

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,

v.

X1 DISCOVERY, INC.,
Patent Owner.

IPR2025-00255
Patent 9,633,139 B2

Before CHARLES J. BOUDREAU, SCOTT C. MOORE, and
LISA A. MURRAY, *Administrative Patent Judges*.

BOUDREAU, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Microsoft Corporation filed a Petition requesting an *inter partes* review of claims 1–27 of U.S. Patent No. 9,633,139 B2 (Ex. 1001, “the ’139 Patent”). Paper 1 (“Pet.”). X1 Discovery, Inc. (“Patent Owner”) filed a Request for Discretionary Denial (Paper 7) and a Preliminary Response. Paper 8 (“Prelim. Resp.”). Petitioner filed an Opposition to Patent Owner’s Request for Discretionary Denial (Paper 9), and the Acting Director issued an Order denying the Request (Paper 13).

We may institute an *inter partes* review when “the information presented in the petition . . . 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) (2018). If we institute an *inter partes* review, the trial must encompass all claims and grounds identified in the Petition. 37 C.F.R. § 42.108(a) (2025) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

For the reasons set forth below, we conclude that there is a reasonable likelihood that Petitioner will prevail in establishing the unpatentability of all challenged claims. We, therefore, institute *inter partes* review of claims 1–27 on the grounds asserted in the Petition.

B. *Real Parties in Interest*

Petitioner identifies Microsoft Corporation, Acer America Corporation, Acer Inc., ASUS Computer International, ASUSTeK Computer, Inc., Dell (Chengdu) Company Limited, Dell Products LP, and Dell Technologies Inc. as real parties in interest. Pet. xiv. Patent Owner identifies X1 Discovery, Inc. as the real party in interest. Paper 3, 2.

C. Related Matters

The parties identify *XI Discovery, Inc. v. Microsoft Corp.*, No. 8:23-cv-02415 (C.D. Cal.) (“*XI v. Microsoft* litigation”) as involving the ’139 patent and related U.S. Patent Nos. 7,370,035 (“the ’035 patent”) and 10,552,490 (“the ’490 patent”). Pet. xiv; Paper 3, 2 (Patent Owner’s Mandatory Notices); Paper 10, 2 (Patent Owner’s Updated Mandatory Notices). The parties indicate that Petitioner is concurrently challenging the ’035 and ’490 patents in IPR2025-00253 and IPR2025-00254, respectively. Pet. xv; Paper 3, 3.

Patent Owner’s Updated Mandatory Notices further identify an additional patent, U.S. Patent No. 8,498,977 (“the ’977 patent”), as being asserted against Petitioner in the *XI v. Microsoft* litigation. Paper 10, 2. Patent Owner reports that the ’977 patent and still another patent, U.S. Patent No. 8,856,093 (“the ’093 patent”), also are asserted against Acer Inc. and Acer America Corporation; ASUSTeK Computer Inc. and ASUS Computer International; and Dell Technologies Inc., and Dell Products L.P. in *Certain Computing Devices Utilizing Indexed Search Systems & Components Thereof*, Inv. No. 337-TA-1389 (ITC), and in the following district court proceedings: *XI Discovery, Inc. v. Acer Inc.*, No. 2:23-cv-10674 (C.D. Cal.); *XI Discovery, Inc. v. ASUSTeK Computer Inc.*, No. 2:23-cv-10672 (C.D. Cal.); and *XI Discovery, Inc. v. Dell Technologies Inc.*, No. 2:24-cv-04109 (C.D. Cal.). *Id.* at 2–3.

D. The ’139 Patent

The ’139 patent, titled “Methods and Systems for Search Indexing,” issued April 25, 2017, from an application filed October 6, 2014, as one of a series of continuation applications dating back to September 3, 2003, and claiming the benefit of five provisional applications filed between September 23, 2002, and June 13, 2003. Ex. 1001, codes (22), (45), (54),

(60), (63). The '139 patent “relates generally to data processing, and in particular to systems and methods for locating data.” *Id.* at 1:35–36.

The '139 patent identifies various drawbacks of conventional search application programs. Ex. 1001, 1:38–2:11. For example, according to the '139 patent, such applications were “often . . . slow and cumbersome to use,” and many “require[d] the user to type in a search term, click on a search button, and review the results,” in some cases repeatedly. *Id.* at 1:38–45, 1:51–2:5. In addition, according to the '139 patent, many search application programs only provided for limited search filtering, and some did not include search features directed to specific types of search targets, necessitating the use of separate tools to search for email, Web pages, and files. *Id.* at 1:45–56. In view of such drawbacks, the '139 patent in one exemplary embodiment “provides for incremental or reactive searching of a variety of search targets,” including “files, emails, email attachments, Web pages, specific databases, and/or the like.” *Id.* at 2:15–19. Because the search is performed incrementally, according to the '139 patent, the search results are “provided or narrowed substantially immediately after each character in a search string is entered” by the user, and, “[t]hus, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters, entering a new search string, or deleting one or more search string characters.” *Id.* at 2:19–27. The '139 patent also describes, for example, an embodiment that includes receiving at least two search strings as they “are being entered into the same search field,” and “incrementally locating at least a first document that has a[t] least a first word that begins with the first search string and a second word that begins with the second search string.” *Id.* at 2:36–42.

E. Challenged Claims

Petitioner challenges claims 1–27 of the '139 patent. Of the challenged claims, claims 1, 23, and 27 are independent. Claim 1, reproduced below with Petitioner's bracketed identifiers and formatting added (*see* Ex. 1040), is representative.

- [1.1] A method of performing a search comprising:
- [1.2] receiving a first partial search string in a first search field;
- [1.3] receiving a second partial search string in the first search field;
- [1.4] wherein the first and second partial search strings are separated by a string separator character in the first search field;
- [1.5] incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises:
 - [1.6] searching for a first one or more documents each including at least one string that corresponds to the first partial search string;
 - [1.7] searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and
 - [1.8] updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are nonadjacent in at least one of the identified documents.

Ex. 1001, 29:43–67.

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability for the challenged claims:

Ground	Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1	1–27	103(a)	Wilcox, ² Londergan, ^{3,4} Raskin, ⁵ Wu ⁶
2	1–27	103(a)	Schwartz, ⁷ Sebastian, ⁸ Barber, ^{9,10} True, ¹¹ Baeza- Yates ¹²

Pet. 2. Petitioner also relies on a Declaration of Loren G. Terveen, Ph.D. in support of the Petition. Ex. 1003. Patent Owner relies on a Declaration of Martin P. Haeberli in support of the Preliminary Response. Ex. 2001.

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the application from which the ’139 patent claims priority were filed before this date, the pre-AIA version of § 103 applies. See Ex. 1001, codes (60), (63).

² Adam A. Wilcox, *PC Learning Labs Teaches Lotus Notes 3.0* (1993) (Ex. 1059).

³ Stephen Londergan & Pat Freeland, *Lotus Notes R5 for Dummies* (1999) (Ex. 1061).

⁴ Petitioner refers to Wilcox and Londergan collectively as “The Lotus Notes references.” See, e.g., Pet. 2.

⁵ Jef Raskin, *The Humane Interface* (2000) (Ex. 1021).

⁶ Wu, US 5,991,756, issued November 23, 1999 (Ex. 1019).

⁷ Steve Schwartz, *Visual QuickStart Guide: Entourage 2001 for Macintosh* (2001) (Ex. 1004).

⁸ Bonita Sebastian et al., *Microsoft Office 2001: A Hands-on Guide for Macintosh* 171–88 (2001) (Ex. 1005).

⁹ Nan Barber & David Reynolds, *Office 2001 for Macintosh: The Missing Manual* (2001) (Ex. 1006).

¹⁰ Petitioner refers to Schwartz, Sebastian, and Barber collectively as “The Entourage references.” See, e.g., Pet. 2.

¹¹ True et al., US 6,112,172, issued August 29, 2000 (Ex. 1009).

¹² Ricardo Baeza-Yates & Berthier Ribeiro-Neto, *Modern Information Retrieval* (1999) (Ex. 1023).

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

Determining whether an invention would have been obvious under 35 U.S.C. § 103 requires resolving the level of ordinary skill in the pertinent art at the time the invention was made. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person who knows the relevant art. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors in determining the level of ordinary skill in the art include the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* One or more factors may predominate. *Id.*

Petitioner contends that a person of ordinary skill in the art “for purposes of the ’139 patent in September 2002 (‘POSITA’) would have had a bachelor’s degree in computer science, or equivalent, with two or more years of experience developing and implementing search engines and/or search interfaces.” Pet. 6. Petitioner further contends, “[m]ore education, e.g., a Master’s or Ph.D., would compensate for less work experience and vice versa.” *Id.* (citing Ex. 1003 ¶ 30). Still further, Petitioner argues, a person of ordinary skill in the art “would have been familiar with common, then-existing search tool functionality,” including “incremental (i.e., character-by-character) searching in which search results are displayed as a user types their query”; “locating documents containing two or more search strings, such as in response to a user including a Boolean AND operator in their search query”; “highlighting a searched string in the search results so that a user can easily and quickly see where the searched string appears in the located document(s)”; and “email-specific search functionality, such as

the ability to search within email-specific headers (e.g., To, From, Subject, etc.).” *Id.* at 7–10 (citing Ex. 1003 ¶¶ 31–50; Ex. 1004; Exs. 1006–1041; Ex. 1043; Ex. 1044; Ex. 1052; Ex. 1053; Ex. 1057; Ex. 1059; Ex. 1061).

Patent Owner does not comment on Petitioner’s formulation or offer any competing formulation in its Preliminary Response. *See generally* Prelim. Resp. Mr. Haeberli, however, testifies as follows in his Declaration:

29. In my opinion, the POSITA at the time of the alleged invention of the Asserted Patents would have had a (1) a Bachelor’s degree in a pertinent discipline, such as computer science, electric engineering, computer engineering, or a related field and (2) have 2–4 years of experience in working with computing devices and have an understanding of indexed search systems utilized by such computing devices.

30. I am aware that Dr. Terveen has provided its own definition

31. I believe Dr. Terveen’s definition is not meaningfully different from my definition of a POSITA. My opinions would not change regardless of which definition of POSITA is applied.

Ex. 2001 ¶¶ 29–31. We find Mr. Haeberli’s formulation to be consistent with the evidence of record at this stage of the proceeding, including the asserted prior art and the ’139 patent, and, accordingly, we adopt and apply that definition for purposes of this Decision.

B. Claim Construction

We interpret claims in the same manner used “in a civil action under 35 U.S.C. § 282(b), including construing 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.” 37 C.F.R. § 42.100(b). When applying that standard, we interpret the claim language as it would have been understood by one of ordinary skill in the art in light of the specification. *Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*,

853 F.3d 1272, 1279–80 (Fed. Cir. 2017). Thus, we give claim terms their ordinary and customary meaning as understood by an ordinarily skilled artisan. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Neither party identifies any claim term as requiring express construction at this stage of the proceeding. In particular, Petitioner contends that, “[u]nless otherwise noted, Petitioner applies the plain and ordinary meaning of all claim terms,” and Patent Owner contends that “[t]he Board need not expressly construe any term for purposes of this proceeding.” Pet. 12; Prelim. Resp. 5. Patent Owner additionally reports, however, that the Administrative Law Judge in the copending ITC proceeding construed (1) “incremental search” to mean “a search performed at each increment of the entry of the search string” and (2) “non-adjacent in at least of the identified documents” to mean “non-adjacent within the context of at least one of the identified documents.” Prelim. Resp. 5 (citing Ex. 2007, 32–33; Ex. 2008, 14). According to Patent Owner, “[t]he Board need not construe th[ese] term[s] because the Petitioner fails to make its case regardless of the construction applied.” *Id.* Still further, Patent Owner argues that, notwithstanding Petitioner’s contention that it applies the plain and ordinary meaning of all claim terms, Petitioner “improperly applies implicit constructions unsupported by any argument or intrinsic evidence, including at least for the terms ‘file’ and ‘string separator character.’” Prelim. Resp. 5 (citing Pet. 12, 25–26 n.6, 69; Ex. 1003 ¶¶ 81, 153). In particular, according to Patent Owner,

in Ground 2 Petitioner equates a portion of a document (the “transcript window” in True) with a document, without any citations to intrinsic evidence, and without explanation or justification. (Pet., 69.) Similarly, in Ground 1, Petitioner equates a Boolean operator such as “AND” with the claimed “string separator character” as required by all claims of the ’139 patent, again without citing to intrinsic evidence or providing any justification for this implicit construction. (Pet., 25-26 n.6.) As discussed below . . . , Petitioner never sought construction of these terms and the intrinsic evidence does not support Petitioner’s implicit claim construction. Thus, both Grounds are based on implicit claim constructions of claim terms for which Petitioner failed to properly seek construction. Even if the Board considers Petitioner’s constructions, however, Petitioner cannot establish obviousness of any challenged claim.

Id. at 5–6.

After reviewing the parties’ arguments and evidence, we determine that the only term that we will need to expressly construe at this stage of the proceeding is the term “string separator character” in claims 1, 23, and 27. For the reasons discussed in Section II.C.2.b.1 below, for the purposes of this Decision we preliminarily construe this term to mean “a single-character string separator.” The parties are invited to address the appropriateness of this construction in future briefing.

C. Obviousness under 35 U.S.C. § 103

An invention is not patentable under pre-AIA 35 U.S.C. § 103 “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.” 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) where in

evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, and failure of others.¹³ *Graham*, 383 U.S. at 17–18.

When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

1. Overview of the Prior Art

a) Overview of Wilcox and Londergan

Wilcox (Ex. 1059) and Londergan (Ex. 1061), which Petitioner refers to collectively as the “Lotus Notes references,” are publications describing Versions 3.0 and R5, respectively, of the Lotus Notes software package. *See* Ex. 1059, (a), xvi; Ex. 1061, (i). Petitioner contends that these publications qualify as prior art under 35 U.S.C. Sections 102(a) and 102(b) because they were published in 1993 and 1999, respectively, and were publicly available more than one year before the earliest possible priority date of the challenged patent. *See* Pet. 13. Patent Owner does not presently dispute that Wilcox and Londergan qualify as prior art.

Wilcox and Londergan explain that Lotus Notes is a so-called “groupware” software product that is designed to allow groups of users to communicate and share information. Ex. 1059, 2; Ex. 1061, 6. Both versions of Lotus Notes store documents in a central database that resides on a network, rather than on the computers of individual users. Ex. 1059, 2–3; Ex. 1061, 12. Both versions of Lotus Notes contain an electronic mail

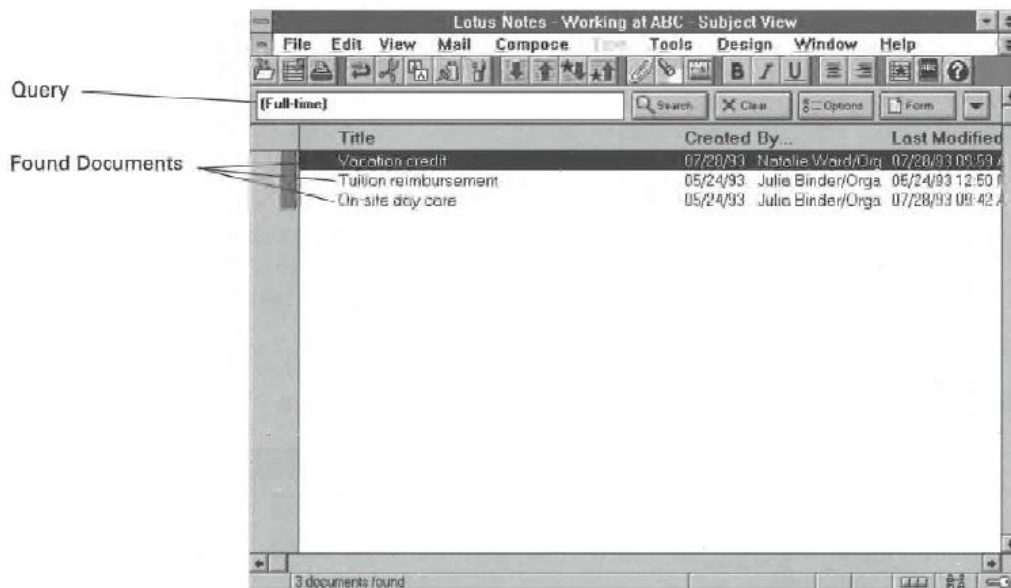
¹³ At this stage of the proceeding, neither party has directed us to evidence of such secondary considerations.

software. Ex. 1059, 5, Ex. 1061, 11. These electronic mail messages are also stored in a database on a central server. Ex. 1059, 5; Ex. 1061, 11–12. Lotus Notes indexes email messages and other types of documents, and allows users to conduct searches. *See* Ex. 1059, 160–65; Ex. 1061, 139–42.

Wilcox explains that version 3.0 of Lotus Notes provides two tools for searching through documents (such as emails) in the indexed Lotus Notes database: The Search bar and the Query Builder. Ex. 1059, 160–61.

Figure 5.17 of Wilcox, reproduced below, depicts the first of these tools, the Lotus Notes 3.0 Search bar.

Figure 5.17 **The results of a query**

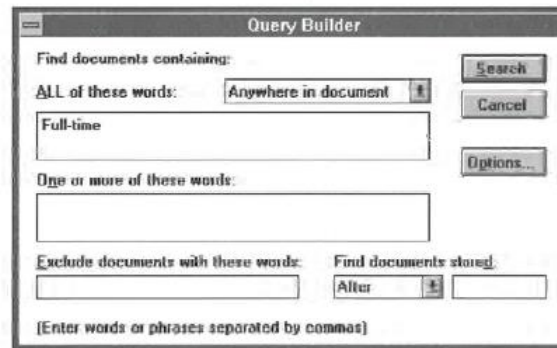


The Search bar in Figure 5.17, above, includes a text box in which a user can enter specific search terms. Ex. 1059, 161, 164. In the depicted example, this text box contains the search term “(Full time).” Wilcox discloses that a user can also use wildcards and Boolean operators (e.g., AND, OR, NOT) to perform searches using the text box. *Id.* The search bar also includes a “Form” button that displays a dialog box that can be used to search for text contained in particular fields of the Lotus Notes database. *Id.* at 167. Below the Search bar is a results window listing three “Found Documents” that

were identified in response to this exemplary search query (i.e., the search for “(Full Time)”). *Id.* at 164.

We now move on to the second search tool of Lotus Notes 3.0, Query Builder. Wilcox explains that the Query Builder is a dialog box that makes it easier for users to construct complex queries. Ex. 1059, 162. Figure 5.16, reproduced below, depicts the Query Builder dialog box.

Figure 5.16 Using the Query Builder dialog box



The Query Builder dialog box above includes a drop-down menu that allows a user to choose whether to conduct a search for the selected search terms “anywhere in document,” or “near each other” (in which case search results are ranked by how close search terms appear to one another). *Id.* at 162–63. The Query Builder also contains an “All of these words” text box that can be used to search for documents that contain all of two or more user-specified words, and a “One or more of these words” box that can be used to search for documents that contain one or more of the specified words. *Id.* The Query Builder additionally contains a textbox that permits a user to exclude certain words from a search, and a drop-down menu and text box that a user can use to search for documents stored before or after a certain date. *Id.* The user is instructed that when entering multiple words in a textbox, the user should “[e]nter words or phrases separated by commas.” *Id.* Once a query has been entered using the text boxes and drop-down menus of the Query Builder, the user can click on “Search” button. *Id.* This causes the

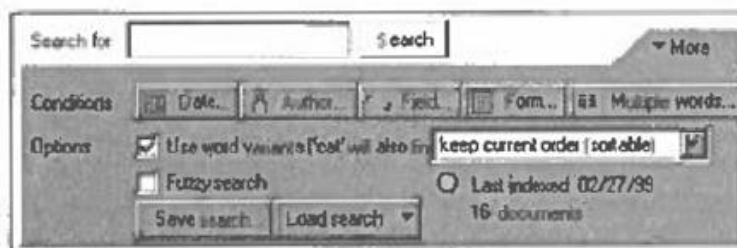
search to appear in the text box of the Lotus Notes 3.0 Search bar. *Id.* at 164. The search results are then displayed below the search bar. *See id.*

The second Lotus Notes reference, Londergan, describes the search functionality of version R5 of Lotus Notes. Ex. 1061, (i), 139–48. Londergan indicates that Lotus Notes R5 also includes a Search bar, reproduced below, which be used to search for words and phrases.



The Lotus Notes R5 Search bar above includes a text box and a “Search” button. *See id.* at 140. Londergan indicates that this Search bar can be used to search for documents containing single words or exact phrases, and can also accept Boolean operators. *See id.*

The depicted Search bar also includes a “More” drop-down button that displays a Search Builder dialog box containing additional search options. *See* Ex. 1061, 140–42. A figure from Londergan depicting the Lotus Notes R5 Search bar and Search Builder dialog box is reproduced below.



The Search Builder dialog box depicted above contains several buttons and fields that permit a user to specify various types of search conditions. *Id.* at 141–45. For example, the Search Builder includes an “Author” condition button that can be used to limit a search query to documents written by a particular author, and a “Date” condition button that can be used to limit a

search to documents created before, after, or between certain dates. *Id.* at 141–42. The Search Builder includes a “Multiple words” condition button. *See id.* at 142. This button opens a separate dialog box that permits searches for documents that contain “any” or “all” of two or more user-specified words. *Id.* Unlike in Query Builder, in Search Builder each user-specified word is entered into a separate textbox. *Id.* The Search Builder additionally includes a “Field” condition button. *Id.* at 143. This button opens a separate dialog box that permits searches for text contained in particular fields of the Lotus Notes database. *Id.* at 143.

b) Overview of Raskin

Raskin is a textbook describing user interface design principles for interactive systems. Ex. 1021, (i), (xi)–(xii). Petitioner contends that Raskin qualifies as prior art under 35 U.S.C. Sections 102(a) and 102(b) because it was published in 2000 and was publicly available more than one year before the earliest possible priority date of the challenged patent. Pet. 18–19. Patent Owner does not presently dispute that Raskin qualifies as prior art.

Portions of Raskin discuss interfaces for conducting string searches and “Find” searches. *See* Ex. 1021, 124–32. Raskin teaches that such search interfaces typically use either or both of two specific search strategies: delimited searches and incremental searches. *Id.* at 125.

In the first and more common type of search strategy, delimited searching, the user would typically enter text in a dialog box field. *Id.* The user would then initiate a search by entering a delimiting character (e.g., the Return key), or clicking a button (e.g., OK, Search, Find). Ex. 1021, 125. This would cause the system to search for instances of the relevant text string, and designate each matching instance with a cursor. *Id.*

In the less common strategy described in Raskin, incremental searching, the user might summon a dialog box and enter a search term.

Ex. 1021, 125. In an exemplary incremental search, the computer would immediately search for the first character entered by the user, and designate the first instance of this character with a cursor. *Id.* After the second character is entered, the computer would begin searching for the first instance of those two characters and then highlight the first such instance with a cursor. *Id.* The computer would then repeat this pattern each time an additional character was added to the search term. *Id.*

Raskin teaches that incremental searches have a number of advantages over delimited searching. Ex. 1021, 126. For example, incremental searches waste less of a user's time, make it easy for users to identify and correct search errors, and provide constant feedback to the user. *Id.* Notwithstanding these advantages, Raskin teaches that incremental searching is less common than delimited searching because interface-building tools (e.g., JavaScript and Visual BASIC) make it “difficult or impossible” for developers to implement incremental searches. *Id.*

c) Overview of Wu

Wu is a U.S. Patent titled “Information Retrieval from Hierarchical Compound Documents.” Ex. 1019 code (54). Petitioner contends that Wu qualifies as prior art under 35 U.S.C. Sections 102(a) and 102(b) because it was published in 1999 and publicly accessible more than one year before the earliest possible priority date of the challenged patent. Pet. 20. Patent Owner does not presently dispute that Wu qualifies as prior art.

Wu generally relates to an apparatus for searching for selected documents in a document repository that contains a large number of documents. Ex. 1019, 3:24–27. Wu discloses one embodiment of a search engine that utilizes a document repository and word index. *Id.* at 6:51–52. Wu describes the operation of this search engine in response to a user-entered query for the search string “The game of Go.” *Id.* at 6:52–54. In

particular, Wu indicates that the search engine, in response to this query, would disregard the common words “the” and “of,” search through the document lists for the terms “game” and “go,” and generate a match list for each term that lists all documents that contain either term, directly or indirectly. *Id.* at 6:54–62. Wu indicates that the search engine would then apply an “AND” operator to the match lists. *Id.* at 60–62. This “AND” operation creates a new match list that contains all documents that appear on both of the previously-created match lists. *See id.* at 9:11–44. Thus, in this example, the match list created by the “AND” operator would identify the documents in the document repository that match both search terms (i.e., “game” and “go”), either directly or indirectly.

Wu further teaches that “indirect” matches may include documents that do not include a search term, but which are, for example, “child documents/nodes from a document/node which does contain the word.” Ex. 1019, 7:24–36. Thus, in at least some embodiments, the match list resulting from the “AND” operator may include documents that do not themselves recite one or more search terms (e.g., “game” and “go”), but which are instead identified as indirectly matching those search terms because they are related within a document hierarchy to other documents that contain the relevant search terms. *See id.*

d) Other References

As discussed above, the Petition sets forth a second ground of unpatentability based on the Schwartz, Sebastian, Barber, True, and Baeza-Yates references. This Decision does not reach the substance of this second ground of unpatentability, and thus does not include a discussion of these additional references.

2. *Ground 1: Obviousness of Claims 1–20 Under 35 U.S.C. § 103(a) Over Wilcox, Londergan, Raskin, and Wu*

Petitioner asserts that claims 1–27 are unpatentable as obvious over the combination of Wilcox, Londergan, Raskin, and Wu. Pet. 12–45. According to Petitioner, Wilcox and Londergan “teach every element of the challenged claims” except for “(1) locating the documents incrementally (i.e., character-by-character) and (2) doing so using an intersection approach (i.e., searching each string separately and then identifying the documents that appear in both sets of search results).” *Id.* at 12. Petitioner contends that Raskin expressly discloses incremental searching and that Wu expressly discloses using an intersection approach. *Id.* at 13 (citing Ex. 1003 ¶ 54 (Terveen Decl.)).

Patent Owner contends that “this 4-way combination fails for one fundamental reason—Petitioner did not meet its burden of showing a motivation to combine these teachings. Moreover, even if such a motivation exi[s]ts (which it does not), the resulting system does not provide each and every limitation of the claims.” Prelim. Resp. 6. We address each of these objections in turn, focusing in particular on independent claims 1, 23, and 27.

a) *Motivation to Combine*

For the reasons discussed below, we are not persuaded by Patent Owner’s argument that one of ordinary skill in the art at the time the invention was made would not have been motivated to combine Wilcox with Londergan or to modify the Wilcox/Londergan combination with the teachings of Raskin and Wu. *See* Prelim. Resp. 7–29.

(1) *Combining the Lotus Notes References*

Petitioner argues that a person of ordinary skill in the art would have been motivated to combine Wilcox and Londergan, which describe two

different versions of Lotus Notes but contain “complementary teachings” on Lotus Notes systems, in order to “obtain a more complete and comprehensive understanding of the Lotus Notes system, its features, and its capabilities.” Pet. 22; *see* Ex. 1059 (Wilcox); Ex. 1061 (Londergan). Patent Owner, however, contends that “Lotus Notes 3.0 described by Wilcox and Lotus Notes R5 described by Londergan are materially different with respect to the functionality Petitioner relies on.” Prelim. Resp. 8–9.

Patent Owner argues that Petitioner “treats the Query Builder in Wilcox (Lotus Notes 3.0) and the Search Builder in Londergan (Lotus Notes R5) as though they have the same functionality but different names.” Prelim. Resp. 13. To the extent that there is any ambiguity about the matter, we find on the basis of the current record that Wilcox and Londergan are not the same reference and do not describe the same Lotus Notes system. Each discloses some, but not all, of the elements of claims 1, 23, and 27 that Petitioner ascribes to the “Lotus Notes references.” *See* Pet. 20–25. For example, Wilcox describes a Lotus Notes system in which it is possible to search on multiple strings entered into a single search field, but which does not highlight search strings in documents. Ex. 1059, 163; *see* Pet. 14–17; Prelim. Resp. 10–11. Londergan describes a different Lotus Notes system in which there can be only one search term per field, but which can, for example, highlight search results. Ex. 1061, 142; *see* Prelim. Resp. 11–12.

Although Patent Owner is correct that Wilcox and Londergan do not describe the same system, that does not mean that they cannot be combined in an obviousness analysis. Petitioner does not rely on the individual teachings of Wilcox and Londergan, but on the *combination* of these two references, or, put another way, on “what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them.” *In re Rosselet*, 347 F.2d 847, 851, (CCPA 1965) (emphasis

omitted). The test for obviousness is “what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *see also Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) (“Claims may be obvious in view of a combination of references, even if the features of one reference cannot be substituted physically into the structure of the other reference.”); *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”).

Patent Owner argues that Petitioner fails to provide any reason why one of ordinary skill in the art would have considered “reverting some of the changes that had been made to Lotus Notes R5’s ‘Search Builder’ to make it more similar to Lotus Notes earlier 3.0’s ‘Query Builder.’” Prelim.

Resp. 16. The issue, however, is not whether “over the years Lotus Notes moved away from a unified search field[,]” as Patent Owner suggests. *Id.* at 14. The issue is what “inferences and creative steps” a person of ordinary skill in the art would have employed, based on Wilcox and Londergan, when designing a new method and system for search indexing. *KSR*, 550 U.S. at 418. Petitioner’s argument is that one of ordinary skill in the art would have been motivated to consider Wilcox and Londergan together in order to “obtain a more complete and comprehensive understanding of the Lotus Notes system,” which in turn would have inspired certain inferences and creative steps that would have resulted in the portions of the claimed invention allegedly disclosed in Wilcox and/or Londergan. Pet. 22. We do not agree with Patent Owner that this argument can only be the result of improper hindsight bias. *See* Prelim. Resp. 16–17. At this stage of the proceedings and based on the current record, we determine that Petitioner

has sufficiently shown that a POSITA would have been motivated to combine Wilcox and Londergan.

(2) *Modifying the Lotus Notes Combination
According to Raskin*

Petitioner proposes that one of ordinary skill in the art would have been motivated to modify the Wilcox/Londergan combination with certain teachings of Raskin. Specifically, Petitioner contends that Raskin discloses incremental searching as recited in claims 1, 23, and 27, meaning a search method that “immediately begins to search” as soon as the user “types the first character of the pattern” and continues to update the search results as characters are added or deleted. Ex. 1021, 125–26; Pet. 19 (citing Ex. 1003 ¶¶ 66–67). According to Petitioner, “[a] POSITA would have been motivated to perform Lotus Notes’ multi-string search incrementally for the reasons stated by Raskin: speed, effectiveness, and ease of use.” Pet. 23; Ex. 1021, 125–27. Petitioner argues that “Raskin specifically points to the type of search taught by Lotus Notes—a multi-string Boolean search—as a search that benefits from being performed incrementally.” Pet. 23 (citing Ex. 1021, 127; Ex. 1003 ¶ 75).

Patent Owner contends that Petitioner has failed to demonstrate a motivation to combine Wilcox/Londergan with Raskin.¹⁴ Prelim. Resp. 18.

¹⁴ As a preliminary matter, Patent Owner argues that Petitioner fails to identify which search tool a POSITA would be modifying, the Wilcox Query Builder or the Londergan Search Builder. Prelim. Resp. 18 n.1; *see also id.* at 26–27. The answer, of course, is neither. Because Petitioner is relying on a combination of Wilcox and Londergan as the primary reference, in Petitioner’s proposed scenario a POSITA would be modifying that hypothetical *combination* by adding the cited features of Raskin and Wu. *In re Keller*, 642 F.2d at 425 (test for obviousness is “what the combined teachings of the references would have suggested to those of ordinary skill in the art”).

Patent Owner argues that Raskin only discusses problems and solutions for searching in a single document, rather than across multiple documents, and that Raskin never discusses using incremental search across multiple documents. Prelim. Resp. 18–20. According to Patent Owner:

To the extent Petitioner alleges there would be a motivation to combine Wilcox-Londergan with Raskin simply because they both generally relate to searching, such a cursory assertion that the references are drawn from the same broadly characterized field is insufficient to meet Petitioner’s burden of identifying a motivation to combine.

Id. at 20 (internal quotation marks omitted).

We disagree with Patent Owner that Petitioner’s argument is simply based on the fact that all three references “generally relate to searching.” *See* Prelim. Resp. 20. The fact that Raskin does not explicitly discuss searching across multiple documents does not mean that there would be no motivation to combine Raskin with the Lotus Notes references. Although a conclusion of obviousness must be supported by findings and analysis establishing a reason to combine or modify the known elements in the manner proposed, the analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, [but] can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. We conclude on the current record that Petitioner’s rationale for combining Raskin with the Lotus Notes references is not over-broad.

Patent Owner also contends that according to Raskin, there were “extreme technical difficulties with even using incremental searches.” Prelim. Resp. 21 (citing Ex. 1021, 126), 24–25. Patent Owner argues that “[a] POSITA is not motivated to undertake a modification of the prior art with something that the art teaches would be difficult or impossible to do.”

Id. at 21 (citing *Natera, Inc. v. NeoGenomics Labs., Inc.*, 106 F.4th 1369, 1377–78 (Fed. Cir. 2024)). We do not interpret Raskin in this manner. Patent Owner points to a passage in Raskin stating, “almost all interface-building tools make it easy to implement delimited searches and difficult or impossible to implement incremental searches.” Ex. 1021, 126. There is a difference, however, between “difficult to implement” and “difficult to use.” For the end-user, Raskin concludes that “[f]rom the point of view of interface engineering, the advantages of incremental searching are so numerous and the advantages of delimited searches so few that I can see almost no occasions when a delimited search would be preferred.” *Id.* at 126 & n.7 (“A search is either incremental or excremental.”). It is reasonable to conclude that one of ordinary skill would have been motivated to choose a search method that offered numerous advantages to end-users.

Finally, Patent Owner argues that “Raskin’s entire philosophy to user interfaces was incompatible with Lotus Notes.” Prelim. Resp. 21–25. According to Patent Owner, “Lotus Notes is all about centralized collaboration around documents, files, and file structures[,]” while Raskin “goes in a completely different direction, espousing the elimination of filenames and ‘hierarchical file structures’ including directories and folders.” *Id.* at 23 (citing Ex. 1021, 119). Patent Owner claims that modifying the Lotus Notes references with Raskin would “effectively render[] Lotus Notes’ functionality of hierarchical viewing of and responding to documents unusable.” *Id.* Petitioner, however, does not propose to incorporate Raskin’s views on hierarchical file structures into the combination of Wilcox and Londergan. It is not necessary for the entirety of Raskin’s teachings to be physically compatible with the Lotus Notes systems described in Wilcox and Londergan. *Orthopedic Equip.*, 702 F.2d at 1013 (“Claims may be obvious in view of a combination of references, even if the features of one

reference cannot be substituted physically into the structure of the other reference.”); *In re Sneed*, 710 F.2d at 1550. Raskin is cited for one purpose: its teachings regarding incremental search. On the current record, we find Petitioner has demonstrated that one of ordinary skill would have been motivated to modify the combination of Lotus Notes references according to those teachings in Raskin.

(3) *Modifying the Lotus Notes Combination
According to Wu*

Lastly, Petitioner proposes that one of ordinary skill in the art would have been motivated to modify the Wilcox/Londergan/Raskin combination with certain teachings of Wu. Petitioner contends that Wu discloses using an intersection approach to locate documents containing multiple search strings, as recited in claims 1, 23, and 27. Pet. 13 (citing Ex. 1003 ¶ 54). This approach searches for each string separately, compiles a match list for each string, and then identifies documents that appear on all of the match lists. Ex. 1019, 6:51–66; Ex. 1003 ¶ 71. Petitioner argues that when implementing a Lotus Notes multi-string search, one of ordinary skill would have been motivated to use Wu’s intersection approach “at least because it was one of a limited number of well-known, predictable approaches, was simple and easy to implement, and is especially well suited for incremental searches.” Pet. 23; Ex. 1003 ¶ 76. Petitioner further argues that “[a] POSITA would have reasonably expected to succeed in combining these teachings from Raskin and Wu with Lotus Notes’ teachings because it would have required only simple and straightforward software modifications.” Pet. 23–24; Ex. 1003 ¶ 77.

Patent Owner contends that Petitioner has failed to demonstrate a motivation to combine Wilcox/Londergan/Raskin with Wu. Prelim. Resp. 25–29. Patent Owner makes three arguments. First, it argues that “[a]

POSITA would not have been motivated to incorporate features from a web search system like Wu when Londergan explicitly directs users to an outside search engine designed specifically for Internet searches, which are materially different than searching for documents on a computer or computer network.” *Id.* at 27 (citing Ex. 1061, 135; Ex. 2001 ¶ 105). We are not convinced by this argument because Patent Owner does not explain why the intersection search approach, the only teaching or suggestion from Wu that Petitioner proposes to incorporate into the Wilcox/Londergan/Raskin combination, is unsuited to searches for documents on a computer or computer network.

Second, Patent Owner argues that “Wu’s search method is, in part, predicated on using a specific file structure/hierarchy as it describes searching for specific nodes of the structure” and “[s]uch a file structure is not contemplated by Lotus Notes.” Prelim. Resp. 27–28 (citing Ex. 2001 ¶ 104). As with Raskin, however, it is not necessary for Wu to be physically compatible with the Lotus Notes systems. *Orthopedic Equip.*, 702 F.2d at 1013; *In re Sneed*, 710 F.2d at 1550. It is sufficient if one of ordinary skill in the art, possessed of ordinary creativity, could view the intersection approach to searching disclosed in Wu and envision how to implement it in the combination of Wilcox, Londergan, and Raskin with a reasonable expectation of success. *See KSR*, 550 U.S. at 418, 421.

This brings us to Patent Owner’s third argument, that “Petitioner fails to describe with particularity how a POSITA would modify any of the search systems in Wilcox-Londergan to incorporate Wu’s intersectional search teachings.” Prelim. Resp. 28–29. Patent Owner contends that Petitioner’s expert “parrots the Petition’s conclusory argument that it ‘would have required only simple and straightforward software modifications’ but never describes what modifications are made and how those modifications

would work within any particular search system in Wilcox-Londergan.” *Id.* at 28 (citing Ex. 1003 ¶¶ 77, 91).

We do not find Patent Owner’s argument persuasive. The amount of explanation needed to support a conclusion that one of ordinary skill not only could have combined a set of references, but would have been motivated to do so, “necessarily depends on context.” *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). Complex or obscure technology or prior-art descriptions may well require detailed explanations. *Id.* On the other hand, “[a] brief explanation may [be] all that is needed if, for example, the technology is simple and familiar and the prior art is clear in its language and easily understood.” *Id.*; *see also KSR*, 550 U.S. at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”). Here, Petitioner asserts that the intersection approach to searching was well-known, predictable, simple, and easy to implement. Pet. 2319; *see* Ex. 1003 ¶ 76. It consists of two steps: (1) for each search term, generate a match list of documents containing that term; and (2) generate a master list of the documents that appear in every match list.¹⁵ *See* Pet. 21; Ex. 1003 ¶ 71. Given the simplicity of the algorithm involved, relatively little explanation of the implementation details is needed to

¹⁵ This is supported by the language of Wu, which describes a slightly modified version of the intersection approach as follows:

The need for “AND”ing two or more match lists might come about where a search string contains an expression of the form “expression_A AND expression_B AND . . .”. One match list is obtained for “expression_A” indicating the documents that contain that subterm, another for “expression_B”, and so on. The resulting match list is a list of all the documents which contain all of the “AND”ed expressions and directly contain at least one of the search sub terms.

Ex. 1019, 9:24–32.

support Petitioner’s proposed incorporation of Wu’s intersection approach into the combination of Lotus Notes references as modified by Raskin. At this stage of the proceedings and on the current record, we find that Petitioner has met this minimal threshold.

Patent Owner has not convinced us that one of ordinary skill in the art at the time the invention was made would not have been motivated to make the proposed prior art combination. We conclude, therefore, that Petitioner has made a sufficiently strong showing at this stage in the proceeding that there is “an apparent reason to combine the known elements [disclosed in Wilcox, Londergan, Raskin, and Wu] in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d at 988).

b) Patent Owner’s Allegations that Certain Limitations of Claims 1, 23, and 27 Are Missing in the Prior Art

Patent Owner contends that even if a motivation to combine the proposed references exists, “the resulting system does not provide each and every limitation of the claims.” Prelim. Resp. 6. Specifically, Patent Owner argues that the combination of Wilcox, Londergan, Raskin, and Wu fails to disclose two partial search strings separated by a string separator character in the same search field, as required by claim limitations [1.4],¹⁶ [23.5], and [27.4]; or incrementally searching of a set of documents using two partial strings, as required by claim limitations [1.5–1.8], [23.6–23.9], and [27.5–27.8]. *Id.* at 29, 34. Patent Owner does not dispute any other aspect of Petitioner’s proposed mapping of the prior art to the challenged claims. *See id.* at 29–36. We have reviewed Petitioner’s contentions regarding the remaining elements of claims 1–27 in full and find that Petitioner is

¹⁶ In Exhibit 1040, Petitioner identifies each limitation of claims 1, 23, and 27 with bracketed reference numerals. This Decision uses those same reference numerals to identify the claim limitations in dispute.

reasonably likely to establish that the prior art teaches or suggests each of those elements. *See* Pet. 24–45.

(1) *Limitations [1.4], [23.5], and [27.4]*

Patent Owner first argues that limitations [1.4], [23.5], and [27.4] are missing in the prior art. Prelim. Resp. 29–34. Limitations [1.4], [23.5], and [27.4] each recite: “wherein the first and second partial search strings are separated by a string separator character in the first search field.” Ex. 1001, 29:47–49, 31:33–35, 32:29–31. Petitioner asserts that both of the Lotus Notes references teach receiving a first search string and a second search string in a single search field, separated by “a string separator character (e.g., a Boolean AND operator and/or a comma).” Pet. 25–26 (footnote omitted). We are not fully persuaded by Petitioner’s argument. In particular, the evidence does not support Petitioner’s argument that a Boolean operator such as “AND” is a string separator *character*. Patent Owner has pointed to intrinsic and extrinsic evidence demonstrating that a string separator character consists of just one character.¹⁷ Consequently, based on the

¹⁷ As Patent Owner argues, the intrinsic evidence does not support this interpretation of the claim language. Prelim. Resp. 31–32. “First, the ’139 patent distinguishes between string separator *characters* (such as space, comma, etc.) and ‘modifiers’ (such as AND, OR, NOT, etc.).” *Id.* at 31; *compare* Ex. 1001, 30:19–22 (claim 6, “string separator character”), *with id.* at 31:22–26 (claim 22, Boolean “modifiers”). Moreover, Patent Owner persuasively argues that “a POSITA would not understand Boolean operators such as ‘AND’ to function as string separator characters” and “would have known that the operator AND is a search syntax instruction rather than a string separator.” Prelim. Resp. 31 (citing Ex. 1059, 162; Ex. 2001 ¶ 110). Even Petitioner acknowledges in a footnote that it may not be appropriate to include the Boolean AND operator in the definition of “string separator character.” Petitioner argues:

To the extent Patent Owner argues the Boolean AND operator is not a string separator character (which Petitioner does not acquiesce is appropriate), it would have been obvious to a

current record, for the purposes of this Decision we preliminarily construe the term “string separator character” to mean “a single-character string separator.” The parties are invited to address the appropriateness of this construction in future briefing.

If Boolean modifiers are excluded from the definition of a “string separator character,” then the Londergan Search Bar and Search Builder features, which accept only Boolean operators, do not teach or suggest limitations [1.4], [23.5], and [27.4].¹⁸ *See* Ex. 1061, 140–42. The Wilcox Search Bar similarly is limited to strings separated by a Boolean operator. *See* Ex. 1059, 160–62. The Wilcox Query Builder, however, *does* teach multiple search strings separated by a string separator character, specifically a comma, in a single search field. *Id.* at 163 (“If you want to search for documents that contain all of several words, type them in this box, separated by commas.”). Thus, while we do not accept all of Petitioner’s reasoning, there is evidence to support Petitioner’s overall argument that the proposed combination discloses multiple search strings separated by a string separator character, as we have preliminarily construed the term, in a search field.

Patent Owner does not dispute that the Wilcox Query Builder feature teaches or suggests a single-character string separator, but argues that

POSITA when implementing Raskin’s teachings to perform the search incrementally to use a single-character string separator character, such as a plus sign, as was known in the art (e.g., EX1057, 60, 109, 129, 151), or a comma, as described by the Lotus Notes references (EX1059, 159-165), at least because a POSITA knew that a goal of the incremental search is to minimize the number of characters the user has to enter before obtaining the desired search results.

Pet. 25 n.6.

¹⁸ There is also no evidence that Search Builder accepts multiple search strings within a single search field. *See* Ex. 1061, 142.

Petitioner's combination does not satisfy limitations [1.4], [23.5], and [27.4] because it fails to disclose two *partial* search strings in the same search field. Prelim. Resp. 29. Patent Owner argues that Petitioner merely "vaguely references Raskin and states that 'a POSITA would have understood or at least found it obvious that the received search strings are partial search strings' in the Wilcox-Londergan-Raskin combination because Raskin allegedly teaches incremental search." *Id.* at 30.

Petitioner's full argument reads as follows:

[w]hen implementing Lotus Notes' search tool to perform incremental searches, as taught by Raskin . . . , a POSITA would have understood or at least found it obvious that the received search strings are partial search strings because incremental searches provide users with results as the users type in their search query (i.e., before the user has entered the complete search strings).

Pet. 27. We are persuaded by Petitioner's logic. One of ordinary skill in the art could reasonably infer that by definition, incremental searches are inherently performed on partial search strings: first on one character, then on two, then three, etc., until the entire search string has been entered. That is, after all, what makes them "incremental."

Patent Owner argues in response that "Raskin only teaches searching over a single string and adding characters to that one string to narrow search results in a single document." Prelim. Resp. 30 (citing Ex. 1021, 124, 126). According to Patent Owner, "Petitioner has not cited to any suggestion or examples in Raskin of searching over two separate strings, let alone two separate partial strings." *Id.* at 31. However, "one cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references." *In re Keller*, 642 F.2d at 426. Petitioner has cited to an example of searching over two separate strings in Wilcox, and it is the *combination* of Wilcox, Londergan, and Raskin that

Petitioner relies on as teaching or suggesting limitations [1.4], [23.5], and [27.4]. *See* Pet. 25–27. We find on this record that Petitioner has made a sufficient showing for purposes of institution that Wilcox, Londergan, and Raskin teach or suggest “first and second strings [] separated by a string separator character in the first search field,” as recited in limitations [1.4], [23.5], and [27.4]..

(2) *Limitations [1.5–1.8], [23.6–23.9], and [27.5–27.8]*

Claim limitations [1.5–1.8] recite:

incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises:
searching for a first one or more documents each including at least one string that corresponds to the first partial search string;
searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and
updating the search results as each successive character of the first partial search string and the second partial search string is receive respectively in the first search field

Ex. 1001, 29:50–67. Claim limitations [23.6–23.9] and [27.5–27.8] include essentially the same recitations. *Id.* at 31:36–52:4, 32:32–49. Patent Owner argues that “Petitioner does not explain how the Wilcox-Londergan-Raskin-Wu combination discloses incrementally searching on two partial strings” as required by claim limitations [1.5–1.8], [23.6–23.9], and [27.5–27.8].

Prelim. Resp. 35. According to Patent Owner,

Petitioner relies on the conclusory testimony of its expert, Dr. Terveen to fill this gap in the prior art. . . . But Dr. Terveen’s analysis fails to provide any support for the conclusion that a POSITA would have extended the teachings of incremental search on a first partial search string to a second partial search string in the same search field.

Id. (citing Pet. 30).

We are not persuaded by this argument. Our review of the evidence submitted to date reveals that Petitioner's witness, Dr. Terveen, explains not only *how* the Wilcox-Londergan-Raskin-Wu combination discloses incrementally searching on two strings, but *why* a person of ordinary skill in the art would have been motivated to do so. According to Dr. Terveen, a POSITA would have recognized that there were only a limited number of known ways to search for documents that contain both of two search strings. Ex. 1003 ¶ 89. Dr. Terveen explains that there would have been three options:

[(1)] the claimed intersection approach, which searches each string separately and then combines/intersects the results, [(2)] a sequential approach, which sequentially checks each document for both search strings, or [(3)] a sort of hybrid approach, which locates documents containing one of the search strings and then searches within that set of documents for documents also containing the other search string.

Id. Dr. Terveen further explains that of these, “the intersection approach would have been a commonsense approach for locating documents containing both search strings when performing an incremental search.” *Id.* ¶ 90. This is because searching for each string separately would enable a system to quickly and efficiently update search results in response to modifications to either search string. *Id.* In contrast, the sequential approach would require the system to rerun the entire search algorithm from the beginning for each incremental search. This is because the sequential search “searches for both strings simultaneously, whereas the intersection approach could preserve previous results for the unmodified search string, and would only have to update results for the modified search string.” *Id.*

In other words, according to Dr. Terveen, by using an intersection approach to searching, as taught by Wu, not only is it possible to perform an incremental search for just the second search string when that string is

modified, but doing so is more efficient than either of the available alternatives, the sequential and hybrid search approaches. *See* Ex. 1003 ¶¶ 89–90. On this record, we determine Dr. Terveen’s testimony adequately supports Petitioner’s contention that applying the intersection approach to an incremental search of multiple search terms was “one of a limited number of well-known, predictable approaches, and was simple and easy to implement.” Pet. 31. We conclude, therefore, that Petitioner has made a sufficient showing at this stage of the proceeding that the proposed combination teaches or suggests limitations [1.5–1.8], [23.6–23.9], and [27.5–27.8].

c) Summary

For the reasons discussed above, Petitioner has made sufficient showings at this stage of the proceeding that the Wilcox-Londergan-Raskin-Wu combination teaches or suggests every limitation in claims 1, 23, and 27 of the ’139 patent, that one of ordinary skill in the art would have had reason to combine those teachings and suggestions to arrive at the inventions recited in claims 1, 23, and 27, and that one of ordinary skill in the art would have had a reasonable expectation of success. Accordingly, Petitioner has demonstrated a reasonable likelihood of prevailing on its challenges to claims 1, 23, and 27 based on the combination of Wilcox, Londergan, Raskin, and Wu. Accordingly, institution of an *inter partes* review is appropriate under 35 U.S.C. § 314(a).

In view of this determination, we need not address dependent claims 2–22 and 24–26 at this stage of the proceeding. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“Section 314(a) does not require the Director to evaluate every claim individually. Instead, it simply requires him to decide whether the petitioner is likely to succeed on ‘at least 1’ claim. Once that single claim threshold is satisfied, it doesn’t matter whether the

petitioner is likely to prevail on any additional claims; the Director need not even consider any other claim before instituting review.”); 37 C.F.R.

§ 42.108(a). Patent Owner also does not presently raise any additional arguments for the patentability of claims 2–22 and 24–26.

3. *Ground 2: Obviousness of Claims 1–27 Under 35 U.S.C. § 103(a) Over Schwartz, Sebastian, Barber, True, and Baeza-Yates*

In Ground 2, Petitioner asserts that claims 1–27 are obvious and unpatentable based on Schwartz, Sebastian, Barber, True, and Baeza-Yates. Pet. 46–93; *see* Ex. 1004; Ex. 1005; Ex. 1006; Ex. 1009; Ex. 1023.

As discussed above, we have determined that the evidence presently before us establishes a reasonable likelihood that Petitioner would prevail with respect to its Ground 1 challenge to at least claims 1, 23, and 27 of the ’139 patent. Consequently, we need not address Petitioner’s Ground 2 in this Decision. *See* 35 U.S.C. § 314(a); *SAS Inst.*, 138 S. Ct. at 1356; 37 C.F.R. § 42.108(a).

III. CONCLUSION

For the reasons discussed above, Petitioner has shown a reasonable likelihood it will succeed in demonstrating that claims 1–27 of the ’139 patent are unpatentable under 35 U.S.C. § 103(a). We, therefore, institute an *inter partes* review as to claims 1–27 on all grounds set forth in the Petition. 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(a).

This Decision does not reflect a final determination on the patentability of any claim. We further note that the burden remains on Petitioner to prove unpatentability of each challenged claim. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED, pursuant to 35 U.S.C. § 314(a), that an *inter partes* review of claims 1–27 of U.S. Patent No. 9,633,139 B2 is instituted with respect to all grounds set forth in the Petition; and

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

IPR2025-00255
Patent 9,633,139 B2

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