

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

MINDBASEHQ, LLC,
Patent Owner.

IPR2021-01252
Patent 6,665,680 B2

Before NORMAN H. BEAMER, NABEEL U. KHAN, and
KARA L. SZPONDOWSKI, *Administrative Patent Judges*.

BEAMER, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Google LLC (“Petitioner”) filed a Petition (Paper 3, “Pet.”) to institute an *inter partes* review of claims 1–46 of U.S. Patent 6,665,680 B2, issued on December 16, 2003 (Ex. 1001, “the ’680 patent”). MindbaseHQ, LLC (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314.

Institution of an *inter partes* review is authorized when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Based on the current record, and for the reasons explained below, we determine that Petitioner has established a reasonable likelihood that it would prevail with respect to at least one challenged claim. Accordingly, we institute an *inter partes* review as to the challenged claims and grounds raised in the Petition.

II. BACKGROUND

A. *Real Parties in Interest*¹

Petitioner identifies itself, Google LLC, as the sole real party in interest. Pet. 7.

B. *Related Matters*

Petitioner advises that the ’680 patent is the subject of the following district court litigation: *MindbaseHQ LLC v. Google LLC*, Case No. 1-20-cv-24742 (S.D. Fla.) (terminated on Mar. 12, 2021) and *MindbaseHQ LLC*

¹ Patent Owner has not filed mandatory notices pursuant to 37 CFR § 42.8.

v. Google LLC, Case No. 3:21-cv-03603 (N.D. Cal.) (transferred on Mar. 13, 2021) (“related litigation”). Pet. 7.

Petitioner concurrently filed IPR2021-01251 involving U.S. Patent No. 6,510,433 (“the ’433 patent”), which is a parent of the ’680 patent. *Id.*

C. The ’680 Patent (Ex. 1001)

The ’680 patent is titled “Database Structure Having Tangible and Intangible Elements and Management System Therefore” and is generally directed to “a new organizational protocol for creating and manipulating relational databases and database structures.” Ex. 1001, code (54), 1:17–19. The ’680 patent states that “[p]resently available databases do not categorize data elements into specific categories with rules for storing and manipulating each type of data element.” *Id.* at 2:29–32.

Because “[t]he inventive arrangements use the neuron-synapse-neuron model for structuring relationships of all data elements in a new database structure[,] . . . the database system . . . is referred to as the MINDBASE data system.” *Id.* at 2:21–24. The MINDBASE data system is generally described as follows:

The inventive arrangements categorize all MINDBASE data elements as either tangible data elements or intangible data elements. Tangible data elements are physical data elements that have weight. Tangible data elements are defined as “cause” data elements. Intangible data elements are all other data elements. Intangible data elements are further categorized into verbs which are identified as “effect” data elements and descriptive data elements which are identified as “descriptors[.]”. Descriptors are used to describe tangible data elements and the degree of performance of tangible data elements.

Id. at 2:32–43. The ’680 patent states that “[t]he unique categorization of cause, effect, and descriptive data elements and their specific uses is not followed by any other database system.” *Id.* at 2:46–49.

D. Illustrative Claims

Among the challenged claims, claims 1, 14, 20, 33, and 41 are independent. Independent claims 1 and 14 and dependent claim 43 are reproduced below, with brackets noting Petitioner’s identifiers.

1. [1.0] A database of information stored in a fixed medium, said database comprising:

[1.1] a set of tangible data elements, said tangible data elements representing things which have physical weight and can cause an effect;

[1.2] a set of intangible data elements, said intangible data elements representing words and concepts which have no physical weight and cannot be weighed;

[1.3] said set of intangible data elements including a first subset having effect data elements, said effect data elements representing at least one among verbs standing alone and verbs in combination with other words, which describe at least one among said tangible data elements, actions, objectives, results, missions, procedures and processes; and,

[1.4] said set of intangible data elements including a second subset having descriptive data elements, said descriptive data elements describing at least one among said tangible data elements, said effect data elements, degrees of performance of said tangible data elements, and the nature of the relationship between the tangible data elements and the effect data elements.

14. [14.0] A database system, comprising:

[14.1] a database stored in a fixed medium and having a set of tangible data elements representing things which have physical weight and can cause an effect and a set of intangible data elements representing words and concepts which have no physical weight and cannot be weighed;

[14.2] said set of intangible data elements including a first subset having effect data elements representing at least one among verbs, standing alone and verbs in combination with other words, which describe at least one among said tangible data elements, actions, objectives, results, missions, procedures and processes, and a second subset having descriptive data elements describing at least one among said tangible data elements, said effect data elements, degrees of performance of said tangible data elements and the nature of the relationship between the tangible data elements and the effect data elements; and,

[14.3] a dictionary routine for automatically classifying and storing words entered into said database according to said sets and subsets of data elements.

43. [43.0] A method for inter-relating different databases structured as recited in claim 41, comprising the steps of:

[43.1] for each of said databases, and in any order, [43.1.1] normalizing names of like data elements having different names in said different databases and [43.1.2] normalizing names of different data elements having like names in said different databases;

[43.2] normalizing data elements which are separate in any one of said databases and which are grouped together as single data elements in any other of said databases;

[43.3] comparing each of said normalized databases with each other one of said normalized databases;

[43.4] recording all common data elements found during each said comparing step; and,

[43.5] recording one location of each said common data element in each of said databases.

Ex. 1001, 35:22–44, 36:21–42, 39:43–40:13.

E. Evidence

Petitioner relies on the following references (*see* Pet. 9).

Reference	Exhibit	Patent/Printed Publication
Conlon	1005	Conlon, et al., <i>Developing a Large Lexical Database for Information Retrieval, Parsing, and Text Generation Systems</i> , Information Processing & Management, Vol. 29, No. 4, pp. 415-431 (1993)
Miller	1013	Miller, <i>Nouns in WordNet: A Lexical Inheritance System</i> , International Journal of Lexicography, Vol. 3, No. 4, pp. 245–264 (1990)
Beckwith	1016	Beckwith, et al., <i>Implementing a Lexical Network</i> , International Journal of Lexicography, Vol. 3, No. 4, pp. 302–312 (1990)
Fong	1029	Fong, et al., <i>Guide on Logical Database Design</i> , NBS Special Publication 500-122 (1985)

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–46 are unpatentable on the following grounds (Pet. 9):

Claims Challenged	35 U.S.C. §	References
1, 2, 9, 12–21, 28, 32–40	103	Conlon
3–6, 8, 10, 11, 22–25, 27, 29–31, 41, 42	103	Conlon, Miller
7, 26	103	Conlon, Miller, Beckwith

Claims Challenged	35 U.S.C. §	References
43–46	103	Conlon, Miller, Fong

In support of its proposed grounds, Petitioner relies on the Declaration of Dr. Bernard J. Jansen. *See* Ex. 1002.

III. ANALYSIS

A. Discretion to Deny Institution Under § 35 U.S.C. 314(a)

Patent Owner contends that the Board should deny institution under 35 U.S.C. § 314(a) because of the related litigation. Prelim. Resp. 1–8.²

Under § 314(a), the Director has discretion to deny institution of an *inter partes* review. *See* 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”); *see Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he [Office] is permitted, but never compelled, to institute an [inter partes review] proceeding.”). In exercising that discretion, the Board may consider the state of a parallel district court proceeding, among other considerations, as a “factor that weighs in favor of denying the Petition under § 314(a).” *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential) (“*NHK*”); *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) (hereafter “*Fintiv*”). When considering the impact of parallel litigation, the Board seeks, among other things, to minimize the duplication of work to resolve the same issue. *See NHK*, Paper 8 at 19–20.

The Board has identified a nonexclusive list of factors “relat[ing] to whether efficiency, fairness, and the merits” favor discretionary denial in

² Patent Owner’s Preliminary Response does not contain page numbers. We begin page 1 at the page labeled “Introduction.”

view of parallel district court litigation. *Fintiv*, Paper 11 at 6. The factors include: 1) whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted; 2) proximity of the court's trial date to the Board's projected statutory deadline for a final written decision; 3) investment in the parallel proceeding by the court and the parties; 4) overlap between issues raised in the petition and in the parallel proceeding; 5) whether the petitioner and the defendant in the parallel proceeding are the same party; and 6) other circumstances that impact the Board's exercise of discretion, including the merits. *Id.* at 5–6. In evaluating the factors, we take “a holistic view of whether efficiency and integrity of the [patent] system are best served by denying or instituting review.” *Id.* at 6.

We consider the facts and circumstances before us in view of the *Fintiv* factors below and determine that the circumstances presented here weigh against exercising discretion under § 314(a) to deny institution of *inter partes* review.

1. Factor 1: Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

As mentioned *supra*, the parties are concurrently engaged in related litigation in district court involving the '680 patent. On November 1, 2021, the district court granted Petitioner's motion to stay the litigation pending the resolution of this IPR and related IPR2021-01251. *See* Ex. 1040 at 7. Thus, we find this factor weighs strongly against exercising discretion to deny institution.

2. *Factor 2: proximity of the court's trial date to the Board's projected statutory deadline for a final written decision*

In the related litigation, no deadlines or hearing dates have been set and, as discussed above, the case is stayed.³ Ex. 1040 at 1, 7. Petitioner asserts that trial is unlikely to occur before mid-2023. Pet. 87.

The latest date for issuance of a final written decision in this proceeding is in January 2023, one year after we issue this decision instituting an *inter partes* review. 35 U.S.C. §§ 314(c), 316(a)(11); *see also* 37 C.F.R. § 42.100(c). Patent Owner contends that “there is not much time savings,” so this factor should be weighed as neutral. Prelim. Resp. 4. Alternatively, Patent Owner contends that the Board may find good cause to extend the one-year deadline, thus pushing back the date for the final written decision, which leads to this factor weighed as neutral or in favor of exercising our discretion to deny institution. *Id.*

We are not persuaded by Patent Owner's arguments. “If the court's trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under NHK.” *Fintiv* 9. At this stage in the related litigation, there are no deadlines or trial date set. Given these circumstances, it is likely the trial date will be substantially later than the deadline for issuance of the final written decision. We, therefore, find this factor weighs against exercising discretion to deny institution.

³ Upon granting the motion to stay, the district court vacated the parties' Initial Case Management Conference scheduled for January 11, 2022. Ex. 1040 at 7.

3. *Factor 3: investment in the parallel proceeding by the court and the parties*

Petitioner argues that the related litigation is not at an “advanced state” and “[t]he parties have invested relatively little in the parallel proceeding.” Pet. 88. Patent Owner argues that it served its first discovery requests in February 2021, and sought an order compelling discovery from Petitioner. Prelim. Resp. 6.

We have considered Patent Owner’s position, but it appears that considerable effort remains to be completed. As noted above, no deadlines or hearing dates have been set. Ex. 1040 at 1. On balance, given the level of investment by the parties and the district court, we find that this factor weighs against exercising discretion to deny institution.

4. *Factor 4: overlap between issues raised in the petition and in the parallel proceeding*

This factor evaluates “concerns of inefficiency and the possibility of conflicting decisions” when substantially identical prior art arguments are submitted in both the district court and the *inter partes* review proceedings. *Fintiv* at 12. In particular, “if the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel processing, this fact has favored denial.” *Id.* (citing *Next Caller, Inc. et al. v. Trust ID, Inc. et al.*, IPR2019-00963, Paper 8 at 11–12 (PTAB Oct. 28, 2019) (same grounds asserted in both cases); *ZTE (USA) Inc. v. Fractus, S.A.*, IPR2018-01451, Paper 12 at 20 (PTAB Feb. 19, 2019) (same prior art and identical evidence and arguments in both cases)).

Petitioner states that there is “[n]o present overlap between [the] petition and parallel proceeding.” Pet. 88. Patent Owner appears to confirm the lack of overlap, based upon Petitioner’s Invalidity Contentions in the

related litigation. Prelim. Resp. 6–8. Thus, we determine this factor weighs against exercising discretion to deny institution.

5. *Factor 5: whether the petitioner and the defendant are the same in the parallel proceeding*

The parties in this proceeding are identical to the parties in the related litigation. Therefore, this factor weighs in favor of exercising discretion to deny institution.

6. *Factor 6: other circumstances that impact the Board’s exercise of discretion, including the merits*

The final factor is a catch-all that takes into account any other relevant circumstances. The decision whether to exercise discretion to deny institution under § 314(a) is based on “a balanced assessment of all relevant circumstances in the case, including the merits.” Patent Trial and Appeal Board Consolidated Trial Practice Guide (November 2019) at 58.⁴ For example, if the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution. *Fintiv* 14–15. By contrast, if the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present. *Id.* at 15.

Patent Owner argues that this factor also favors denying institution because (1) Petitioner’s proposed level of ordinary skill in the art “is not based on the technology of the ’680 Patent” and (2) the prior art references “lack[] reduction to practice.” Prelim. Resp. 9.

We have considered Patent Owner’s Preliminary Response, but are nevertheless persuaded that the merits of Petitioner’s challenges have a

⁴ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

reasonable likelihood of success, as discussed herein. Accordingly, the sixth *Fintiv* factor is neutral.

7. *Conclusion on Discretionary Denial Under § 314(a)*

We have considered the circumstances and facts before us in view of the *Fintiv* factors. Our analysis is fact driven and no single factor is determinative under § 314(a). Based on the circumstances presented, we determine that, as a whole, the factors weigh against exercising discretion to deny institution of the Petition.

B. *Legal Standards*

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

A patent claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418. An obviousness determination requires finding “both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled

artisan would have had a reasonable expectation of success in doing so.”

Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359, 1367–68 (Fed. Cir. 2016) (citation omitted); *see KSR*, 550 U.S. at 418.

Further, an assertion of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418; *In re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (a finding of a motivation to combine “must be supported by a ‘reasoned explanation’” (citation omitted)).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)); *see also Intelligent Bio-Sys.*, 821 F.3d at 1369. Therefore, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. At this preliminary stage, we determine whether the information presented in the Petition shows there is a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed combinations of prior art.

C. Level of Ordinary Skill in the Art

Petitioner asserts a person of ordinary skill in the art would have had at least a bachelor’s degree in computer science, computational linguistics, computational lexicography, or the equivalent, and at least two years of academic or industry experience in lexical databases, computational linguistics, computational lexicography, or the equivalent, and experience or coursework in computer science, database development, or

the equivalent. Less experience can be remedied with additional education (e.g., a Master's degree); conversely, less education can be remedied with additional experience.

Pet. 14 (citing Ex. 1002 ¶ 53). Petitioner contends that the level and skill of a person of ordinary skill in the art are reflected in the prior art. *Id.* at 15–25 (citing Ex. 1002 ¶¶ 56–101).

Patent Owner contends that Petitioner does not explain how the terms “lexical databases, computational linguistics, computational lexicography, or the equivalent” relate to the '680 Patent, so Petitioner's proposed level of skill “is not based on the technology of the '680 Patent, as evidenced by the '680 Patent's complete absence of these terms.” Prelim. Resp. 9. Patent Owner does not provide an alternative proposal.

On the record before us, we are not persuaded that simply because the '680 Patent does not explicitly use the terms “lexical database,” “computational linguistics,” or “computational lexicography” that it does not evince that technology. Petitioner provides testimony from Dr. Jansen regarding the level of ordinary skill as reflected in the prior art that sufficiently explains how its proposed level of skill in the art relates to the '680 patent, and is unrebutted by Patent Owner. *See* Ex. 1002 ¶¶ 56–101; e.g., Ex. 1002 ¶ 56 (“[Natural language processing] systems utilize lexical databases like the database disclosed by the '680 Patent.”); ¶ 58 (“That basic premise [a theory and system of natural language processing] tracks exactly the Mindbase technology, which claims to put ‘[t]he mind's view of a data structure . . . directly into a computer.’”) (citing Ex. 1001, Fig. 1a); ¶ 73 (“those skilled in the art of [natural language processing] were implementing systems that performed the same functions as the challenged claims of the

'680 Patent . . . [and] lexical databases that categorized words by parts of speech and analyzed the relationship between those words were recognized as a central part of *any* [natural language processing] system”).

We, therefore, find Petitioner’s proposal is consistent with the level of ordinary skill in the art reflected by the prior art of record, and, therefore, adopt Petitioner’s proposed level of ordinary skill in the art for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. Claim Construction

Petitioner contends that all terms should be given their ordinary and customary meaning. Pet. 26. Patent Owner does not respond. *See generally* Prelim. Resp. At this stage in the proceeding, only terms that are in controversy need to be construed, and then only to the extent necessary to determine whether to institute *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). After reviewing the parties’ arguments and evidence, we determine that we do not need to expressly construe any term for purposes of this Decision.

E. Ground 1: Obviousness Over Conlon

Petitioner contends claims 1, 2, 9, 12–21, 28, and 32–40 would have been obvious over Conlon. Pet. 26–59. For the reasons that follow, we are persuaded that the evidence, including Dr. Jansen’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to at least one claim of this ground at this stage of the proceeding.

1. Conlon (Ex. 1005)

Conlon is an article titled “Developing a Large Lexical Database for Information Retrieval, Parsing, and Text Generation Systems.” Ex. 1005 at 415. Petitioner contends that Conlon was catalogued and accessible to the public in 1993, more than one year before the ’680 patent’s earliest possible effective date, and is prior art under 35 U.S.C. § 102(b). Pet. 26 (citing Ex. 1005, Watters Declaration at 1–2).

Conlon describes the organization and design of the tables of a lexical database, which is stored in an Oracle Relationship Database Management System, and constructed by combining material from a number of machine-readable sources. Ex. 1005 at 415 (Abstract). Conlon’s lexical database “contains information about approximately 50,000 word entries (each word may have many senses)” and “is grouped by major parts of speech into tables for nouns, verbs, adjectives, and adverbs. *Id.* at 416. Conlon states “[t]o support our goals, we need to collect and organize the huge amounts of information used routinely by humans to process language.” *Id.*

Conlon explains that “[e]ach source of lexical data has a different structure and must be treated differently.” *Id.* at 418. For example, “[i]n order to translate knowledge from machine-readable dictionaries into a form usable in a lexical database, it must be analyzed and formalized in order to make it sufficiently explicit for machine use. We have performed this analysis by semi-automatic methods.” *Id.*

Conlon’s lexical database “contains tables of lexical and semantic relations and relationships, to make it possible to find terms related to any given word.” *Id.* at 421. The “organization is based on parts of speech, with each part of speech involving different types of syntactic and semantic

information.” *Id.* There is a main table that “contains word entries in alphabetical order.” *Id.* There are also separate tables for each part of speech, including nouns, verbs, adjectives, and adverbs. *Id.* at 422. The noun tables include “whether a noun is abstract or concrete,” as “[t]hese two groups of nouns can be modified by different groups of adjectives.” *Id.* The verb tables include “whether a verb is regular or irregular, dynamic or stative, transitive or intransitive (or both), whether a verb takes a sentential complement or not, or whether it can be put into passive voice or not.” *Id.* at 423. “For each argument of the verb we must also indicate its syntactic role (as subject, direct object, indirect object, or object of a preposition), its case (agent, patient, beneficiary, etc.), whether its appearance is obligatory, optional, or elliptical, and the selectional restrictions (animate, inanimate, human) imposed on the filler of that slot.” *Id.*; *see also id.* at Table 14. The adjective tables are classified in a way that the system knows which adjectives are appropriate for the nouns they will modify. *Id.* at 424. “Adverbs are the most complicated part of speech” because “[t]hey can modify nouns, verbs, adjectives, adverbs, or whole sentences.” *Id.* at 425. Conlon, therefore, describes an adverb classification table and an adverb placement table. *Id.*

Conlon’s “[l]exical entries throughout the database are connected by a network of lexical and semantic relations,” the most frequent of which are those that are familiar from commercial dictionaries. *Id.* at 426. The lexical database also contains tables of relations and the words and phrases they connect. *Id.*

2. *Patent Owner's Contention That the References Lack Reduction to Practice*

Patent Owner contends that each of the “proffered prior art references,” including Conlon, “lacks reduction to practice of its respective academic precept.” Prelim. Resp. 9. According to Patent Owner, because the references are not the only papers written by those authors on the respective topics, it shows that the author’s previous work on the subject must not have been complete, and “[t]hese theoretical approaches are more likely than not to lead to an absence of reduction to practice.” *Id.* Patent Owner contends that “lack of reduction to practice is independent of any substantive evaluation of whether the references disclose all the other elements of the ’680 Patent claims.” *Id.* According to Patent Order, based on the lack of reduction to practice of the proffered prior art, the merits of the Petition do not support institution. *Id.*

Patent Owner’s speculation that the references might not have been reduced to practice is without basis, and in any event Patent Owner does not provide support or citation for its arguments that a prior art reference applied in an obviousness analysis must be reduced to practice. Accordingly, we decline to deny institution based upon Patent Owner’s argument.

3. *Analysis of Independent Claim 1*

a) *Limitation [1.0]: “A database of information stored in a fixed medium, said database comprising:”*⁵

Petitioner asserts that Conlon discloses the preamble. Pet. 28 (citing Ex. 1005 at 415, 421–425, Table 8; Ex. 1002 ¶ 116). For example, Conlon

⁵ Neither party argues whether the preamble of claim 1 is limiting. Although we find the evidence supports that the prior art teaches the preamble, we

discloses a “lexical database, which is stored in an Oracle Relational Database Management System” that “contains information about approximately 50,000 word entries.” *Id.* at 28.

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine Petitioner has adequately shown that Conlon teaches the preamble for purposes of institution.

b) *Limitation [1.1]: “a set of tangible data elements, said tangible data elements representing things which have physical weight and can cause an effect”*

Petitioner asserts that Conlon discloses this limitation. Pet. 29–30. Specifically, Petitioner asserts that Conlon’s “[c]oncrete nouns are tangible data elements representing things that have physical weight and can cause an effect.” *Id.* at 29 (citing Ex. 1002 ¶¶ 119, 120). Dr. Jansen provides un rebutted testimony that “concrete nouns represent ‘tangible things,’ either things of natural kind (e.g. animals, trees, rock, cloud) or artifacts, things made by men (e.g. vehicles, architecture, machinery, furniture).” Ex. 1002 ¶ 120 (citing Ex. 1009 at 49). Petitioner also relies on Table 9 of Conlon, which depicts a noun table where every noun in the table is a concrete noun. Pet. 29 (citing Ex. 1002 ¶ 121).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

make no determination at this stage of the proceeding that the preamble of claim 1 is limiting.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches limitation [1.1] for purposes of institution.

- c) *Limitation [1.2]: “a set of intangible data elements, said intangible data elements representing words and concepts which have no physical weight and cannot be weighed”*

Petitioner contends that Conlon discloses limitation [1.2]. Pet. 31. In particular, Petitioner contends that Conlon’s verb tables, adjective tables, and adverb tables contain verbs, adjectives, and adverbs that are all intangible data elements representing words and concepts which have no physical weight and cannot be weighed. *Id.* (citing Ex. 1002 ¶¶128–129). Petitioner asserts, citing to supporting testimony from Dr. Jansen, that “[b]ecause all verbs, adjectives, and adverbs are necessarily *intangible*, a word’s appearance in any one of those tables in Conlon (Tables 11–19) would immediately inform a POSITA that the word has been classified by Conlon as an intangible data element and not a tangible data element.” *Id.* (citing Ex. 1002 ¶¶ 129–130).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches limitation [1.2] for purposes of institution.

- d) *Limitation [1.3]: “said set of intangible data elements including a first subset having effect data elements, said effect data elements representing at least one among verbs standing alone and verbs in combination with other words, which describe at least one among said tangible data elements,*

actions, objectives, results, missions, procedures and processes”

Petitioner asserts that Conlon discloses this limitation. Pet. 31–33. Specifically, Petitioner relies on Conlon’s Table 14, which is the “Case-frame table” and includes data elements representing (1) the syntactic role of the verb (e.g., subject, direct object, indirect object, object of a preposition); (2) its case (e.g., agent, patient, beneficiary); (3) occurrence (e.g., obligatory, optional, or elliptical); and (4) selectional restrictions (e.g., animate, inanimate, human). *Id.* at 31. Petitioner contends “[t]he WORD column in Table 14 discloses *effect data elements representing verbs standing alone*. The columns SYN-ROLE, CASE, OCCURRENCE, and SELECT-RESTRICT (each of which is associated with the verb in the WORD column) disclose *verbs in combination with other words*. Collectively, the information in Table 14 describes *actions, objectives, results, missions, procedures and processes*.” *Id.* at 32–33 (citing Ex 1002 ¶¶131–134).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches limitation [1.3] for purposes of institution.

- e) *Limitation [1.4]: “said set of intangible data elements including a second subset having descriptive data elements, said descriptive data elements describing at least one among said tangible data elements, said effect data elements, degrees of performance of said tangible data elements, and the nature of the relationship between the tangible data elements and the effect data elements”*

Petitioner asserts that Conlon discloses this limitation. Pet. 33–34.

Specifically, Petitioner contends, with supporting testimony from Dr. Jansen, that Conlon's adjective table (Table 19) includes data elements that are descriptive data elements describing said tangible data elements. *Id.* (citing Ex. 1002 ¶ 135). Petitioner also contends, with supporting testimony from Dr. Jansen, that Conlon's adverb table (Table 21) contains data elements with information regarding adverb classifications, which are descriptive data elements describing effect data elements and degrees of performance of said tangible data elements. *Id.* at 34 (citing Ex. ¶¶ 136–137).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches limitation [1.4] for purposes of institution.

f) Conclusion

For the reasons discussed above, we determine, on the current record and for purposes of this decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103(a) over Conlon.

4. Analysis of Dependent Claim 2

Claim 2 depends from claim 1 and recites “each said tangible data element is linked to each said effect data element partially or wholly caused by said tangible data element” (limitation 2.1) and “each said effect element is linked to each said tangible data element required for said effect to occur” (limitation 2.2). Ex. 1001, 35:45-50.

Petitioner contends that Conlon discloses this limitation. Pet. 35–38. In particular, Petitioner, supported by testimony from Dr. Jansen, contends that Conlon discloses linking related data elements, including linked relationships between subjects (nouns) and verbs, and provides several examples supporting this contention. *Id.* (citing Ex. 1005 at 421, 422, 426; Ex. 1002 ¶¶ 138–144, 147).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches the limitations in claim 2 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 2 is unpatentable under 35 U.S.C. § 103(a) over Conlon.

5. *Analysis of Dependent Claims 9, 12, and 13*

Petitioner contends that dependent claims 9, 12, and 13, which depend directly or indirectly from independent claim 1, would have been obvious over Conlon, and provides explanation as to how the prior art teaches each claim limitation. Pet. 38–43. For example, claim 9 recites “wherein each said data element is stored only once,” and Petitioner relies on Conlon’s disclosure that “[t]he addition of material from other sources . . . [has] *not increased the number of words and phrases*,” due to Conlon’s “unique identifier.” *Id.* at 38.

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches the limitations in claims 9, 12, and 13 for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 9, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) over Conlon.

6. Analysis of Independent Claim 14

For limitations [14.0], [14.1], and [14.2], Petitioner relies on the same analysis as discussed above for limitations [1.0]–[1.4]. *See* Pet. 44. Therefore, for the same reasons, we find that Petitioner has adequately shown that Conlon teaches limitations [14.0], [14.1], and [14.2] for purposes of institution.

Limitation [14.3] recites “a dictionary routine for automatically classifying and storing words entered into said database according to said sets and subsets of data elements.” Ex. 1001, 36:41–43.

Petitioner contends Conlon discloses limitation [14.3]. Pet. 44–47. Specifically, Petitioner argues that Conlon “discloses a sub-program or function within a larger program for looking up words in a dictionary which automatically classifies and stores words entered into the [lexical database] and differentiates between uses of the same word for different parts of speech.” Pet. 44 (citing Ex. 1002 ¶ 164). Petitioner points to an example of looking up the word *chip*, as described in Conlon, and asserts that “Conlon’s dictionary routine automatically generates a unique value (e.g., the information shown in Tables 2–3) in response to the entry of a unique key (e.g., *chip*, H#1, S#1).” *Id.* at 46–47 (citing Ex. 1002 ¶ 167).

Petitioner has not sufficiently shown that Conlon discloses this limitation. For example, Petitioner's assertions that Conlon performs its classification *automatically* are not supported by the record. With respect to machine-readable dictionaries, Conlon states that:

Dictionaries contain very rich and diverse information, but are intended for human rather than machine interpretation. They contain both implicit and explicit information. Explicit information in machine-readable dictionaries includes parts of speech, pronunciation, etymologies, variants, synonyms, and cross references. Computer systems are often able to use explicit information directly, but they have difficulty with implicit information like that in definitions. In order to translate knowledge from machine-readable dictionaries into a form usable in a lexical database, it must be analyzed and formalized in order to make it sufficiently explicit for machine use. We have performed this analysis by semiautomatic methods. For example, the definition of "chip" in homograph number 1 and sense number 1 provided by CED is shown in Table 2.

Ex. 1005 at 418 (emphasis added). Conlon then further affirms that the chip example, relied upon by Petitioner, is semi-automatic: "After analyzing this definition semi-automatically, we have been able to create explicit information about 'chip.'" Ex. 1005 at 418. Conlon also states that "[u]nfortunately, it is not possible to classify verbs automatically by analyzing machine-readable dictionary definitions. Currently, we are therefore in the process of generating this information by hand." *Id.* at 423. In addition, Conlon states:

We are trying to automate this process, but most of the time human intervention is necessary. Different strategies are required for different sources, which complicates this task.

Id. at 427.

Accordingly, we determine that Petitioner has not adequately shown that Conlon teaches limitation [14.3] for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition does not demonstrate a reasonable likelihood that claim 14 is unpatentable under 35 U.S.C. § 103(a) over Conlon.

7. Analysis of Dependent Claims 15–19

Petitioner contends that dependent claims 15–19, which depend directly or indirectly from independent claim 14, would have been obvious over Conlon, and provides explanation as to how the prior art teaches each claim limitation. Pet. 48–52.

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp.

As these claims depend from claim 14, we find that, for the same reasons as set forth for claim 14, that the information presented in the Petition does not demonstrate a reasonable likelihood that claims 15–19 are unpatentable under 35 U.S.C. § 103(a) over Conlon.

8. Analysis of Independent Claim 20 and Dependent Claims 21, 28, and 32

Petitioner contends that independent claim 20 would have been obvious over Conlon, largely for the same reasons as set forth in independent claim 1, and provides explanation as to how the prior art teaches each claim limitation. Pet. 53–54. Similarly, Petitioner contends that dependent claim 21 would have been obvious over Conlon, for the same reasons as set forth in dependent claim 2. *Id.* at 55. Petitioner also contends that dependent claim 28 would have been obvious over Conlon, for the same

reasons as set forth in dependent claim 9, and dependent claim 32 would have been obvious over Conlon, for the same reasons as set forth in dependent claim 13. *Id.* at 55.

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon teaches the limitations in claims 20, 21, 28, and 32 for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 20, 21, 28, and 32 are unpatentable under 35 U.S.C. § 103(a) over Conlon.

9. Analysis of Independent Claim 33 and Dependent Claims 34–40

Petitioner contends that independent claim 33 would have been obvious over Conlon, largely for the same reasons as set forth in independent claim 1 and independent claim 14, and provides explanation as to how the prior art teaches each claim limitation. Pet. 55–56. Petitioner contends that dependent claims 34–40, which depend directly or indirectly from independent claim 33, would have been obvious over Conlon, and provides explanation as to how the prior art teaches each claim limitation. Pet. 56–59.

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp.

We find that, for the same reasons as set forth for claim 14, regarding the requirement of “automatically classifying and storing . . .,” that the information presented in the Petition does not demonstrate a reasonable

likelihood that claims 33–40 are unpatentable under 35 U.S.C. § 103(a) over Conlon.

10. Summary of Ground 1

We find that Petitioner has demonstrated a reasonable likelihood that claims 1, 2, 9, 12, 13, 20, 21, 28, and 32 are unpatentable under 35 U.S.C. § 103(a) over Conlon, but *has not* demonstrated a reasonable likelihood that claims 14–19 and 33–40 are unpatentable under 35 U.S.C. § 103(a) over Conlon.

F. Ground 2: Obviousness Over Conlon and Miller

Petitioner contends claims 3–6, 8, 10, 11, 22–25, 27, 29–31, 41, and 42 would have been obvious over the combination of Conlon and Miller. Pet. 60–73. For the reasons that follow, we are persuaded that the evidence, including Dr. Bernard’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding.

1. Miller (Ex. 1013)

Miller is an article titled “Nouns in WordNet: A Lexical Inheritance System.” Ex. 1013 at 245. Petitioner contends that Miller was catalogued and accessible to the public in 1993, more than one year before the ’680 patent’s earliest possible effective date, and is prior art under 35 U.S.C. § 102(b). Pet. 60 (citing Ex. 1011, Watters Declaration at 1–2).

Miller describes organizing noun files in WordNet.⁶ Miller states: “Definitions of common nouns typically give a superordinate term plus

⁶ “WordNet is an on-line lexical reference system whose design is inspired by current psycholinguistic theories of human lexical memory.” Ex. 1012, Abstr.

distinguishing features; that information provides the basis for organizing noun files in WordNet. The superordinate relation (hyponymy) generates a hierarchical semantic organization that is duplicated in the noun files by the use of labeled points between sets of synonyms.” Ex. 1013 at 245

(Abstract). Miller describes:

The fundamental design that lexicographers try to impose on the semantic memory for nouns is not a circle, but a tree (in the sense of *tree* as a graphical representation). It is a defining property of tree graphs that they branch from a single stem without forming circular loops. The lexical tree can be reconstructed by following trails of superordinate terms: *oak@ → tree@ → plant@ → organism*, for example, where '@ →' is the transitive, asymmetric, semantic relation that can be read 'is a' or 'is a kind of'. (By convention, '@ →' is said to point upward.) This design creates a sequence of levels, a hierarchy, going from many specific terms at the lower levels to a few generic terms at the top. Hierarchies provide conceptual skeletons for nouns; information about individual nouns is hung on this structure like ornaments on a Christmas tree.

Id. at 247. “The semantic relation that is represented above by '@ →' has been called the ISA relation, or the hypernymic or superordinate relation (since it points to a hypernym or superordinate term); it goes from specific to generic and so is a generalization.” *Id.* Miller, therefore, describes a “lexical inheritance system,” where “a systematic effort has been made to connect hyponyms with their superordinates (and vice versa).” *Id.* at 248.

2. *Combination of Conlon and Miller*

Petitioner argues that one of ordinary skill would have naturally looked to Miller for guidance regarding how to implement a lexical inheritance system such as the described by Conlon, and would have a reasonable expectation of success in organizing Conlon’s database entries in

accordance with Miller’s hierarchical semantic organization. Pet. 61–62 (citing Ex. 1002 ¶¶ 220–224).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

For purposes of this Decision, we determine that Petitioner has provided sufficiently articulated reasoning with rational underpinnings for the proffered combination.

3. *Analysis of Dependent Claim 3*

Claim 3 depends from claim 1 and recites “wherein all said data elements are stored in hierarchical structures of parent-child relationships.” Ex. 1001, 35:51–53.

Petitioner contends Miller teaches the limitations in claim 3. Pet. 62–63. Specifically, Petitioner contends that Miller discloses a “lexical tree” that “can be reconstructed by following trails of superordinate terms: oak@→tree@→plant@→organism, for example, where ‘@→’ is the transitive, asymmetric, semantic relation that can be read ‘is a’ or ‘is a kind of.’” *Id.* (citing Ex. 1013 at 247). Petitioner also asserts that “Miller further discloses that ‘this design creates a sequence of levels, a hierarchy, going from many specific terms at the lower levels to a few generic terms at the top’ and that “[h]ierarchies provide conceptual skeletons for nouns; information about individual nouns is hung on this structure like ornaments on a Christmas tree.” *Id.* at 63. Petitioner argues that “any data element at the lower level of this *hierarchal structure* can be said to be the *child*, whereas the more generic term above it is its *parent*. The parent and child are related by the ‘is a’ or ‘is a kind of’ semantic relation represented by ‘@→.’” *Id.* (citing Ex. 1002 ¶¶ 225–226). Petitioner asserts that “[i]t would

have been obvious to extend this parent-child organizational structure beyond the nouns in Miller and to apply it to *all said data elements* in the database, as motivated by Conlon and others.” *Id.* (citing Ex. 1005 at 421; Ex. 1002 ¶¶ 226–227).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Miller teaches the limitations in claim 3 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 3 is unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

4. *Analysis of Dependent Claim 4*

Claim 4 depends from claim 3 and recites “wherein each said tangible data element having any children in said hierarchal structure must have at least two of said children.” Ex. 1001, 35:54–56.

Petitioner contends Miller teaches the limitations in claim 3. Pet. 63–64. Specifically, Petitioner contends that in Miller’s *oak@→tree@→plant@→organism* example, the word *plant* has two children: *tree* and *oak* (albeit on different levels of the hierarchy). *Id.* (citing Ex. 1013 at 247; Ex. 1002 ¶ 228). Petitioner also contends that Miller’s Figure 1 depicts that each tangible data element has at least two children. *Id.* at 64 (citing Ex. 1013, Fig. 1, 252; Ex. 1002 ¶¶ 228–229).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Miller teaches the limitations in claim 4 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 4 is unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

5. Analysis of Dependent Claim 5

Claim 5 depends from claim 3 and recites “wherein each said effect data element can have any number of children in said hierarchical structure.” Ex. 1001, 35:57–59.

Petitioner contends Miller teaches the limitations in claim 5. Pet. 64–65. Specifically, Petitioner contends that Figure 2 of Miller shows one or two children on any given level of the hierarchy. *Id.* (citing Ex. 1013 at 260; Ex. 1002 ¶¶ 230–231).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Miller teaches the limitations in claim 5 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 5 is unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

6. *Analysis of Independent Claim 41*

Petitioner relies on its analysis for claims 1–5 for limitations in independent claim 41. Pet. 71–73. In addition, Petitioner asserts that Miller’s Figure 2 discloses an example of a hierarchical structure defining vertical lines and horizontal levels. *Id.* at 72 (citing Ex. 1013 at 260). Petitioner further asserts that “organizing parent-child relationships in structures defining vertical line and horizontal levels was well known in the field of lexical databases and would have been obvious to implement in the [lexical database] of Conlon.” *Id.* at 72–73 (citing Ex. 1002 ¶¶ 264–265; Ex. 1009 at 109–111).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon and Miller teaches the limitations in claim 41 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 41 is unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

7. *Dependent Claims 6, 8, 10, 11, 22–25, 27, 29–31, 42*

Petitioner contends that dependent claims 6, 8, 10, 11, 22–25, 27, 29–31, 42, which depend directly or indirectly from independent claims 1, 20, and 41, would have been obvious over Conlon and Miller, and provides explanation as to how the prior art teaches each claim limitation. Pet. 65–70, 73.

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that Conlon and Miller teach the limitations in claims 6, 8, 10, 11, 22–25, 27, 29–31, 42 for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 6, 8, 10, 11, 22–25, 27, 29–31, 42 are unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

8. *Summary of Ground 2*

We find that Petitioner has demonstrated a reasonable likelihood that claims 3–6, 8, 10, 11, 22–25, 27, 29–31, 41, and 42 are unpatentable under 35 U.S.C. § 103(a) over Conlon and Miller.

G. *Ground 3: Obviousness Over Conlon, Miller, and Beckwith*

Petitioner contends claims 7 and 26 would have been obvious over the combination of Conlon, Miller, and Beckwith. Pet. 73–77. For the reasons that follow, we are persuaded that the evidence, including Dr. Bernard’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding.

1. *Beckwith (Ex. 1016)*

Beckwith is an article titled “Implementing a Lexical Network.” Ex. 1016 at 302. Petitioner contends that Beckwith “was published in the same issue of the *International Journal of Lexicography* as Miller (Ex-1013), and is prior art under 35 U.S.C. § 102(b) for the same reasons as Miller. Pet. 73 (citing Ex. 1011, Watters Declaration at 1–2).

Beckwith generally describes the “computer implementation of the lexical database described in” the Miller reference. Ex. 1016 at 302 (Abstract). In particular, WordNet includes an index of familiarity associated with each word form. *Id.* at 304. Table 2 of Miller, reproduced below, depicts an example of this familiarity index where the superordinates of the word *bronco* are requested. *Id.* at 305.

Table 2. Hypernyms of *bronco* and their familiarity indices.

Word	Polysemy
bronco	1
@→horse	14
@→equid	0
@→odd-toed ungulate	0
@→herbivore	1
@→mammal	1
@→vertebrate	1
@→animal	4
@→organism	2

Table 2 depicts the hypernyms of bronco and their familiarity indexes. *Id.* For example, bronco has a familiarity index of 1, horse has a familiarity index of 14, equid has a familiarity index of 0, and so on. *Id.*

2. *Combination of Conlon, Miller, and Beckwith*

Petitioner argues that one of ordinary skill “seeking to build a ‘good LDB’ per Conlon, and who is familiar with Miller’s description of hierarchical noun structures in WordNet, would have readily looked to Beckwith.” Pet. 74–75. Petitioner contends that Beckwith describes the same lexical database as Miller (WordNet), was co-authored by the same person (George A. Miller), and was published together with Miller in the same journal issue. Pet. 75 (citing Ex. 1002 ¶¶ 270–272). Petitioner

additionally asserts that “[o]rganizing Miller’s hierarchical structures in outline form constitutes the use of a known technique to improve similar systems in the same way, or the application of a known technique to a known system ready for improvement to yield predictable results.” *Id.* at 75.

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

For purposes of this Decision, we determine that Petitioner has provided sufficiently articulated reasoning with rational underpinnings for the proffered combination.

3. *Analysis of Dependent Claims 7 and 26*

Claim 7 depends from claim 3 and recites “wherein said hierarchal structure is an outline.” Ex. 1001, 35:62–63. Claim 26 depends from claim 22 and recites similar limitations. *Id.* at 37:49–51.

As explained above, Petitioner relies on Conlon and Miller as teaching the limitations of claims 3 and 22. *See supra* §§ III.F.3, III.F.7. Petitioner asserts that Beckwith teaches the additional limitations in claims 7 and 26. Pet. 75–77. Petitioner argues that Beckwith’s Table 2 teaches a hierarchical structure of words organized in the form of an outline. *Id.* at 75–76 (citing Ex. 1016 at 305, 308; Ex. 1002 ¶ 273). Petitioner asserts that Beckwith’s outline structure can be applied to Conlon’s example of “Rhode Island Red” IS-A “chicken” and “chicken” IS-A “bird.” *Id.* at 76 (citing Ex. 1002 ¶¶ 274–275, Ex. 1006 at 426).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that the combination of

Conlon, Miller and Beckwith teaches the limitations in claims 7 and 26 for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 7 and 26 are unpatentable under 35 U.S.C. § 103(a) over Conlon, Miller, and Beckwith.

H. Ground 4: Obviousness Over Conlon, Miller, and Fong

Petitioner contends claims 43–46 would have been obvious over the combination of Conlon, Miller, and Fong. Pet. 77–86. For the reasons that follow, we are not persuaded that the evidence, including Dr. Bernard’s testimony, sufficiently supports Petitioner’s arguments and, therefore, Petitioner does not establish a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding.

1. Fong (Ex. 1029)

Fong is an article titled “Guide on Logical Database Design.” Ex. 1029. Petitioner contends that Fong bears a publication date of February 1985, and was distributed to depository libraries in microfiche and available for purchase at least as of December 1986. Pet. 77 (citing Ex. 1029, at 119; Ex. 1032 at 46, Ex. 1031 at 0001, Ex. 1002 ¶ 278). Petitioner contends Fong is prior art under 35 U.S.C. § 102(b). *Id.*

Fong generally describes “an iterative methodology for Logical Database Design” that “lead[s] to the development of a high quality [Logical Database Design.]” Ex. 1029 Abstract, 2. One procedure is “normalization,” which helps to ensure that the collection of entities is optimal. *Id.* at 8, 75. For example, Fong describes eliminating redundancies and combining entities with the same or equivalent identifiers. *Id.* at 75.

2. *Combination of Conlon, Miller, and Fong*

Petitioner argues that, in building a database of lexical data from multiple heterogeneous sources like the one in Conlon, one of ordinary skill would have would have naturally used the logical database design approach of Fong in “determining the fundamental data structure needed to support [a lexical database],” and would have been drawn to Fong’s description of a “high quality LDD” whose benefits include internal consistency, completeness, and robustness. Pet. 77–79 (citing Ex. 1002 ¶¶ 278–285). Petitioner further asserts that a person of ordinary skill in the art “would have been particularly motivated to perform normalization as described by Fong” and “[a]pplying normalization to the data in Conlon thus amounts to the use of a known technique to improve similar systems in the same way, or the application of a known technique to a known system ready for improvement to yield predictable results.” *Id.* at 78 (citing Ex. 1002 ¶¶ 287, Ex. 1029 at 76).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp.

For purposes of this Decision, we determine that Petitioner has provided sufficiently articulated reasoning with rational underpinnings for the proffered combination.

3. *Analysis of Dependent Claim 43*

Petitioner contends Conlon teaches limitations 43.0, 43.1, 43.1.1, 43.1.2, and 43.2 of claim 43. Pet. 79–83. With respect to the claimed “normalizing,” Petitioner generally asserts that to the extent that Conlon does not expressly state that “normalizing” is performed, a person of ordinary skill in the art “would have immediately recognized that the above-

described relational structures necessarily involved normalization,” “normalization was an obvious and beneficial technique for building such structures,” and “normalization would have been necessary or at least obvious.” *Id.* (citing Ex. 1029 at 75–76, Ex. 1002 ¶¶ 293–295, 298–302; Pet. 78–79). Petitioner, therefore, appears to rely on Fong to teach the claimed “normalizing.” *Id.* at 78–79.

Limitation [43.3] recites “comparing each of said normalized databases with each other one of said normalized databases.” Ex. 1001, 40:7–8. Petitioner asserts that “[o]nce the information has been normalized as taught by Fong, the next necessary step is to compare the normalized information.” Pet. 82 (citing Ex. 1002 ¶ 303).

Limitation [43.4] recites “recording all common data elements found during each said comparing step.” Ex. 1001, 40:9–10. Petitioner asserts that “[i]n order to combine entities with the same or equivalent identifiers as taught by Fong, a POSITA would next record all common data elements found during the comparing step.” Pet. 83 (citing Ex. 1002 ¶ 304).

Limitation [43.5] recites “recording one location of each said common data element in each of said databases.” Ex. 1001, 40:11–12. Petitioner asserts that “[a]s explained above for claim 9, in Conlon, each data element is stored only once in the main table. Entities with the same or equivalent identifiers are combined and recorded once in the main table.” Pet. 83 (citing Ex. 1002 ¶ 305).

We find that Petitioner has not sufficiently shown, for purposes of institution, that the references teach limitations [43.3], [43.4], and [43.5]. We do not express an opinion as to the sufficiency of Petitioner’s showing as to any other limitation not discussed herein. Specifically, Petitioner has not

identified with particularity how the references teach these limitations. Petitioner relies on Fong for the recited “normalizing,” but Petitioner’s position with respect to these claim limitations is confusing and vague. For example, with respect to limitation [43.3], Petitioner asserts that “the next necessary step is to compare the normalized information” and cites to paragraph 303 of Dr. Jansen’s Declaration (Ex. 1002) in support. *See* Pet. 82. However, Dr. Jansen’s Declaration merely repeats the language in the Petition, and generally cites to Fong and two other references, Hansen and Schaller, without further explanation. *See* Ex. 1002 ¶ 303 (citing Ex. 1029 (Fong) at 75–76; Ex. 1034 (Hansen) at 140–141, 146; and Ex. 1035 (Schaller) at 12). Petitioner does not explicitly assert that Fong teaches the claimed “comparing”; rather, Petitioner asserts that this is a “necessary” step. Pet. 82. By using the term “necessary,” Petitioner appears to be taking an inherency-like position. However, none of the citations to Fong, Hansen, or Schaller describe that this is a “necessary” step. *See MEHL/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) (inherency requires that “the prior art necessarily functions in accordance with, or includes, the claimed limitations”). Schaller, in particular, describes that “[t]echniques for semantic reconciliation *include* . . . Comparison of objects . . . [where] [t]o determine similarity, the schema of objects *may be compared* with heuristic methods.” Ex. 1035 at 12 (emphasis added). In other words, Petitioner provides no supporting evidence that “comparing” is a “necessary step.”

Similarly, for limitation [43.4], Petitioner asserts that “a POSITA would next record all common data elements found during the comparing step” and cites to paragraph 304 of Dr. Jansen’s Declaration (Ex. 1002) in

support. *See* Pet. 83. As with limitation [43.3], Dr. Jansen’s Declaration merely repeats the language in the Petition, and cites to the same portions of Fong, Hansen, and Schaller without further explanation. *See* Ex. 1002 ¶ 304. Again, Petitioner does not explicitly assert that Fong teaches the claimed “recording”; rather, Petitioner simply asserts that a POSITA “would next record.” But none of the cited references appear to even describe a “recording” step as recited in the limitation, much less support that a POSITA “would next record.” At the very least, Petitioner (and Dr. Jansen) have not identified with enough specificity what portions of these references support the assertion that a POSITA “would next record.”

With respect to limitation [43.5], Petitioner states “Entities with the same or equivalent identifiers are combined and recorded once in the main table,” and cites to paragraph 305 of Dr. Jansen’s Declaration in support. *See* Pet. 83. As with limitations [43.3] and [43.4], Dr. Jansen’s Declaration merely repeats the language in the Petition, and cites to the same portions of Fong, Hansen, and Schaller without further explanation. *See* Ex. 1002 ¶ 305. Petitioner’s statement is conclusory and unsupported by the record. None of the cited references appear to describe a “recording” step as recited in limitation [43.5]. At the very least, Petitioner (and Dr. Jansen) have not identified with enough specificity what portions of these references support the assertion.

Accordingly, we determine that Petitioner has not adequately shown that Conlon, Miller, and Fong teaches limitations [43.3], [43.4], and [43.5] for purposes of institution. For these reasons, we determine, on the current record and for purposes of this Decision, that the information presented in

the Petition does not demonstrate a reasonable likelihood that claim 43 is unpatentable under 35 U.S.C. § 103(a) over Conlon, Miller, and Fong.

4. *Analysis of Dependent Claims 44–46*

Claim 44 depends from claim 41, and recites, in part “proceeding with said integrating if respective top level data elements in said heterogenous databases and said parts thereof are substantially the same or differentiated only by descriptors.” Ex. 1001, 40:17–20. Petitioner identifies this as limitation [44.1]. Claim 44 also recites “recording each new and old location of each said relocated data element as a cross reference,” which Petitioner identifies as limitation [44.6]. *Id.* at 40:36–37. We find that Petitioner has not satisfied its burden to show, sufficiently for institution, that the prior art teaches or suggests these limitations. We do not express an opinion as to the sufficiency of Petitioner’s showing as to any other limitation not discussed herein.

With respect to limitation [44.1], Petitioner contends that

When integrating heterogeneous databases, such as the data sources disclosed in Conlon and organizing them hierarchically as taught by Miller, a POSITA would proceed with the integration of top level data elements from heterogeneous databases only if the top level data elements in the heterogeneous databases and said parts thereof are substantially the same or differentiated only by descriptors. Ex-1002, ¶ 307.

Pet. 83–84 (emphasis added). Dr. Jansen’s Declaration repeats this statement, and additionally cites to Fong, stating “step 2: discussing hierarchical levels of *branch@ → division@ → department*; steps 3&4: combining entities with the ‘same’ or ‘equivalent’ identifiers.” Ex. 1002 ¶ 307 (citing Ex. 1029 at 75).

Petitioner fails to cite sufficient evidence supporting its contention that Conlon, Miller, and Fong disclose this limitation. As set forth above, limitation [44.1] recites “*proceeding with said integrating if*” certain conditions are met, that is, “respective top level data elements in said heterogenous databases and said parts thereof are substantially the same or differentiated only by descriptors.” Petitioner cites no portion of any of the references purportedly describing this limitation; rather, Petitioner simply asserts that a person of ordinary skill in the art would proceed in this manner, and cites Dr. Jansen’s testimony in support. However, the cited portions of Dr. Jansen’s testimony merely repeat the unsupported characterizations from the Petition.

Dr. Jansen cites to page 75 of Fong, but the cited portion describes eliminating redundant non-key attributes of entities and combining entities with the same or equivalent identifiers, as it pertains to normalizing the collection of entities. *See* Ex. 1029 at 75. Dr. Jansen does not provide any testimony explaining how this citation teaches limitation [44.1]. Petitioner does not explain how the cited portion of Fong discloses limitation [44.1] and simply relies on conclusory testimony from Dr. Jansen in support of its assertions. Our reviewing court has made clear that declarant testimony “cannot be used as a wholesale substitute for reasoned analysis and evidentiary support.” *Arendi v. Apple*, 832 F.3d 1355, 1361–62 (Fed. Cir. 2016). Our Consolidated Trial Practice Guide (“CTPG”) also cautions, “in an obviousness analysis, conclusory assertions from a third party about general knowledge in the art cannot, without supporting evidence of record, supply a limitation that is not evidently and indisputably within the common

knowledge of those skilled in the art.” CTPG (Nov. 2019)⁷ 36 (citing *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365 (Fed. Cir. 2014)). We, therefore, afford Dr. Jansen’s unsubstantiated testimony little weight. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

With respect to limitation [44.6], Petitioner states “Same reasons as claim 9 and limitations [10.2] and [43.5].” Pet. 85. As discussed above, we find Petitioner has not sufficiently shown that limitation [43.5] is taught by the references. Moreover, Petitioner has not explained, and it is not readily apparent, how the analysis for claim 9 and limitation [10.2] teach the recited limitation in limitation [44.6].

Accordingly, based on the current record, Petitioner has not shown sufficiently that the combination of Conlon, Miller, and Fong would have rendered claim 44 obvious, and has not, therefore, established a reasonable likelihood of prevailing on its challenge with respect to claim 44. Claims 45 and 46 depend from claim 44, so we, likewise find Petitioner’s analysis deficient for the same reasons as with claim 44. Accordingly Petitioner also has not established a reasonable likelihood of prevailing on its challenge with respect to claims 45 and 46.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine Petitioner has established a reasonable likelihood of prevailing on its assertion that at least one claim

⁷ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=>.

of the '680 patent is unpatentable. Accordingly, we institute an *inter partes* review on all the challenged claims and all of the grounds presented in the Petition. At this stage of the proceeding, we have not made a final determination as to the patentability of these challenged claims.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review is instituted as to the challenged claims of the '680 patent with respect to all grounds of unpatentability presented in the Petition; and

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

FURTHER ORDERED that Patent Owner is to file Mandatory Notices pursuant to 37 C.F.R. § 42.8 within 5 business days of this Order.

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