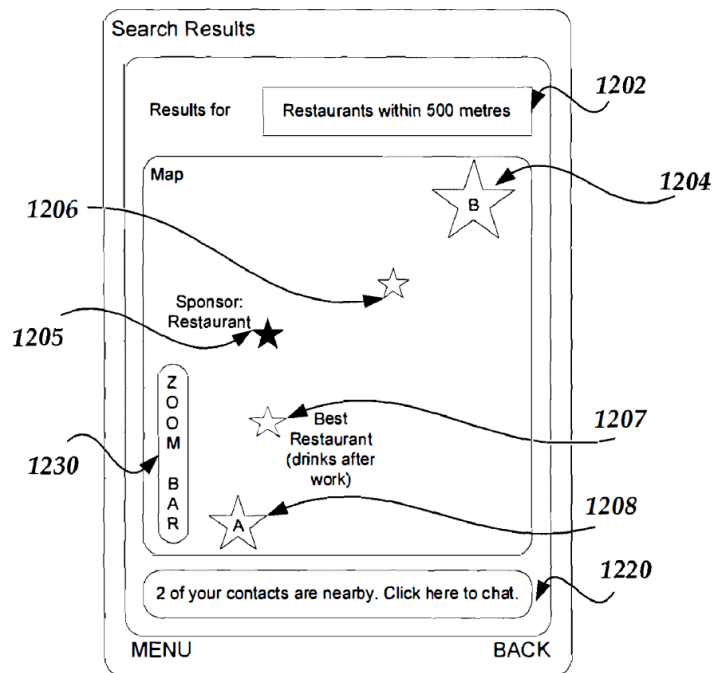


Figure 12 of Fortescue illustrates a display for providing search results of a search of the social network for location information.

4. Overview of Ng

Ng relates to ranking search engine results based on popularity with mobile-device users. Ex. 1007, Abstract. Ng explains that results for a search can be ranked based on several factors, including distance or user reviews. Ex. 1007 ¶¶ 5–9. However, when user reviews are either unreliable or lacking, an automated system to determine user ratings is needed. Ex. 1007 ¶ 10. Ng therefore uses geo-position data from mobile devices to calculate traffic at particular businesses and rank search results. Ex. 1007, Abstract.

Figure 7 of Ng, reproduced below, shows a map of search results with ratings determined by device visits. Ex. ¶ 61. The ranking in this figure is done by distance from the center, however, the search results may be ranked based on other factors, such as user rating and user traffic. Ex. 1007 ¶¶ 62–64, Fig. 7.

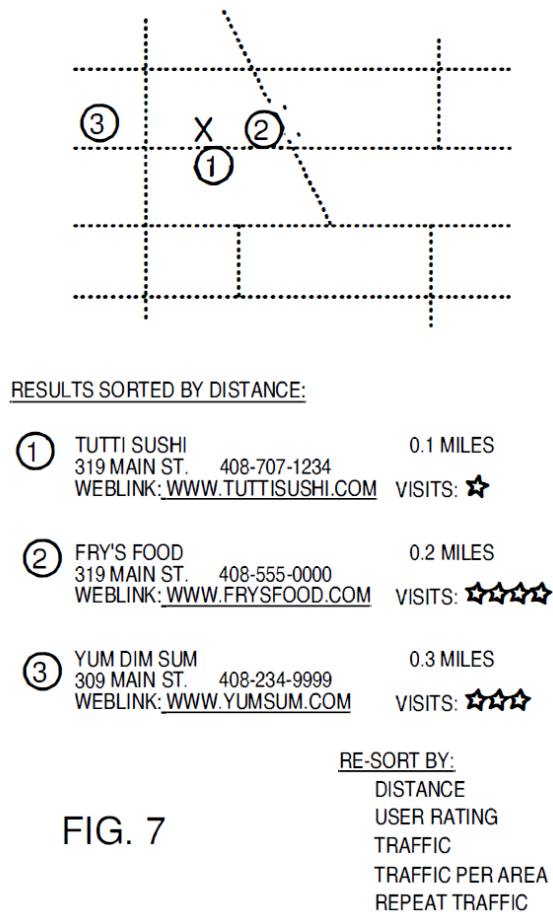


Figure 7 shows a 2-D map of search results with star ratings determined by mobile-device visits

5. *Combination of Roth with Fortescue*

Petitioner argues “The POSITA would have had ample motivation to modify the disclosures in Roth to incorporate some of the additional features disclosed in Fortescue for search results.” Pet. 55. Petitioner argues that Roth “describes as its goal improving a user’s ability to use his mobile

device to obtain information about local restaurants and other businesses” by allowing verbal input and by formatting the information returned to the user. Pet. 55 (citing Ex. 1005 ¶ 3, 29). Dr. Porter testifies that a person of ordinary skill “would have been motivated to add to Roth the additional feature of formatting the results based on other ranking factors” such as the relevancy information described in Fortescue. Pet. 55 (citing Ex. 1004 ¶ 164). According to Petitioner, Fortescue overlaps with Roth “as they are both directed to allowing users to more effectively perform internet searches on their mobile phones for local businesses like restaurants.” Pet. 55–56 (citing Ex. 1004 ¶ 164). Therefore, Petitioner argues “a POSITA would logically look to a reference like Fortescue for features and elements to incorporate into the system of Roth for performing those same search functions.” Pet. 56. Additionally, Petitioner argues that incorporating Fortescue’s social network elements into Roth would not require any significant technical changes. Pet. 56 (citing Ex. 1004 ¶ 165). Alternatively, Petitioner argues that a person of ordinary skill would have been motivated to modify Fortescue to incorporate Roth’s speech to text features. Pet. 56 (citing Ex. 1004 ¶ 167).

Patent Owner does not present arguments in its Response disputing Petitioner’s evidence and arguments that a person of ordinary skill would have combined Roth with Fortescue.

We find Petitioner has demonstrated that one of ordinary skill in the art would have been motivated to combine Roth with Fortescue. Both references relate to performing internet searches and both discuss searching for restaurants. On this record, we are persuaded by Petitioner that a person of ordinary skill would have considered adding Fortescue’s social network elements and the ability to rank based on various factors to benefit Roth’s

search results. Similarly, the present record supports Petitioner's assertion that a skilled artisan would have been motivated to modify Fortescue to add Roth's speech to text feature for additional convenience for the user.

6. Combination of Roth with Ng

Petitioner argues, "[t]he POSITA would have been motivated to modify the disclosures in Roth to incorporate the features disclosed in Ng." Pet. 57 (citing Ex. 1004 ¶ 168). According to Petitioner, a person of ordinary skill in the art "would have been motivated to add to Roth the additional feature of ranking the results based on social-network-based factors (i.e., the popularity and repeat visitor information described in Ng) in addition to physical location." Pet 58 (citing Ex. 1004 ¶ 169). Petitioner points out that Ng discusses performing searches on search engines like Google and Yahoo, and that Ng discloses ranking those search results based on multiple factors, including personal reviews, ratings, and popularity based on visits. Pet. 58 (citing Ex. 1007 ¶¶ 2–5, 8). Petitioner argues that modifying Roth to add Ng's ranking of results based on various social networking factors would benefit Roth's speech based search system and also would have been within the skill of the ordinary artisan. Alternatively, Petitioner argues one of skill would have been motivated to modify Ng to add Roth's speech to text features to provide users with additional ways to interact with Ng's system. Pet. 59 (citing Ex. 1004 ¶ 171).

Patent Owner does not present arguments in its Response disputing Petitioner's evidence and arguments that a person of ordinary skill would have combined Roth with Ng.

We find Petitioner has demonstrated that one of ordinary skill in the art would have been motivated to combine Roth with Ng. The evidence

supports Petitioner’s contention that a skilled artisan would have understood Ng’s ability to rank search results based on user rating and popularity would benefit Roth’s speech based search system. On this record, we are also persuaded that a person of ordinary skill would have considered Roth’s speech to text features beneficial to Ng’s searches by providing additional user convenience.

7. Analysis of Independent Claim 1

Claim 1 is one of three independent claims of the ’981 Patent, along with claims 10 and 16. Claims 10 and 16 include limitations similar to those of claim 1 and Petitioner presents similar evidence for claims 10 and 16 as it does for claim 1. *See* Pet. 42–55. Thus, some of our analysis of claim 1 below also applies to claim 10 and claim 16. In the few instances that they differ, we explicitly address those differences separately below.

a) Preamble: “A system for presenting social-network-provided outputs to a mobile-electronic-device user at a location associated with the user in response to the user’s spoken request.”

Petitioner argues the preamble does not limit the claims, but argues in the alternative that it has shown the elements of the preamble in their arguments of the other limitations. *See* Pet. 23 n. 4. Patent Owner argues that the preamble is limiting and that Petitioner has failed to address the preamble at all. PO Resp. 27.

Regardless of whether the preamble is limiting, we find Petitioner has demonstrated that the cited prior art references teach elements such as “social-network-provided outputs,” (*see* §§ II.C.6.d–II.C.6.e below) “mobile-electronic device” (*see* § II.C.6.b) and “user’s spoken request” (*see* § II.C.6.b) in the arguments it presents for the other limitations of the independent claims, as we analyze below.

- b) Limitation 1.1: “a data input port configured to receive speech information from the mobile-electronic-device user”*

Petitioner argues Roth teaches the aforementioned limitation by disclosing “a wireless mobile device that ‘allows its user to submit a verbal query.’” Pet. 23 (citing Ex. 1004 ¶¶ 89–90). For example, Figure 2 of Roth depicts a wireless mobile device with a voice input that includes “a microphone which is electrically connected to speech to text converter 112.” Pet. 23–24 (citing Ex. 1005 ¶¶ 18, 19, 25, 29).

By identifying Roth’s wireless mobile devices that allow users to submit verbal input through, for example, a microphone to a speech to text converter, Petitioner has demonstrated that Roth alone, and Roth combined with either Fortescue or Ng, teaches “a data input port configured to receive speech information from the mobile-electronic-device user” as claimed.

- c) Limitation 1.2: “a memory configured to store a transcript of the spoken request and metadata associated with the spoken request comprising at least the location during the spoken request.”*

Petitioner argues Roth alone teaches the aforementioned limitation by disclosing a speech to text converter that converts the spoken request to a transcript of the spoken request. Pet. 24 (citing Ex. 1005 ¶¶ 25, 29; Ex. 1004 ¶¶ 91–93). Petitioner also argues that a person of skill in the art would have understood that the mobile devices include memory configured to store the transcript in order for it to be processed to the desired format. Pet. 24–25 (citing Ex. 1004 ¶ 92).

Petitioner further argues that Roth “automatically detects the location of the wireless mobile device 100 and passes that information along with the text message to the search engine 104.” Ex. 1004 ¶ 34. Similarly, “[i]n another alternative described in Roth, ‘mobile devices with Global

Positioning System (GPS) capability can transfer its location directly to the search engine.” Pet. 25 (citing Ex. 1005 ¶ 34). Petitioner’s declarant testifies that passing location information to a search engine “indicates that the system of Roth includes a memory configured to store this location metadata so that it can be sent with the text message and used by the search engine.” Pet. 25 (citing Ex. 1004 ¶ 93).

Petitioner also argues the combination of Roth and Fortescue teaches this limitation. For example, Petitioner argues Fortescue “discloses ‘Memory 230 . . . which can be utilized by client device 200 to store, among other things, programs 244 and/or other data,’ which may include ‘data input by a user of client device 200’ or ‘location information data, or the like.’” Pet. 25 (citing Ex. 1006 ¶ 77). Thus, Petitioner argues that “[t]o the extent it is argued that Roth does not disclose the claimed memory, it would have been obvious to the POSITA to use the memory available in the devices described by Roth to store the query and the location data as described expressly in Fortescue.” Pet. 25.

Petitioner argues the combination of Roth and Ng also teaches this limitation. Here, Petitioner argues that Ng discloses that when a user performs a local search, the geographic location of the user may be provided along with the search and factored into ranking the search results. Pet. 26 (citing Ex. 1007 ¶¶ 32, 33, 20). As before, relying on the testimony of Dr. Porter, Petitioner argues that the disclosure of cellular phones in Ng with memory indicates that Ng “discloses a memory storing the user’s current location when the user searches for information.” Pet. 26 (citing Ex. 1004 ¶ 95).

Patent Owner generally argues that Roth does not teach storing both the transcript of the spoken request and metadata associated with the spoken

request, because the metadata in Roth is not associated with the spoken request and because Roth does not teach that a device stores the two together. PO Resp. 28–32. For example, Patent Owner argues Petitioner does not explain how Roth’s transcript would have metadata associated with the transcript. PO Resp. 29. Patent Owner argues “[n]othing in ¶ 34 [of Roth] discloses that a transcript of a spoken request is stored with metadata. Rather Roth discloses only that location data can be sent to a search engine.” PO Resp. 30 (citing Ex. 2006 ¶¶ 60–67). According to Patent Owner, “Roth never suggests that the text message is associated with the location. Rather, Roth teaches that GPS or other location data is separately sent in order to send advertisements to the user.” PO Resp. 30 (citing Ex. 1005 ¶ 35). According to Patent Owner, “[m]erely because a device location is ‘detected’ in a later transmission to a search engine does not mean the metadata is ‘associated with the spoken request’ or the location is attached ‘during the spoken request,’ and it is incorrect to assume so.” PO Resp. 31.

Addressing Fortescue and Ng, Patent Owner argues that both of those references fail because, other than disclosure of memory, neither reference teaches that the memory stores both the transcript and the metadata, that the metadata is associated with the spoken request, and that the metadata comprises the location during the spoken request. PO Resp. 31–32.

We find Petitioner has demonstrated that Roth alone, or Roth combined with either Fortescue or Ng, teaches “a memory configured to store a transcript of the spoken request and metadata associated with the spoken request comprising at least the location during the spoken request.” In particular, we are persuaded that Roth’s speech to text converter converts a spoken request into a transcript of that request, stores it in memory, and sends the transcript to a search engine. Ex. 1005 ¶¶ 25, 29. For example,

Roth discloses that a “wireless mobile device 100 receives via its voice input 110 a query spoken by a user,” and that this query “is converted by the speech to text converter 112 to text,” and that this text is ultimately transmitted to a search engine. Ex. 1005 ¶ 29. The speech to text converter 112 is a component of the wireless mobile device itself. *See* Ex. 1005 ¶ 25, Fig. 2. We credit and are persuaded by the testimony of Petitioner’s expert that one of ordinary skill in the art would understand that in order to convert the voice input into text and then transmit the text to a search engine, the text (i.e. the claimed transcript) would be stored, at least temporarily, in the memory of the wireless mobile device. Ex. 1004 ¶ 91–92.

The same is true for the metadata. Roth discloses that “mobile devices with Global Position System (GPS) capability can transfer its location directly to the search engine without the requirement of mobile triangulation.” Ex. 1005 ¶ 34. Here, once again, we credit and are persuaded by the testimony of Petitioner’s expert that one of ordinary skill would understand that in order to transmit its location directly to the search engine, a wireless mobile device would store that location, at least temporarily, in its memory. Ex. 1004 ¶ 93.

Patent Owner argues that Roth does not disclose that the transcript and the metadata identifying the location of the spoken request are stored together. PO Resp. 31. This argument, however, is incommensurate with scope of claim 1. Claim 1 requires a memory configured to store the transcript and the metadata without requiring that the two are stored together.

Finally, we address Patent Owner’s argument that the location data in Roth is not “associated with” the spoken request. This argument is unpersuasive in light of Roth’s disclosure. Roth discloses that a user can

speaking a command into a mobile device to initiate a search. Ex. 1005 ¶ 31. An example of such a search may be for restaurants. Ex. 1005 ¶¶ 31–32. The user is then prompted for location in which to search for restaurants. Ex. 1005 ¶ 32. Alternatively, the location of the mobile device may be automatically detected by having the mobile device transfer its GPS location to the search engine along with the text transcript. Ex. 1005 ¶ 34. In response, the search engine sends back results for restaurants based on the location of the device. *See* Ex. 1005 ¶ 35, Fig. 6. In addition, advertisements for other restaurants may be appended to the search results, where the advertisements are also based on the location of the mobile device. Ex. 1005 ¶ 35. This disclosure makes clear that the location of the mobile device (i.e. the claimed “metadata”) is associated with the search for restaurants (i.e. the claimed “spoken request”). If there were no association between the transmitted location of the device and the transmitted spoken request for restaurants, the search results and advertisements would not be for restaurants in the geographic vicinity of the user.

The claim, as properly construed, requires no more than this. In particular, we disagree with Patent Owner’s argument that the transcript and location data are not associated with each other because the location data is not attached to the transcript in the memory of Roth’s device. This argument is based on a claim construction (requiring an attachment between the location data and the transcript) that is unsupported by the ’981 Patent, as explained above in our analysis of the parties’ claim construction positions.

Accordingly, Petitioner has shown by a preponderance of the evidence that Roth teaches “metadata associated with the spoken request comprising at least the location during the spoken request.” Similarly, on this record,

Fortescue and Ng's teaching that location data is sent with the search request, combined with Roth's teaching of a transcript of the spoken request, teaches the aforementioned limitation.

d) Limitation 1.3: "an interface port to a social network database, configured to transmit a request to mine information of the social network database based on the transcript and the metadata, and to receive social network information from the social network database based on the transmitted request."

Petitioner argues Roth alone teaches the aforementioned limitation if the term "social network" is not given patentable weight. Pet. 26–27. Petitioner relies on Roth's disclosure that a spoken search query is converted to SMS format and sent to a search engine along with the location of the mobile device, and that the search results are sent back to the mobile device in SMS format from the search engine. Pet. 26–27 (citing Ex. 1004 ¶¶ 96, 97; Ex. 1005 ¶¶ 6, 18, 26, 29, 34, Fig. 2). Petitioner argues, in the alternative, that if "social network" is given patentable weight, Roth "still suggests" a social network database because it describes searching for information about restaurants, and, therefore, it would have been obvious to one of ordinary skill in the art to search for user reviews of those restaurants. Pet. 28 (citing Ex. 1004 ¶ 99). Petitioner argues that databases containing user reviews necessarily constitute a social network database. Pet. 28 (citing Ex. 1004 ¶ 99).

Further, Petitioner argues "Fortescue discloses an interface from a mobile device that allows searching a database that includes user reviews (the rating and review server 133)." Pet. 28 (citing Ex. 1006 ¶ 58). According to Petitioner, "Fortescue further discloses a mobile device configured to transmit the user's search request to such a social network

database and to receive those search results in response.” Pet. 28–29 (citing Ex. 1006 ¶¶ 190–192, 198, Figs. 2, 11, 12).

Petitioner also relies on Ng, arguing that “when the user enters a search, ‘the user makes a connection to server 54 through Internet 46 or some other network’ and the server ‘extracts the search terms from a request’ and ‘sends a search query to search engine 52.’” Pet. 29 (citing Ex. 1007 ¶ 32). Petitioner further alleges that Ng’s “Biz Database” that includes the traffic count used as a measure of popularity, and links to user ratings, teaches a social network database and that the information received is social network information that is ranked based in popularity and user ratings. Pet. 29 (citing Ex. 1007, Fig. 2, ¶ 31).

Patent Owner argues Roth alone does not disclose a social network database that contains social network information. PO Resp. 33. Indeed, Patent Owner argues that Roth never uses the word database and does not disclose anything resembling a database. PO Resp. 33 (citing Ex. 2006 ¶¶ 76–80).

Patent Owner further argues that mining a database is distinct from searching a database, in that mining implies adding additional value to the retrieved stored data to reveal further insights into the data, while searching implies receiving information stored as it is stored in the database for formatting and display. PO Resp. 34. Patent Owner argues that Petitioner ignores this distinction in its Petition. PO Resp. 34–35.

As to Fortescue or Ng, Patent Owner argues that neither reference teaches the claim limitation because neither teaches mining a social network database rather than simply searching such database, and because Petitioner incorrectly relies on the databases storing user reviews as evidence that they constitute social network databases. PO Resp. 35 (citing Ex. 2006 ¶ 79).

We find Petitioner has not demonstrated by a preponderance of the evidence that Roth alone teaches limitation 1.3. In particular, we find Petitioner has not presented sufficient evidence for the contention that because Roth discloses searching for restaurants, one of ordinary skill in the art would have understood that Roth also suggests searching for restaurant reviews and that Roth's search engine would include user reviews. Roth does not disclose a user searching for user reviews of restaurants. Roth also does not disclose that the search engine it interfaces with contains user reviews of restaurants, even if a user were to search for such reviews. Instead, Roth simply teaches searching for certain types of restaurants in an area. Ex. 1005, Figs. 5, 6. Petitioner relies on its expert's testimony, but Dr. Porter merely repeats the arguments Petitioner makes in the Petition without adding significantly more analysis or explanation. There is insufficient explanation to support the contention that searching for information about restaurants would suggest searching for user reviews of restaurants. *See* Ex. 1004 ¶ 99. We, therefore, are not persuaded that Petitioner has presented sufficient evidence of either of the aforementioned contentions.

We, however, find Petitioner has demonstrated that Roth combined with either Fortescue or Ng, teaches "an interface port to a social network database, configured to transmit a request to mine information of the social network database based on the transcript and the metadata, and to receive social network information from the social network database based on the transmitted request." Fortescue, for example, explicitly teaches searching social networks for locations and restaurants based on various factors such as proximity, user rating, etc. *See* Ex. 1006 ¶¶ 192, 198–200, Figs. 11, 12. This information is kept in databases such Fortescue's ratings and review

server and in social network database tables and data structures. *See* Ex. 1006 ¶¶ 58, 60, 61, 89–92, Figs. 14–16. As explained previously, Petitioner provides a rational reason why a person of ordinary skill in the art would have combined Roth’s voice based search for restaurants with Fortescue’s disclosure of searching a social network, to improve search results and provide information such as user ratings for restaurants and the like. *See supra* § II.C.4.

Ng teaches a business database that includes information such as popularity and user ratings. Ex. 1007, Figs. 2, 7, ¶¶ 9, 32–34, 64. We are persuaded by Petitioner’s arguments that Ng’s business database teaches a social network database. The business database is searchable and includes information such as links to user ratings and also a traffic counter that tracks number of mobile devices found to be within the premises of a business. Ex. 1007 ¶¶ 31, 33. Both user ratings and traffic information are types of information that are the same as or similar to the types of information described in the ’981 Patent as being contributed by members of a community to a searchable database. *See* Ex. 1001, 14:64–67. As explained above, Petitioner has provided a rational reason why one of ordinary skill would have modified Roth’s voice based search for restaurants based on Ng’s teaching of ranking the results based on user rating and other factors. *See supra* § II.C.5.

We are persuaded by Petitioner’s arguments that Fortescue and Ng each teach an interface to a social network database, configured to transmit a request to mine information of the social network database. As explained above, we find Petitioner has demonstrated that a person of ordinary skill would have been motivated to combine Roth with Fortescue, and Roth with Ng. Roth teaches performing a search based on a transcript of a spoken

request and associated metadata such as the location of the device. Ex. 1005 ¶¶ 6, 34. Petitioner has shown sufficiently that the combination of Roth and Fortescue, and also Roth and Ng teaches, “an interface port to a social network database, configured to transmit a request to mine information of the social network database based on the transcript and the metadata, and to receive social network information from the social network database based on the transmitted request.”

- e) *Limitation 1.4: “at least one processor configured to transmit the request through the interface port dependent on at least the transcript and the metadata, to receive the social network information from the interface port.”*

Petitioner argues, and we are persuaded, that Roth teaches the aforementioned limitation by disclosing a “transmitter and receiver that are configured to transmit the user’s request to the search engine and receive the results of the search therefrom.” Pet. 30 (citing Ex. 1005 ¶ 25, Fig. 2). Petitioner argues that a person of ordinary skill would have understood that Roth’s mobile device would use at least one processor to transmit and receive data. Pet. 30 (citing Ex. 1004 ¶ 104; Ex. 1005 ¶ 19).

Further, Petitioner argues Fortescue, in combination with Roth, also teaches the aforementioned limitation by disclosing processors that “transmit a user’s request based on the query and the location metadata and to receive the social network information in response.” Pet. 30–31 (citing Ex. 1006 ¶¶ 112, 131, 106).

Patent Owner does not present arguments separately addressing this limitation. *See* PO Resp. 36. On this record, we are persuaded that Roth in combination with Fortescue teaches at least one processor that transmits a search request through an interface port based on a transcript of a search

request (as taught by Roth) and metadata associated with the search request (as taught by both Roth and Fortescue) and receives social network information from the interface port (as taught by Fortescue). As explained above, Petitioner has provided a sufficient reason to combine Roth with Fortescue in order to provide the benefits of social network information that can be used to improve, format, and rank the search results of Roth. *See supra* § II.C.4.

Petitioner argues that the combination of Roth and Ng also teaches this limitation by disclosing that Ng's device sends a search query and location data to a server, which searches a business database storing social network information and returns results back to Ng's device for display. Pet. 31–32 (citing Ex. 1007 ¶¶ 32, 34, 43–47). Based on the present record, we are persuaded that Roth in combination with Ng teaches at least one processor that transmits a search request through an interface port based on a transcript of a search request (as taught by Roth) and metadata associated with the search request (as taught by both Roth and Ng) and receives social network information from the interface port (as taught by both Roth and Ng). As explained above, Petitioner has provided a rational reason why one of ordinary skill would have modified Roth's voice based search for restaurants based on Ng's teaching of ranking the results based on user rating and other social networking factors. *See supra* § II.C.5.

f) Limitation 1.5: “communication port configured to communicate at least a portion of the social-network information to the user.”

Petitioner argues that Roth teaches the aforementioned limitation by disclosing “that ‘[a]fter receiving the search results, either directly from the search engine 104 or from the intermediary site 106, the wireless mobile

device 100 displays the search results on its screen.” Pet. 32–33 (citing Ex. 1005 ¶ 23, Fig. 2).

Petitioner also relies on Fortescue as teaching the aforementioned limitation, arguing that Fortescue discloses that the mobile device includes an input/output interface that is used to, *inter alia*, receive the social network information and communicate it to the user.” Pet. 33 (citing Ex. 1006 ¶¶ 81, 131, 132, Figs. 1, 12 and 13).

Petitioner argues the combination of Roth and Ng teaches this limitation as well. Petitioner contends Ng describes that once search results are received, they are ranked based on the information in the business database and then displayed to the user. Pet. 33 (citing Ex. 1007 Fig. 2, ¶ 43). Figures 4 and 7, for example, depict social network information being communicated to the user that include popularity and user reviews. Pet. 33.

Patent Owner does not present separate arguments addressing this limitation. We are persuaded that the combination of Roth and Fortescue, and the combination of Roth and Ng, each teach a communication port configured to communicate social network information to the user by displaying search results from a social network. For example, Fortescue teaches a display 1200 and 1300 in Figures 12 and 13, respectively, that present search results to the user. Ex. 1006 ¶ 81, Figs. 12, 13. Similarly, Ng teaches displaying search results for a restaurant based on popularity. Ex. 1007 ¶¶ 42–43, Fig. 4. For reasons stated above, we find Petitioner has presented rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information. *See supra* §§ II.C.4–5.

- g) *Limitation 1.6: “wherein the social network database comprises a plurality of social network records, the at least one processor being further configured to rank the received social network information comprising a plurality of received social network records dependent on at least one social network ranking factor, the communication port being further configured to output at least a portion of the social network records in a manner dependent on the at least one social network ranking factor”*

Petitioner argues Roth teaches the aforementioned limitation by disclosing “when records are received as a result of the search query, the formatter is used to format and order the records for display” at least based on distance from the user’s location. Pet. 34 (citing Ex. 1005 ¶¶ 30–31, Fig. 6). Petitioner explains that the search results in Figure 6 of Roth are ranked based on distance from the user, and Dr. Porter testifies that it would be obvious to a person of ordinary skill in the art, based on Figure 6 (and common sense), to rank restaurants based on physical distance from the user. Pet. 35 (citing Ex. 1004 ¶ 114). Petitioner argues that distance is a social network ranking factor and that “[t]herefore Roth’s disclosure of results ordered by distance from the user would disclose this element to the POSITA.” Pet. 35.

Petitioner argues that Fortescue also teaches the aforementioned limitation. Petitioner argues Fortescue discloses a social network database with multiple social network records and that information received from this database is ranked based on a social networking factor. Pet. 36 (citing Ex. 1006 ¶¶ 31–32, 54, 127). Petitioner argues “The output of a portion of the social network records depending on at least one social network ranking factor is shown, *inter alia*, in Figures 12 and 13.” Pet. 36.

Petitioner argues that “Ng discloses a processor that is configured to rank the social network information.” Pet. 36 (citing Ex. 1007 ¶ 34).

According to Petitioner, Ng ranks its results based on popularity and other factors as well, such as user ratings (Pet. 36 (citing Ex. 1007 ¶¶ 24, 35, 5)), and that these factors fall within the scope of “social network ranking factors” as shown by dependent claims 3 and 4 (Pet. 36 (citing Ex. 1004 ¶ 116)). Petitioner also relies on Figures 4 and 7 of Ng as showing that search results displayed on a user’s screen are ranked by factors such as popularity and user rating. Pet. 36–37 (citing Ex. 1007, Figs. 4, 7, ¶ 79).

Addressing obviousness over Roth alone, Patent Owner argues that Roth “never refers to any social network at all, and thus by definition, does not disclose any ‘social network ranking factor.’” PO Resp. 37. Roth also never discloses ranking of any sort, according to Patent Owner, and while Roth discloses formatting search results, “‘formatting’ is not ‘ranking.’” PO Resp. 37. Patent Owner argues that Roth simply formats the results it receives, preserving its order, and never explicitly discloses ranking the results it receives. PO Resp. 37–38. Additionally, Patent Owner argues that even if it were assumed Roth orders based on distance, Roth still does not disclose ranking based on a “social network ranking factor” because distance is not dependent upon an interpersonal metric. PO Resp. 39.

Addressing the combination of Roth and Fortescue, Patent Owner argues Fortescue’s ordering is based on “relevancy” not a “social network ranking factor.” Relevancy, is related to degree of separation between two members of a social network, and ordering based on such degree of separation is not ranking based on a social network ranking factor, according to Patent Owner. PO Resp. 39–40. Patent Owner also argues that “the received social network information” being ranked is the information received in the prior limitations of the claim from the social network database based on the transcript and associated metadata. PO Resp. 36–37.

According Patent Owner, Fortescue does not disclose “the received social network information.” PO Resp. 39.

Addressing the combination of Roth and Ng, Patent Owner argues that Ng never uses the word “social” and thus does not disclose a social network ranking factor. PO Resp. 40. The ranking based on popularity in Ng is based on a count of how many mobile devices were found in a given business, and this count is not based on an interpersonal metric, thus, according to Patent Owner, ranking based on Ng’s popularity does not teach a social network ranking factor. PO Resp. 40. Similarly, ranking based on user reviews does not teach ranking based on a social network ranking factor because user reviews are not an interpersonal metric according to Patent Owner.

Having reviewed the arguments and evidence presented by the parties, we determine Petitioner has not demonstrated that Roth alone teaches ranking search results based on a social network ranking factor. Roth discloses that when search results become available, they are received as a text message. Ex. 1005 ¶ 29. The text message is sent to the formatter which formats the search results for display. Ex. 1005 ¶ 29. “Formatted information is ordered and presented in an easily digestible way.” Ex. 1005 ¶ 29. In addition to this disclosure, Figure 6 of Roth lists three restaurants in order of distance. These disclosures alone, we determine, are insufficient to teach ranking the received social network information dependent on a social network ranking factor. Although Roth discloses ordering the search results as part of the formatting, it does not expressly disclose that the search results are ordered by distance or other specific factor. The fact that the results in Figure 6 of Roth are ordered based on distance may be the result of happenstance since only three results are shown. Without further

explanation or disclosure, we find Roth alone is insufficient in teaching limitation 1.6.

The same is not true of the combination of Roth and Fortescue, which we determine teaches limitation 1.6. Here, Fortescue discloses that its search results (e.g. for a restaurant) are ordered based on relevancy information. Ex. 1006 ¶ 127. Relevancy information can include a degree of separation between the member and the other members associated with search results, an amount of match of the search criteria, . . . [and] a rating associated with the search result.” Ex. 1006 ¶ 127. Thus Fortescue explicitly discloses ordering search results based on degree of separation, and also based on a rating of the location. *See also* Ex. 1006, Figs. 11–13 (which depict searching for restaurants based on distance, time, and rating). We determine both degree of separation and user ratings are social network ranking factors as disclosed in Fortescue. As explained above, Petitioner has provided a sufficient reason to combine Roth with Fortescue in order to provide the benefits of social network information that can be used to improve, format, and rank the search results of Roth. *See supra* § II.C.4.

Similarly, we determine the combination of Roth and Ng also teach limitation 1.6. Ng discloses searching for restaurants and shows that these search results may be ranked based on popularity and user reviews. Ex. 1007 ¶¶ 5, 24, 31, 34, Figs. 4, 7. As we said earlier, user reviews of restaurants are encompassed by the claim term “social network ranking factor.” Ng discloses displaying the ranking search results to the user. Ex. 1007 Figs. 4, 7. As explained above, Petitioner has provided a rational reason why one of ordinary skill would have modified Roth’s voice based search for restaurants based on Ng’s teaching of ranking the results based on user rating and other social networking factors. *See supra* § II.C.5.

h) Conclusion

Based on a review of the record, we find Petitioner has not sufficiently demonstrated Roth alone teaches all the limitations of claim 1 at least because Petitioner has not shown that Roth teaches limitations 1.3 and 1.6. However, for the reasons stated above, we find Petitioner has demonstrated by a preponderance of the evidence that the combination of Roth with Fortescue and Roth with Ng teach all the limitations of claim 1.

8. Analysis of Claim 10

The limitations of independent claim 10 are similar to those of independent claim 1 and Petitioner relies on largely the same evidence and arguments for claim 10 as it does for claim 1. *See* Pet. 42–47. Patent Owner presents largely the same arguments against claim 10, as it does against claim 1. *See* PO Resp. 44–47. For those common assertions and counter-arguments, the corresponding discussions above in the context of claim 1 equally apply. In one limitation, however, claim 10 differs slightly. We analyze this limitation below.

a) Limitation 10.3: “automatically selecting a plurality of social-network-provided information records with at least one automated processor, by searching the social-network for information records using both the location and the transcript”

Petitioner argues Roth teaches this claim limitation by disclosing “that ‘after receiving a query over the wireless network 102, the search engine 104 generates search results and sends the search results back over the wireless network 102 to the wireless mobile device 100.’” Pet. 44 (quoting Ex. 1005 ¶ 20. Petitioner further relies on Roth’s disclosure that “the wireless network 102 automatically detects the location of the wireless mobile device

100 and passes that information along with the text message.” Pet. 44 (quoting Ex. 1005 ¶ 34).

Petitioner relies on Fortescue’s disclosure that the GPS coordinate of the mobile device is received with the search criteria and then the social network is searched. Pet. 44 (citing Ex. 1006 ¶¶ 112–113). As explained above, Petitioner has provided a sufficient reason to combine Roth with Fortescue in order to improve Roth’s voice based search with the ability to search social networks. *See supra* § II.C.4.

Petitioner also relies on Ng’s disclosure that when a user performs a local search, the search engine uses the query and the location information to consult its business database and creates a result set of businesses “matching the search terms that are close to the search center.” Pet. 44–45 (quoting Ex. 1007 ¶ 33). As explained above, Petitioner has provided a rational reason why one of ordinary skill would have modified Roth’s voice based search for restaurants based on Ng’s teaching of ranking the results based on user rating and distance. *See supra* § II.C.5.

Patent Owner argues that Petitioner ignores that references to “the social-network,” “the location,” and “the transcript” refer back to the “social network database,” the “location associated with the user during the spoken request,” and “the transcript of the spoken request and metadata associated with the spoken request” respectively recited previously in the claim. With regard to the social network database, Patent Owner argues that Petitioner fails to show that the references disclose a social network database under Patent Owner’s proposed construction. Regarding “the location,” and “the transcript,” Patent Owner argues that the references do not show that the location is associated with the spoken request and that instead they disclose

sending the location of the device independently of any query. PO Resp. 46–47.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated that the combinations of Roth and Fortescue, and Roth and Ng, each teach limitation 10.3. As explained in our analysis of claim 1, Roth teaches creating a transcript of a spoken search request. *See supra* § II.C.6.b–II.C.6.d; Ex. 1005 ¶¶ 18, 19, 25, 29. In addition, Roth discloses detecting the location of the mobile device, or alternatively having the device itself transmit its location, and using this location as a basis for conducting the search. Ex. 1005 ¶ 34. Fortescue also clearly shows that searches are performed using the location of the device. Ex. 1006 ¶ 112–113. For example, Fortescue teaches that GPS coordinates are received from the client device as part of searching the social network. Ex. 1006 ¶¶ 10, 112, Fig. 4. Finally, Ng discloses conducting searches using the location of the mobile device. For example, Ng discloses “[u]sing search terms and the search center location, search engine 52 consults business database Businesses matching the search terms that are close to the search center are included in the result set.” Ex. 1007 ¶ 33. For reasons stated above, we find Petitioner has presented a rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information. *See supra* §§ II.C.4–5.

Patent Owner’s argument that the references do not disclose a social network database has been addressed in our analysis of claim 1. As we explained, we do not agree with Patent Owner’s construction of social network database. Instead we find Fortescue and Ng both disclose social network databases under our adopted construction of the term. We also have addressed Patent Owner’s argument that the location is not associated with

the spoken request because the two are sent independently of one another. We disagree with Patent Owner. Instead we explained that Roth discloses that the location of the device is associated with the spoken request because the two are sent together and because the search engine sends back search results for restaurants, and additional advertisements, based on the location of the device. *See* Ex. 1005 ¶ 35, Fig. 6.

b) Conclusion

Based on a review of the record, and for the same reasons explained with regard to limitations 1.3 and 1.6 of claim 1, we find Petitioner has not sufficiently demonstrated Roth alone teaches limitation 10.4 of claim 10 because Roth does not teach “ranking the plurality of selected social network-provided information records . . . dependent on at least one social network ranking factor.”

However, for the reasons stated above, we find Petitioner has demonstrated by a preponderance of the evidence that the combination of Roth with Fortescue and Roth with Ng teach the limitations of claim 10 because both Fortescue and Ng teach ranking the search results dependent on a social network ranking factor.

9. Analysis of Independent Claim 16

The limitations of independent claim 16 are similar to those of independent claim 1 and Petitioner relies on largely the same evidence and arguments for claim 16 as it does for claim 1. *See* Pet. 48–55. Patent Owner presents largely the same arguments against claim 16, as it does against claim 1. *See* PO Resp. 48–49. For those common assertions and counter-arguments, the corresponding discussions above in the context of claim 1

equally apply. One limitation of claim 16, however, differs slightly from the corresponding limitation of claim 1. We analyze this limitation below.

- a) *Limitation 16.4: “automatically ranking the plurality of social network records corresponding to the query, with the at least one automated processor, according to at least one social network ranking factor comprising at least a physical distance from the location and a factor dependent on the user ratings with the at least one automated processor”*

Petitioner argues that Roth alone teaches the aforementioned limitation. Specifically, Petitioner argues that Roth’s Figure 6 shows restaurant listings based on the physical distance from the location of the mobile device. Ex. 1005 ¶¶ 26, 29, Fig. 6. For reasons explained in our analysis of limitation 1.6 above, we do not find Petitioner has sufficiently shown that Roth teaches ranking social network records based on physical distance.

Petitioner additionally argues that the combination of Roth and Fortescue teach limitation 16.4. Pet. 52 (citing Ex. 1004 ¶¶ 158–159). According to Petitioner, Fortescue describes ranking the results of a search based on both physical distance from a location and user rating. Pet. 52 (citing Ex. 1006 ¶¶ 121, 127).

Petitioner also argues that the combination of Roth and Ng teach limitation 16.4. Pet. 52–53. Petitioner argues Ng describes that ranking of results could be based on a combination of visits per area, repeat visitors, and distance, and that “other combinations could be tested and offered.” Pet. 52–53 (citing Ex. 1007 ¶ 67). Petitioner points out that Ng describes using user ratings as one of the factors on which to rank search results. Pet. 53 (citing Ex. 1007 ¶ 64). Thus, relying on its expert’s testimony, Petitioner argues that a person of ordinary skill would recognize based on Ng’s

disclosure of using a combination of a variety of factors to rank search results, along with its disclosure of individual factors being distance and user rating, that both location and user rating could be used together as factors on which to rank Ng's search results. Pet. 53 (citing Ex. 1004 ¶ 159).

Patent Owner argues that this limitation requires “that the processor factor *both* physical distance from the location *and* a factor dependent on the user ratings” and that Petitioner has ignored these points. PO Resp. 49.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated that the combinations of Roth and Fortescue, and Roth and Ng, each teach limitation 16.4. For reasons stated above, we find Petitioner has presented a rational reason for combining Roth with Fortescue and Roth with Ng, to provide, format, and rank search results based on social network information. *See supra* §§ II.C.4–5. Fortescue discloses that both distance and rating are used together as filters for searching a social network. *See* Ex. 1006 ¶ 121 (“At block 412, the plurality of search results are filtered based on the search criteria [or] . . . based on information about the social network. In one embodiment, the search criteria may include a query string, a search distance, a search time, a rating level . . .”). Fortescue further teaches that search results may be ordered based on a variety of relevancy information such as degree of separation and rating. We are persuaded by Petitioner's arguments that these disclosures would teach to one of ordinary skill in the art that search results would be ranked based on both distance and user ratings.

Similarly, Petitioner has demonstrated that Ng ranks search results based on a combination of factors. Ex. 1007 ¶ 67 (“Sorting could also be performed by a combination of factors.”). This combination includes, at least, visits per area, repeat visitors, and distance. Ex. 1007 ¶ 67. Ng is

clear that “[v]arious other combinations could be tested and offered.” Ex. 1007 ¶ 67. Separately, Ng teaches ranking search results based on user ratings. Ex. 1007 ¶ 64, Fig. 7. We are persuaded by Petitioner’s arguments and credit their expert’s testimony that these disclosures would teach one of ordinary skill in the art that search results would be ranked based on both distance and user ratings. Ex. 1004 ¶ 159.

b) Conclusion

Based on a review of the record, and for the same reasons explained with regard to limitations 1.3 and 1.6 of claim 1, we find Petitioner has not sufficiently demonstrated Roth alone teaches ranking social network records based on physical distance as limitation 16.4 requires.

However, for the reasons stated above, we find Petitioner has demonstrated by a preponderance of the evidence that the combination of Roth with Fortescue and Roth with Ng each teach the limitations of claim 16, including limitation 16.4, as explained above.

10. Analysis of Claim 2

Claim 2 depends from claim 1 and further recites “wherein the at least one social network ranking factor comprises a social network credibility.” Petitioner argues “Ng discloses ‘[s]ome customers may be better judges than others so visits by better judges could be given more weight.’” Pet. 37 (citing Ex. 1007 ¶ 95). According to Petitioner, “Ng describes using social network credibility in terms of dining at popular restaurants as a ranking factor for search results.” Pet. 37 (citing Ex. 1007 ¶ 95).

Petitioner also argues “Fortescue describes that the search results may be ranked by ‘social network information’ and describes that the search may consider factors such as the strength of the association between that social

network member and the user, a set of members having strength of association with the user or other social network factors.” Pet. 37 (citing Ex. 1006 ¶¶ 125–129).

Patent Owner argues that because claim 2 depends from claim 1, the words “social network credibility” means that the credibility factors must be based on the interpersonal relationships of the social network database.” PO Resp. 41–42. Addressing the combination of Roth and Ng, Patent Owner argues Ng’s “better judges” are not determined to be such by social network credibility but instead by traffic. PO Resp. 42 (citing Ex. 1007 ¶ 95; Ex. 2006, ¶ 91). According to Patent Owner, Petitioner confuses credibility and traffic. Patent Owner argues “Ng’s ‘better judges’ factor is not a social network ranking factor, but is instead a scoring system based on traffic, visitor patterns and restaurant alleged popularity as determined by traffic patterns.”

Addressing the combination of Roth and Fortescue, Patent Owner argues that “the only factor Fortescue considers is the degree of separation between the user and other individuals, with those having a first degree of separation being deemed more relevant than individuals who are of lower degrees of separation.” PO Resp. 43 (citing Ex. 1006 ¶ 129). Patent Owner argues Fortescue teaches against using social network credibility. PO Resp. 43. Patent Owner points out Fortescue’s disclosure that “First-degree relationships can have varying degrees of closeness, trust, and other characteristics” as indicating that having a direct relationship within a social network does not make them any more or less credible. PO Resp. 43 (citing Ex. 1006 ¶ 27).

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated that the combinations of Roth and Fortescue,

and Roth and Ng, each teach limitations of claim 2. For reasons stated above, we find Petitioner has presented a rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information such as social network credibility. *See supra* §§ II.C.4–5. Ng, for example, teaches keeping count of customer visits to a business location (or traffic) as a metric for business popularity. *See Ex. 1007 ¶ 24.* However, Ng notes that “[s]ome customers may be better judges than others, so visits by better judges could be given more weight.” *Ex. 1007 ¶ 95.* In other words, Ng keeps track of more than just customer visits and traffic, it also takes into account whether a customer is a better judge of a business than others. Contrary to Patent Owner’s argument, this disclosure teaches more than just a scoring system based on traffic. Instead, we are persuaded by Petitioner, that this disclosure teaches a “social network credibility,” as claimed in claim 2.

Fortescue teaches that search results may be ordered based on degree of separation between the user and another member of the social network. *Ex. 1006 ¶ 127.* Fortescue explains that “a first search result associated with a first member of the social network may be ordered higher . . . than a second search result associated with a second member, if the first member has a lower degree of separation . . . than the second member.” *Ex. 1006 ¶ 129.* We are persuaded by Petitioner that ordering search results by degree of separation, or “strength of association” as Fortescue sometimes refers to it, would teach one of ordinary skill to order search results based on social network credibility. Degree of separation may be consistent with, or a proxy of, credibility or trustworthiness. Being able to rank by degree of separation would teach the ordinary artisan that search results would equally be able to be ranked by social network credibility.

11. Analysis of Claim 3

Claim 3 depends from claim 1 and further recites “wherein the at least one social network ranking factor comprises a social network popularity.” Petitioner argues Ng teaches this limitation by disclosing the use of popularity as a social network ranking factor in conjunction with physical distance. Pet 38 (citing Ex. 1007 ¶ 27). Petitioner argues Fortescue also describes ranking of search results by social network popularity. Pet. 38 (citing Ex. 1006 ¶¶ 125–129; Ex. 1004 ¶ 121).

Patent Owner argues that Ng’s popularity is not a “social network popularity” because “interpersonal relationships do not matter at all” in Ng. PO Resp. 43 (citing Ex. 2006 ¶ 99). According to Patent Owner, Ng’s popularity indicates a number of visits of a mobile device not popularity. Patent Owner provides an example of a popular movie theater that would not be considered popular by Ng because customers would turn their phones off when inside the premise of the theater and thus their visits would not be counted towards the theater’s popularity. PO Resp. 43–44.

As for Fortescue, Patent Owner argues that Fortescue’s disclosure of ordering search results based on degree of separation does not teach ranking search results based on social network popularity. PO Resp. 44.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated that the combination of Roth and Ng teaches the limitations of claim 3. For reasons stated above, we find Petitioner has presented rational reasons for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information such as social network popularity. *See supra* §§ II.C.4–5. Ng discloses ordering search results of a business, such as a restaurant, based on popularity of the restaurant. Ex. 1007 ¶ 27 (“Users of mobile devices 10 may perform a

search for local restaurants that is ranked by popularity. The popularity ranking may reveal that Tutti Sushi 28 receives relatively few visits while Fry's Food 26 receives many.”). Whether this popularity is measured by accounting for user visits or otherwise, it is still a measure of popularity of a business. We find this to be sufficient in teaching to one of ordinary skill in the art ranking search results based on social network popularity. Patent Owner’s argument that Ng’s popularity is not based on an interpersonal metric is unpersuasive under our adopted construction of the term social network ranking factor.

As to the combination of Roth and Fortescue, we agree with Patent Owner that the cited paragraphs of Fortescue teach ranking by various relevancy information, including degree of separation, but do not teach ranking the search results based on social network popularity.

Accordingly we determine that the combination of Roth and Ng teaches the limitations of claim 3, but the combination of Roth and Fortescue does not.

12. Analysis of Claim 4

Claim 4 depends from claim 1 and further recites “the social network ranking factor comprising user review ratings” where the ratings are output “dependent on the respective user review ratings and a geographical distance of the restaurants from the user.” Petitioner argues that the combination of Roth and Fortescue teaches these limitations. Specifically, Petitioner relies on Fortescue’s disclosure that “‘relevancy information may include . . . a rating associated with the search result’ and ‘search results for a search of ‘Restaurants within 500 meters.’” Pet. 39 (citing Ex. 1006 ¶¶ 127, 199). Petitioner contends that Figure 12 of Fortescue “also depicts the output of

restaurant reviews based on user review ratings and distance.” Pet. 39 (citing Ex. 1006, Fig. 12, ¶¶ 199–200).

Petitioner argues that the combination of Roth and Ng also teaches the limitations of claim 4. Petitioner relies on Ng’s disclosure of allowing a user to re-rank restaurants by user reviews of those restaurants, and its disclosure that a combination of factors may be used to rank search results including factors such as distance. Pet. 39 (citing Ex. 1007 ¶ 64, 35).

Patent Owner relies on the same arguments made with respect to limitation 1.6 of claim 1. *See* PO Resp. 36–40.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated that the combinations of Roth and Fortescue, and Roth with Ng each teach the limitations of claim 4. For reasons stated above, we find Petitioner has presented rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information such as user ratings and reviews. *See supra* §§ II.C.4–5. Fortescue teaches that “search results are ordered based on relevancy information” and that “relevancy information may include . . . a rating associated with the search result.” Fortescue ¶ 127. Fortescue also discloses searching for a restaurant where both rating and distance are factors in the search. *See* Figs. 11–13, ¶¶ 198–200. One of ordinary skill in the art would understand these disclosures to teach that ranking of search results would be based on both user rating and distance.

Ng also teaches ranking by a combination of factors such as “physical distance . . . from the search center” and other factors. Ex. 1007 ¶ 35, 67. Ng further teaches that search results may be re-ranked based on factors such as user rating. Ex. 1007 ¶ 64, Fig. 7. Thus, Ng also teaches ranking based on both user review ratings and distance.

Having reviewed the arguments and evidence presented, we conclude Petitioner has demonstrated by a preponderance of the evidence that the combinations of Roth with Fortescue and Roth with Ng both teach the limitations of claim 4. Patent Owner's arguments have been addressed in our analysis of limitation 1.6 above.

13. Analysis of Claims 7 and 11

Claim 7 depends from claim 1 and claim 11 depends from claim 10. Claim 7 further recites "further comprising ranking the mined information based on criteria comprising a physical distance from the location" and claim 11 further recites "wherein said ranking comprises ranking a plurality of the selected social network information records on criteria comprising a physical distance from the mobile-electronic device user's location." Petitioner argues, "Roth, Fortescue, and Ng all disclose ranking by distance from the user." Pet. 40 (citing Ex. 1004 ¶ 126). Specifically, Petitioner argues "Figure 6 of Roth shows restaurants ranked by distance from the user." Pet. 40 (citing Ex. 1005 Fig.6). Petitioner further argues, "Ng discloses 'the ranking parameter could be a combination of one-third visits per area, one-third repeat visitors and one-third distance' and Figure 7 of Ng shows that the results are '[s]orted by [d]istance.'" Pet. 40 (citing Ex. 1007 ¶¶ 64, 67). Finally, Petitioner argues, "Fortescue discloses 'a relevancy score may be associated with at least one of location information in a search result' and 'may be used (alone or in combination with other relevancy information) to order the search results.'" Pet 40 (citing Ex. 1006 ¶ 130). As explained above, we find Petitioner has presented rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information, including improvements to those

search results by formatting and ranking based on various factors. *See supra* §§ II.C.4–5.

Patent Owner does not present any separate arguments specifically directed to claims 7 and 11.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated by a preponderance of the evidence that the combinations of Roth and Fortescue, and also Roth with Ng, teach the limitations of claims 7 and 11 for the reasons summarized above.

14. Analysis of Claims 8, 9, 13, 14, and 18

Claims 8 and 9 each depend from claim 1. Claims 13 and 14 each depend from claim 10. Claim 18 depends from claim 16. Claims 8, 13, and 18 each add limitations requiring communicating the social network information within a location or spatial mapping user interface. Claims 9 and 14 each add limitations requiring communication of the social network information within Google maps.

Petitioner argues, “Roth recognizes the opportunity to incorporate mapping into the results returned from a query, indicating that ‘a map query function that provides directions to a destination returned as a part of the search results’ could be appended to the search results.” Pet. 41 (citing Ex. 1005 ¶ 21). Petitioner argues Fortescue communicates social network information within a location mapping user interface platform such as those shown in Figures 12 and 13 of Fortescue, which are described as including “display 1200 includes the map of the searched area.” Pet. 41 (quoting Ex. 1006 ¶ 199). Petitioner further argues that Figure 7 of Ng displays search results within a map interface. Pet. 41 (citing Ex. 1007, Fig. 7, ¶¶ 61, 79). Relying on its expert, Petitioner concludes that, based on these

disclosures, a person of ordinary skill “would understand that the commercially available Google maps would be an obvious choice to implement such a map interface.” Pet. 41–42 (citing Ex. 1004 ¶ 131).

Patent Owner does not present any separate arguments specifically directed to claims 8, 9, 13, and 14. Patent Owner does, however, argue that claim 18 is worded differently than claims 9, 13, and 14 in that it requires “outputting the ranked plurality of records within a spatial mapping user interface.” PO Resp. 49 (citing Ex. 2006 ¶¶ 134–136). Patent Owner argues that even if the prior art discloses outputting reviews to a map interface, “Petitioner fails to explain how the prior art outputs the *ranked* records within a spatial mapping user interface.” PO Resp. 49.

Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated by a preponderance of the evidence that Roth combined with Fortescue, and Roth combined with Ng, each teach the limitations of claims 8, 9, 13, 14, and 18 for the aforementioned reasons presented by Petitioner. As we have explained, we find Petitioner has presented a rational reason for combining Roth with Fortescue and Roth with Ng, to provide search results based on social network information and for improving the search results by formatting and ranking based on various factors. *See supra* §§ II.C.4–5. Petitioner, here explains that Roth discloses a map query function and that both Fortescue and Ng display search results on a map. Pet. 41 (citing Ex. 1006 ¶ 199; Ex. 1007, Fig. 7, ¶¶ 61, 79). Thus, a person of ordinary skill would have combined the references to format and rank Roth’s search results on a map based display.

We disagree with Patent Owner’s argument regarding claim 18. In both Fortescue and Ng, the results displayed on the map are ranked, at the very least by distance. For example, Fortescue discloses that the results of

the search are displayed on a map based on “a physical proximity to a location.” Ex. 1006 ¶ 199. Additionally, Fortescue discloses that the results displayed on a map are “ordered, such that some points are more relevant to the user of display 1200/member, then [sic] other points.” Ex. 1006 ¶ 200. Ng also discloses displaying search results on a map based on distance. Ex. 1007 ¶¶ 61, 67, 79, Fig. 7. Thus, both Fortescue and Ng output search results ranked within a spatial mapping user interface.

15. Analysis of Claims 12 and 17

Claim 12 depends from claim 10 and further recites “wherein the at least one social network ranking factor comprises at least one of reverse chronological order, social network credibility, social network popularity, and type of social information, and said communicating comprises outputting.” Claim 17 depends from claim 16 and further recites “wherein the plurality of records are further automatically ranked by the at least one automated processor in dependence on the at least one social network ranking factor selected from the group consisting of a social network credibility and a social network popularity.”

Petitioner relies on its arguments made with respect to claims 2 and 3 for the limitations of claims 12 and 17. Pet. 48. Patent Owner does not present any separate arguments specifically directed to claims 12 and 17. Having reviewed the arguments and evidence presented, we determine Petitioner has demonstrated by a preponderance of the evidence that Roth combined with Fortescue, and Roth combined with Ng, each teach the limitations of claims 12 and 17.

16. Claim 15

Claim 15 depends from claim 10 and further recites “outputting the user reviews of the plurality of restaurants ranked based on at least the distance from the user and the user review ratings.” Petitioner relies on the same arguments and evidence presented for claim 4. *See* Pet. 38–39.

Patent Owner argues the scope of claims 4 and 15 are different, in that claim 4 requires a distance from a restaurant, while claim 15 requires a distance from a user review. PO Resp. 47 (citing Ex. 2006 ¶¶ 121–123). These two distances may not be the same, according to Patent Owner, because the “user review can be made at any location, not merely restaurants.” Patent Owner’s expert cites to various portions of the ’981 Patent as supporting its interpretation. Ex. 2006 ¶ 121 (citing Ex. 1001, Abstract, 2:5–13, 3:46–50, 5:61–64, 6:3–7, 7:54–58, 8:14–20, 9:31–39, 12:27–37, 13:7–16, Figs. 1, 2). Petitioner responds that claim 15 should be construed as requiring that the output be ranked based on (1) the distance from the user and (2) the ratings provided by user reviews. Pet. Reply 21.

Patent Owner essentially argues that claim 15 requires ranking based on one factor: the distance between the user’s current location and the location where the user review took place. Under Patent Owner’s interpretation, the phrase “distance from the user and user review rating” is to be taken as one single clause. Petitioner argues that claim 15 requires ranking based on two factors: (1) the distance of the restaurant from the location of the user and (2) the user review ratings. Under Petitioner’s interpretation the phrase “distance from the user and the user review ratings” is taken as two separate clauses separated by the word “and” in the phrase.

We find Petitioner’s interpretation to be more reasonable. As Petitioner argues, ranking based on a distance between the user and the

location where the user review took place would be of very little benefit to the user (if at all) especially in the case where the location of the user review rating is different than the location of the restaurant. If the user review rating occurred in a reviewer's home, but the restaurant being reviewed was 20 miles away, a user searching for restaurants based on distance would not want the results ranked based on the distance between the user and the reviewer's home. Rather the user would naturally want results based on distance from the user and the restaurant itself. Moreover, Patent Owner's interpretation assumes that a "user review rating" has a location, but the phrase "user review ratings" does not imply a location on its own. Thus, one of ordinary skill in the art would have more reasonably interpreted it as an additional factor under which to rank search results, rather than a location with a distance. Further, we do not find any of Patent Owner's citations to the '981 Patent to support its interpretation.

We, therefore, adopt Petitioner's interpretation of claim 15. Under this interpretation and for the same reasons we explained in our analysis of claim 4, we are persuaded that the combinations of Roth with Fortescue, and Roth with Ng, teach ranking search results based on a combination of distance between the user and the restaurant and also user review rating.

17. Conclusion: Weighing the Graham Factors

For the aforementioned reasons, we determine Petitioner has provided a sufficient motivation to combine the references. We determine Petitioner has demonstrated that the combination of Roth with Fortescue teaches the limitations of claims 1, 2, 4, and 7–18. We also determine that Petitioner has demonstrated that the combination of Roth with Ng teaches the limitations of claims 1–4 and 7–18. We do not find, however, that Petitioner

has sufficiently demonstrated that Roth alone teaches each of the limitations of claims 1, 10, and 16. We find that the objective indicia of nonobviousness has little probative value in the overall analysis of nonobviousness on this record.

Accordingly, when weighing all of the evidence of obviousness and nonobviousness together, including the content of the prior art, the differences between the prior art teachings and the claim limitations, and the objective indicia of nonobviousness, we determine Petitioner has shown by a preponderance of the evidence that claims 1–4 and 7–18 are obvious over the combination of Roth and Ng and that claims 1, 2, 4, and 7–18 are obvious over the combination of Roth and Fortescue. Petitioner has not shown that claims 1, 10, 16 are obvious over Roth alone or that claim 3 is obvious over the combination of Roth and Fortescue.

D. Motion to Exclude

Petitioner filed a Motion to Exclude (Paper 27) Patent Owner’s Exhibits 2001–2005, which relate to the Google Blog Post and Apple Presentation. Petitioner argues that Patent Owner has failed to establish the authenticity of the exhibits and that the exhibits are inadmissible hearsay. Paper 27, 1–7.

As indicated above, in rendering our Final Written Decision, we have considered the exhibits Petitioner seeks to exclude, but still arrive at a conclusion not adverse to Petitioner. Accordingly, we dismiss Petitioner’s Motion to Exclude as moot.

E. Constitutional Challenge

Patent Owner argues the Board should terminate or stay this proceeding because Administrative Patent Judges (“APJs”) are

unconstitutionally appointed. PO Resp. 57 (citing *Lucia v. SEC*, 138 S. Ct. 2044, 2049 (2018); *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019) *cert. granted sub nom. United States v. Arthrex, Inc.*, 2020 WL 6037206 (Oct. 13, 2020)). Patent Owner argues that although the Federal Circuit attempted to cure this constitutional defect in *Arthrex* by severing Title 5’s removal protections, the solution is insufficient because IPR proceedings are formal adjudications under the APA. PO Resp. 57 (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015)). Under 5 U.S.C. § 556(b), Patent Owner argues, formal adjudications must be conducted by administrative law judges appointed under 5 U.S.C. § 3105 and such judges may be removed only for good cause. PO Resp. 57 (citing 5 U.S.C. § 7521). Because APJs are now removable, Patent Owner argues they lack the authority to preside over formal adjudications such as the present proceeding, and thus, Patent Owner requests the Board to dismiss or stay this proceeding pending review of the *Arthrex* decision. PO Resp. 58. Such a stay would not result in undue prejudice according to Patent Owner. PO Resp. 58–59.

We decline to consider Patent Owner’s constitutional challenge. The Federal Circuit has addressed this issue in *Arthrex*, 941 F.3d at 1325, 1337–38 (“This as-applied severance . . . cures the constitutional violation.”); *see also Arthrex, Inc. v. Smith & Nephew, Inc.*, 953 F.3d 760, 764 (Fed. Cir. 2020) (Moore, J., concurring in denial of rehearing) (“Because the APJs were constitutionally appointed as of the implementation of the severance, *inter partes* review decisions going forward were no longer rendered by unconstitutional panels.”).

III. CONCLUSION⁷

For the foregoing reasons, we conclude Petitioner has demonstrated by a preponderance of the evidence that claims 1–4 and 7–18 of the '981 Patent are unpatentable under 35 U.S.C. § 103(a) over Roth in combination with Ng, and that claims 1, 2, 4, and 7–18 are unpatentable over Roth in combination with Fortescue. We conclude Petitioner has not demonstrated that claim 3 is unpatentable over Roth in combination with Fortescue. We also conclude that Petitioner has not demonstrated that claims 1, 10 and 16 are unpatentable over Roth alone.

In summary:

Claims	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–4, 7–18	103(a)	Roth, Fortescue	1, 2, 4, 7–18	3
1–4, 7–18	103(a)	Roth, Ng	1–4, 7–18	
1, 10, 16	103(a)	Roth		1, 10, 16
Overall Outcome			1–4, 7–18	

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 7–18 of the '981 Patent are held to unpatentable; and

FURTHER ORDERED that Petitioner's Motion to Exclude is dismissed as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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