

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,

v.

X1 DISCOVERY, INC.,
Patent Owner.

IPR2025-00254
Patent 10,552,490

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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LIST OF NEWLY FILED EXHIBITS

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1095	<i>Yahoo Raises Stakes in E-mail War with Google</i> , NBC News (June 15, 2004)
1096	<i>Yahoo Mail Review: Yahoo Mail</i> , CNET (July 15, 2002)
1097	Charles Petzold, <i>Programming Windows</i> , Microsoft Press (excerpts) (5 th ed.) (1998)
1098	Deposition Transcript of Martin Haerberli in <i>Microsoft Corp. v. XI Discovery, Inc.</i> , IPR2025-00255 (Jan. 8, 2026)
1099	John Cole et al., <i>The Implementation of Electronic Services: Planned or Organic Growth?</i> , Informatics in Primary Care, Vol. 13, No. 3, 187-193 (2005)
1100	Reply Declaration of Loren Terveen dated February 12, 2026
1101	<i>Microsoft Press Computer Dictionary</i> , Microsoft Press (excerpts) (1 st ed.) (1991)

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No.	Description
1001	U.S. Patent No. 10,552,490 (“ 490 patent ”)
1002	File History of U.S. Patent No. 10,552,490
1003	Declaration of Dr. Loren Terveen, dated December 19, 2024
1004	Steve Schwartz, <i>Visual QuickStart Guide Entourage 2001 for Macintosh</i> , Peachpit Press (2001) (“ Entourage-1 ”)

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1005	Bonita Sebastian et al., <i>Microsoft Office 2001 A Hands-On Guide for Macintosh</i> , Computer Literacy Press (excerpts) (2000) (“ Entourage-2 ”)
1006	Nan Barber & David Reynolds, <i>Office 2001 for Macintosh: The Missing Manual</i> , Pogue Press/O’Reilly (1 st ed.) (Apr. 2001) (“ Entourage-3 ”)
1007	<i>Eudora Email User Manual for Windows Version 5.0</i> , QUALCOMM (Aug. 2000) (“ Eudora ”)
1008	Alan R. Neibauer, <i>Running Microsoft Outlook 2000</i> , Microsoft Press (excerpts) (1999) (“ Outlook ”)
1009	U.S. Patent No. 6,112,172 to True et al. (“ True ”)
1010	U.S. Patent No. 5,444,823 to Trung D. Nguyen (“ Nguyen ”)
1011	U.S. Patent No. 7,039,635 to Morgan et al. (“ Morgan ”)
1012	U.S. Patent Application Publication No. 2002/0055981 to Spaey et al. (“ Spaey ”)
1013	U.S. Patent No. 5,845,278 to Kirsch et al. (“ Kirsch ”)
1014	U.S. Patent No. 4,255,796 to Gabbe et al. (“ Gabbe ”)
1015	U.S. Patent No. 5,692,173 to Chee Heng Chew (“ Chew ”)
1016	U.S. Patent No. 6,049,796 to Siitonen et al. (“ Siitonen ”)
1017	U.S. Patent No. 5,303,361 to Colwell et al. (“ Colwell ”)
1018	U.S. Patent No. 6,741,985 to Robin A. R. Green (“ Green ”)
1019	U.S. Patent No. 5,991,756 to Jiong Wu (“ Wu ”)
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1022	Richard M. Stallman, <i>GNU Emacs Manual</i> (1 st ed.) (Jun. 1985) (“ GNU Emacs ”)
1023	Ricardo Baeza-Yates & Berthier Ribeiro-Neto, <i>Modern Information Retrieval</i> , ACM Press (1999) (“ Baeza-Yates ”)
1024	Sunny Lam, <i>The Overview of Web Search Engines</i> (Feb. 9, 2001) (“ Lam ”)
1025	Oscar Vallarino, <i>On The Use Of Bit Maps For Multiple Key Retrieval</i> , Proceedings of the 1976 Conference on Data: Abstraction, Definition And Structure, 108-114 (Mar. 1976) (“ Vallarino ”)
1026	Steve Lawrence & C. Lee Giles, <i>Context And Page Analysis For Improved Web Search</i> , IEEE Internet Computing, 38-46 (Jul.-Aug. 1998) (“ Lawrence ”)
1027	Rawley D. Johnson et al., <i>Technical Reference Document Database System (TDOCS) Requirements Definition</i> (Aug. 1993) (“ Johnson ”)
1028	Lev Finkelstein et al., <i>Placing Search in Context: The Concept Revisited</i> , ACM Transactions on Info. Sys., Vol. 20, No. 1, 116-131 (Jan. 2002) (“ Finkelstein ”)
1029	U.S. Patent No. 6,952,805 to Tafoya et al. (“ Tafoya ”)
1030	U.S. Patent No. 6,009,459 to Belfiore et al. (“ Belfiore ”)
1031	U.S. Patent No. 5,220,625 to Hatakeyama et al. (“ Hatakeyama ”)
1032	U.S. Patent No. 6,185,551 to Birrell et al. (“ Birrell ”)
1033	U.S. Patent No. 6,839,702 to Patel et al. (“ Patel ”)
1034	U.S. Patent No. 6,973,450 to Silverbrook et al. (“ Silverbrook ”)
1035	U.S. Patent No. 6,834,276 to Jensen et al. (“ Jensen ”)
1036	U.S. Patent No. 5,946,678 to Ijsbrand Jan Aalbersberg (“ Aalbersberg ”)

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1037	European Patent Application Publication No. EP 1 209 866 to Baldonado et al. (“ Baldonado ”)
1038	Declaration of Delainey Tanner, dated November 18, 2024
1039	Kaitlin Duck Sherwood, <i>Overcome Email Overload With Eudora 5</i> , World Wide Webfoot Press (excerpts) (1 st ed.) (2001)
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1043	Steven Schwartz & Robert Correll, <i>Running Microsoft Office 2001 for Mac</i> , Microsoft Press (excerpts) (2001)
1044	Ben Shneiderman et al., <i>Clarifying Search: A User-Interface Framework For Text Searches</i> , D-Lib Mag. (Jan. 1997)
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1052	Ben Shneiderman, <i>Designing The User Interface: Strategies For Effective Human-Computer Interaction</i> , Addison Wesley Longman (excerpts) (3 rd ed.) (Mar. 1998)
1053	Claudine Badue et al., <i>Distributed Query Processing Using Partitioned Inverted Files</i> , Proc. Eighth Symp. on String Processing and Info. Retrieval, IEEE, 10-20 (2001)

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1055	Dick Pountain, <i>The New Penguin Dictionary of Computing</i> , Penguin Group (excerpts) (1 st ed.) (2001)
1056	File History of U.S. Patent No. 7,370,035
1057	Alfred and Emily Glossbrenner, <i>Search Engines For The World Wide Web</i> , PeachPit Press (3 rd ed.) (2001)
1058	U.S. Patent No. 7,370,035 to Gross et al. (“ the ’035 patent ”)
1059	Adam A. Wilcox, <i>PC Learning Labs Teaches Lotus Notes 3.0</i> , Ziff-Davis Press (1993)
1060	Declaration of Dr. Sylvia Hall-Ellis Dated December 16, 2024
1061	Stephen Londergan & Pat Freeland, <i>Lotus Notes R5 For Dummies Quick Reference</i> , IDG Books Worldwide, Inc. (1999)
1062	Declaration of Dr. Ingrid Hsieh-Yee Dated December 16, 2024
1063	Exhibit CX-0196 to Complainant’s Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
1064	Exhibit CX-0198 to Complainant’s Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
1065	Exhibit CX-0199 to Complainant’s Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
1066	Exhibit CX-0203 to Complainant’s Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
1067	Exhibit CX-0204 to Complainant’s Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)

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1068	Exhibit CX-0206 to Complainant's Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
1069	Exhibit CX-0208 to Complainant's Pre-Trial Brief in the Matter of <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , ITC-337-TA-1389 (August 29, 2024)
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1075	U.S. Patent No. 9,663,139 to Gross et al. (" 139 patent ")
1076	File History of U.S. Patent No. 9,663,139
1077	N/A
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1081	First Amended Complaint in <i>XI Discovery, Inc. v. Microsoft Corporation</i> 8:23-cv-02415-GW-JDE (C.D. Cal), ECF No. 61 (May 9, 2025)
1082	Scheduling Order in <i>XI Discovery, Inc. v. Microsoft Corporation</i> 8:23-cv-02415-GW-JDE (C.D. Cal), ECF No. 62 (May 15, 2025)
1083	<i>C.D. Cal. Time to Milestones</i> , Docket Navigator (last visited May 15, 2025)
1084	<i>Judge George H. Wu Time to Milestones</i> , Docket Navigator (last visited May 15, 2025)
1085	Initial Determination Granting Summary Determination of Non-infringement, <i>Certain Computing Devices Utilizing Indexed Search Systems and Components Thereof</i> , 337-TA-1389, Order No. 18 (Sep. 3, 2024)
1086	Declaration of Arie Pellikaan, dated May 20, 2025
1087	<i>Windows 10 available as a free upgrade on July 29</i> , Microsoft Corporation (June 1, 2015)
1088	Terry Myerson, <i>Hello World: Windows 10 Available on July 29</i> , http://blogs.windows.com/windowsexperience/2015/06/01/hello-world-windows-10-available-on-july-29/ (June 1, 2015), archived Oct. 4, 2015, at https://web.archive.org/web/20151004065326/http://blogs.windows.com/windowsexperience/2015/06/01/hello-world-windows-10-available-on-july-29/
1089	<i>Windows Guide, Using Windows Vista</i> , Microsoft Corporation (2008)
1090	Complaint, <i>XI Discovery, Inc. v. Microsoft Corp.</i> 8:23-cv-02415-GW-JDE (C.D. Cal.), ECF No. 1 (December 19, 2023)
1091	Screenshots from “Superfast searching in Windows Vista” video available at https://www.youtube.com/watch?v=TLL7nk21sIg&t=200s at 1:40-41, 2:53-55 (added July 23, 2008)

No.	Description
1092	Mary Jo Foley, “ <i>Microsoft Releases First Public Test Build of Windows Search 4.0</i> ” http://blogs.zdnet.com/microsoft/?p=1299 (March 27, 2008), archived March 30, 2008 at https://web.archive.org/web/20080330222253/http://blogs.zdnet.com/microsoft/?p=1299
1093	David Pogue, <i>Windows Vista: The Missing Manual</i> (2007) (excerpts)
1094	X1 Products webpages, “Overview” and “FAQ” http://www.x1.com/products/x1_search/ , http://www.x1.com/products/x1_search/faq.html (2016), archived April 2016 at https://web.archive.org/web/20160405154536/http://www.x1.com/products/x1_search/ and https://web.archive.org/web/20160401084554/http://www.x1.com/products/x1_search/faq.html

I. INTRODUCTION

The POR acknowledges that incrementally searching within a single file was known but disputes that it would have been obvious to do so across a large volume (one gigabyte's worth) of files allegedly because 2002-era computers did not have the short-term memory capacity to perform such a search. The claims, however, require a search across only a "plurality" of (i.e., two or more) files, not a large volume. And in 2002, two typical files (e.g., emails) required but a few kilobytes of memory, not one gigabyte. For two or more files, a POSITA would have been motivated with a reasonable expectation of success to perform an incremental search across the files to provide quick, efficient search results, as explained in the Petition.

Patent Owner's shifting characterization of the alleged invention underscores the obviousness of the challenged claims. When filing the '490 patent's ancestor application, Applicant described its invention broadly as incremental searching. EX1056, 4-6 (¶¶2-6). When confronted with prior art clearly disclosing this well-known concept, Applicant shifted to arguing that the claims allow entry of multiple search strings in the same search field. EX1056, 157-158, 219-221, 236. Patent Owner (PO) and its expert now acknowledge, however, that this too was known, as evidenced by the numerous exhibits cited by the Petition and Petitioner's expert, Dr. Terveen. Paper 1, 7; EX1003, ¶¶40-41; Paper 21, 3; EX2020, ¶9; EX1098, 31:2-5. The POR instead argues infeasibility at a one-gigabyte scale, a feature not required

by the claims. Moreover, as Dr. Terveen explains, multiple prior art references cited by the Petition teach incrementally searching across multiple files.

The challenged claims thus reflect the “combination of familiar elements according to known methods” that “yield predictable results”—precisely the type of claims the Supreme Court sought to prevent in *KSR*. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401, 127 S. Ct. 1727, 1731 (2007). The claims recite flexible and predictable computer software concepts that were well known in the art. *Vasudevan Software, Inc. v. MicroStrategy, Inc.*, No. 11-CV-06637 RS, 2013 WL 12174144, at *8 (N.D. Cal. Oct. 17, 2013)(“[T]he invention is in the software field, which is a predictable art with well-developed [computer] languages.”).

The Petition pointed to Dr. Terveen’s explanation of why a POSITA would have been motivated with a reasonable expectation of success to combine these known, flexible software concepts, which is sufficient to establish obviousness under controlling precedent, including the Federal Circuit’s decision in *KEYnetik*. *KEYnetik, Inc. v. Samsung Elecs. Co.*, No. 2022-1127, 2023 WL 2003932, at *1-2 (Fed. Cir. Feb. 15, 2023).

**II. AS LAID OUT IN EACH GROUND
IN THE PETITION, A POSITA WOULD
HAVE BEEN MOTIVATED WITH A REASONABLE
EXPECTATION OF SUCCESS TO COMBINE THE PRIOR ART
REFERENCES TO INCREMENTALLY SEARCH ACROSS FILES**

For Ground 1, the Petition explained that a POSITA implementing a search tool would have been motivated with a reasonable expectation of success to combine Lotus Notes' teachings to search across multiple indexed files for two search strings entered in a single search field with Raskin's teachings to perform a search incrementally to provide faster, more responsive search results, as was known in the art. *E.g.*, Paper 1, 11, 18-20, 25-28; EX1003, ¶¶57, 75-81, 92-96.

Similarly for Ground 2, the Petition explained that a POSITA implementing a search tool would have been motivated with a reasonable expectation of success to combine Entourage's teachings to incrementally search across multiple files for at least one search string entered in a single search field with True's teachings to incrementally search for multiple search strings entered in the search field to provide more precise, targeted search results, as was known in the art. *E.g.*, Paper 1, 43, 53-54, 59-69; EX1003, ¶¶123-134, 137-141, 153-166.

The POR and its expert admit that it was known to incrementally search within a single file but dispute whether it would have been obvious to do so across a large set/volume (one gigabyte's worth) of files, allegedly because of the limited memory capacity of 2002-era computers. Paper 21, 3-6, 17-28, 55-63; EX2020, ¶¶8-9, 47-62,

84-88. The challenged claims, however, recite searching across a “plurality” of files (i.e., two or more), not a large volume. Moreover, 2002-era computers were entirely capable of incrementally searching across a plurality of files, especially considering that the median size of, for example, two emails in 2002 was approximately 4.4 kilobytes—0.00044% of the one gigabyte database assumed by Mr. Haerberli. EX1099, 190; EX1100, ¶¶13-32. Indeed, several prior art references cited by the Petition teach incrementally searching across files, confirming that incrementally searching across files (as opposed to within a single file) would not have required a leap of inventiveness. Paper 1, 6-7 (citing EX1004, EX1010, EX1012, EX1016, EX1021, EX1039); EX1100, ¶11. Moreover, searching across multiple files was well known, as acknowledged by PO and its expert, Mr. Haerberli. EX1003, ¶¶33-47; Paper 21, 3; EX1098, 30:24-31:1; EX1100, ¶12; EX2020, ¶9.

A. The Claims Encompass Searching Across As Few As Two Files

The claims recite searching among “a plurality of” (i.e., two or more) files, not the large volume/set alleged by the POR. *E.g.*, EX1001, 29:56-30:28 (claim 1); Paper 21, 5-6, 17, 56 (referring to “large volume[,]” “large set,” “large file set[.]”); *see also* EX2020, ¶48 (assuming a search across a one gigabyte database). The Federal Circuit has repeatedly found that the plain ordinary meaning of a “plurality” is “two or more.” *E.g.*, *Dayco Prods., Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1327-28 (Fed. Cir. 2001). The specification confirms that “a plurality” encompasses

as few as two at least because the specification’s “plurality of search fields” includes as few as two search fields. EX1001, 28:9-12, FIG. 3C.

**B. 2002-Era Computers Were Entirely Capable Of
Performing An Incremental Search Across Two Or More Files**

Contrary to the POR’s assertions, a POSITA would have been motivated with a reasonable expectation of success to combine Lotus Notes with Raskin and Entourage with True at least because 2002-era computers could provide the response times needed to perform an incremental search¹ across a plurality of files, especially while using known index data structures, such as Lotus Notes’ full-text index, when searching across larger volumes of files. EX1100, ¶¶13-32.

Raskin confirms that indexing provides response times sufficient to support incremental searching across files. EX1021, 129, 132.² When discussing

¹ Because a system that practices the claims does not return results until two search strings are entered (*see, e.g.*, EX1098, 34:22-38:25), the computer’s response time is less important than in an incremental search where results are returned as a user enters the first string.

² Reliance on these pages in Raskin is proper at least because: (1) they are part of the same 9-page chapter section (5-4) cited by the Petition, (2) they directly rebut an allegation in the POR that is based on the unforeseeable “large volume” implicit

incremental searches, Raskin notes “a few implementation tricks” that can be used to increase the search speed. *Id.*, 129. For example, Raskin explains that algorithms (e.g., “Boyer-Moore algorithm”) and indexes speed up the search. *Id.* “Indexing all local mass-storage devices can make searching over a local system or network take only milliseconds.” *Id.* And when describing how the “search can proceed circularly not only through the local document but also afterward in automatically expanding domains, up to and including the entire Internet,” Raskin explains in a footnote that “[i]t is entirely possible, by such techniques as lookahead and indexing, to maintain the 250 msec response time.” *Id.*, 132; *see also* EX1023, 196, 383-384; EX1003, ¶¶45-47 (Dr. Terveen explaining that it was well understood that index data structures were designed to accelerate search operations); EX1100, ¶¶15-17 (same), ¶¶20-22.

The POR’s argument that a larger index would allegedly be needed to perform an incremental search misses the point and mischaracterizes Dr. Terveen’s

claim construction argument, and (3) they expand on the Petition’s previous arguments and are not a meaningfully distinct unpatentability contention. *E.g.*, Paper 1, 8, 16, (citing EX1021, 124-132), 21, 25-30, 77; Paper 21, 5-6, 17, 56; *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1380-84 (Fed. Cir. 2023); *Rembrandt Diagnostics, LP v. Alere, Inc.*, 76 F.4th 1376, 1384-85 (Fed. Cir. 2023).

testimony. EX1100, ¶¶18-19. Even if the index's size increases, an index generally still increases the speed of the search because it contains less data than the underlying files. EX1003, ¶¶45-47; EX1100, ¶18; EX2021, 122:19-22. Haeberli's argument that an index for an incremental search would be too large for a 2002-era computer's volatile memory (RAM) should be given no weight because it assumes an unrealistically large database of one gigabyte. EX2020, ¶48. A typical 2002-era email database was no more than 10 megabytes—1% the size assumed by Haeberli. EX1061, 136; EX1095, 1, 3; EX1096, 1. Re-running Haeberli's same analysis with this more appropriate starting point, Dr. Terveen concludes that an average-size email database in 2002 would have required an index that was only 0.16% of a 2002-era computer's RAM. EX1100, ¶¶13-14.

Multiple other prior art references, including the Entourage references (EX1004-1006, EX1043), Eudora (EX1039), Nguyen (EX1010), Siitonen (EX1016), Spaey (EX1012), and True (EX1009), also teach incrementally searching across files, confirming that a POSITA would have been motivated with a reasonable expectation of success to implement this functionality. Paper 1, 6-7; EX1003, ¶¶33-39.

Haeberli does not dispute that Spaey and Nguyen teach incrementally searching across files (EX2001, ¶¶41-42), and his analysis of the other references is flawed, as explained by Dr. Terveen. EX1100, ¶¶20-32. Thus, a POSITA would have

reasonably expected a 2002-era computer to be able to perform an incremental search for two search strings across a plurality of files, especially when searching across a smaller number (but still a plurality) of files. EX1100, ¶¶10-32.

C. The Prior Art References Are Compatible And Analogous

The Petition explained that Lotus Notes, Raskin, Entourage, and True each relate to searching and further explained why the specific teachings relied on in each of the references are compatible. *E.g.*, Paper 1, 12-20, 43-54. For each ground, the POR argues that the references are not compatible, and for ground 2, it also argues that True is not analogous art. These arguments improperly rely on bodily incorporation of the references' disclosures.

1. Lotus Notes And Raskin (Ground 1) Are Compatible

As explained above, the Petition relied on Raskin's teachings to perform a search incrementally. Paper 1, 11, 18-20, 23-30; EX1003, ¶¶57, 75-81, 88-102. The POR argues that Lotus Notes and Raskin are not compatible because Raskin's approach allegedly searches a single document using a brute force technique, which is fundamentally different than Lotus Notes' index search across files. Paper 21, 18-19; EX2020, ¶¶32-37.

The POR mischaracterizes the Petition's combination because the Petition relies on Raskin's teachings to perform a search incrementally, not its alleged teachings to search within a single file without an index. And, as explained above in

Section II.B, the POR misapprehends Raskin because Raskin teaches that indexing can maintain incremental response time even as the search domain expands beyond a single file. EX1021, 129, 132. Further, PO's argument contradicts Federal Circuit precedent by mandating bodily incorporation of Raskin's entire alleged architecture. *E.g., In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985); *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1293-94 (Fed. Cir. 2015).

2. Entourage And True (Ground 2) Are Compatible

As explained above, the Petition relied on True's teachings to perform an incremental search for multiple search strings entered in a search field. Paper 1, 43, 53-54, 59-73; EX1003, ¶¶123-134, 137-141, 153-175. The POR argues that True is not compatible with Entourage because True searches within a single transcribed audio file, which is not 100% accurate like the pure text of Entourage's files. Paper 21, 52-61.

Again, this mischaracterizes the Petition, misapprehends the prior art reference (True), and contradicts the Federal Circuit's bodily incorporation precedent. The Petition relies on True's teachings to perform an incremental search for multiple search strings entered in a search field, not its alleged teachings to assign confidence levels to transcribed audio or search within a single file. And, True is not limited to searching only transcribed audio, as Haeberli admitted during his deposition that True describes searching a text file that has 100% accuracy. EX1009,

7:63-8:2; EX1098, 48:5-49:19; EX1100, ¶¶33-35. Further, as explained by Dr. Terveen, True at least suggests to a POSITA searching across files since it treats its transcript windows separately, and even if it did not, intra-file searches are not meaningfully different than inter-file searches and would require trivial modifications to search across files. EX1100, ¶¶11, 32, 36-38; EX2021, 141:16-147:6.

3. True (Ground 2) Is Analogous Art

As explained in the Petition, True is analogous art to the '490 patent because they are from the same field of endeavor. Paper 1, 49-50. The '490 patent states that “[t]he present invention relates generally to data processing, and in particular to systems and methods for locating data.” EX1001, 1:38-39. The patent goes on to state that “the present invention advantageously provides for incremental or reactive searching of a variety of search targets,” which results in providing the user “with substantially immediate feedback as the search string is being entered.” EX1001, 2:20-32.

True’s title similarly discloses “interactive searching,” its drawings depict UIs similar to the patent’s, and it describes a similar incremental search process where the user is provided with “immediate feedback in response to actions such as modification of the query.” EX1009, cover, 2:26-48, FIGS. 1A, 1B, 2; *see also e.g., id.*, Abstract, 1:6-17, 4:66-5:15.

Nonetheless, the POR wrongly asserts that True is not analogous art because True allegedly relates to searching an imprecise audio transcription, whereas the challenged patent allegedly relates to “incrementally searching for and identifying indexed files.” Paper 21, 53.

As explained above in Section II.C.2, True discloses searching text that is 100% accurate, as acknowledged by Haeberli during deposition. EX1009, 7:63-8:2; EX1098, 48:5-49:19. PO even submitted True in an IDS during prosecution of the '490 patent, indicating that Applicant considered True material to patentability. EX1002, 100, 147; 37 C.F.R. § 1.56. The POR's assertions ignore True's broad search disclosures (e.g., in its title and abstract) and conflict with Applicant's representations to the Patent Office during prosecution.

Further, the field of endeavor is not limited “to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field.” *Unwired Planet, LLC v. Google, Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016). As the '490 patent states, its alleged invention “relates generally to data processing,” not specifically “incrementally searching for and identifying indexed files,” as alleged in the POR. EX1001, 1:38; Paper 21, 53. Under this proper, broader field of endeavor, True's comparability is even more evident.

The POR's cited cases are inapposite because the prior art references in the cited cases were directed to different fields. In *Wang Lab'ys. v. Toshiba Corp.*, the

prior art was directed to large industrial machinery controllers, not the claims' compact personal computer memories. 993 F.2d 858, 864 (Fed. Cir. 1993). And in *In re Clay*, the prior art was directed to the extraction of crude petroleum, not the claims' storage of refined petroleum. 966 F.2d 656, 658-59 (Fed. Cir. 1992). Here, True and the '490 patent not only describe the same general field (searching text), but also a narrower field (incrementally searching text).

Setting aside the field of endeavor, True is also analogous because its incremental search teachings are reasonably pertinent to the problem addressed by the '490 patent: slow, cumbersome delimited searches. EX1001, 1:43-2:16; EX1009, 2:25-48, 4:66-5:15; EX1100, ¶39; *In re Clay*, 966 F.2d at 658-59.

**D. The Petition Sufficiently Explained The
Reasonable Expectation Of Success, Especially
Given The Patent's Lack Of Implementation Details**

The Petition and Dr. Terveen identified the combination of software functions from the prior art references relied on by each ground. *E.g.*, Paper 1, 18, 53; EX1003, ¶¶75, 137. Dr. Terveen explained that a POSITA would have reasonably expected success in combining this functionality because “it would have required only simple and straightforward software modifications,” and provides further explanation in his supplemental declaration on how a POSITA would reasonably expect success in using a known programming language, such as C or C++, to make the necessary software modifications. EX1003, ¶¶80, 96, 99, 108, 140, 149, 155, 163; EX1100,

¶¶40-49; *see also* EX1100, ¶¶10-52. The Petition cited to this testimony in Dr. Terveen's Initial Declaration and to the Federal Circuit's decision in *KEYnetik*. Paper 1, 19-20, 28-29, 54, 56-57, 62, 67; *KEYnetik*, 2023 WL 2003932, at *1-2.

The POR does not address *KEYnetik* and instead cites *Juniper Networks, Inc. v. Correct Transmission LLC*, which is inapposite. In *Juniper*, the Petitioner failed to address PO's expert testimony that the combination would require a complete redesign and would not be successful. No. 2023-1046, 2024 WL 3517862, at *5 (Fed. Cir. July 24, 2024). Here, Dr. Terveen provides detailed technical explanation, supported by evidence (e.g., EX1018, EX1021, EX1023, EX1061, EX1095-1097, EX1099), that directly rebuts Haeberli's allegations. As discussed throughout, Haeberli's infeasibility allegations are unfounded as they are based on a misreading of the claims and undermined by his later testimony. EX1100, ¶¶10-52; EX1098, 21:9-15, 24:17-25:10; *supra* Section II.B. Though the POR complains about the alleged lack of detail in Dr. Terveen's Initial Declaration, it does not specifically identify what should have been included. Paper 21, 26-28, 62-63.

Moreover, the lack of detailed explanation in the '490 patent on how to implement the claimed search functionality confirms that implementing such a search was within the skill of a POSITA. EX1100, ¶¶50-52; *In re Fox*, 471 F.2d 1405, 1407 (C.C.P.A. 1973); *accord In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994) ("the Board's observation that appellant did not provide the type of detail in

his specification that he now argues is necessary in prior art references supports the Board's finding that one skilled in the art would have known how to implement the features of the references”).

Indeed, the '490 patent describes using a standard “inverted index” to perform its search. EX1001, 5:29-36. Though the patent describes indexing prefixes (EX1001, 7:37-48), this is not claimed and was already known to a POSITA as explained by Dr. Terveen. EX1100, ¶¶16-17 (citing EX1018, EX1023, EX1061), ¶21.

Thus, Dr. Terveen’s explanations establish the reasonable expectation of success.

1. A POSITA Would Have Reasonably Expected Success In Implementing A User Interface That Supports Incremental Searching

A POSITA would have reasonably expected success implementing a user interface (UI) that supports incremental searching using an appropriate programming language such as C or C++. EX1100, ¶¶42-45; *see also id.*, ¶¶46-49 (describing how a POSITA would have reasonably expected success implementing the supporting back-end software using the same or similar programming language). The POR’s reference to Raskin’s discussion of incremental searching being difficult to implement in Visual Basic is a red herring because a POSITA would not use Visual Basic for this task. Paper 21, 25, 27-28. EX1100, ¶42.

Robust programming languages such as C and C++, together with well-developed operating systems and UI frameworks, allowed an ordinary programmer to build a UI that supported incremental searching, as evidenced by the numerous prior art systems that implemented such functionality, including Entourage, Eudora, Emacs, Canon Cat, SwyftWare, and others. EX1004, 8-9, 161; EX1021, 125, 127, 129; EX1039, 102-103; EX1043, 385-389; EX1100, ¶¶43, 44 (citing EX1097). Indeed, Haeberli admitted as much during his deposition. EX1098, 21:9-15, 24:17-25:10.

Further confirming this reasonable expectation of success, the '490 patent does not provide any details on how to build a user interface that supports an incremental search. EX1100, ¶¶50-52; *In re Fox*, 471 F.2d at 1407.

III. THE PETITION EXPLAINED WHY A POSITA WOULD HAVE COMBINED THE SIDE-BY-SIDE DISCLOSURES IN THE LOTUS NOTES REFERENCES (GROUND 1) AND THE ENTOURAGE REFERENCES (GROUND 2)

The Petition provided reasons why a POSITA would have been motivated to combine the side-by-side disclosures in the Lotus Notes references (Ground 1) and the Entourage references (Ground 2), though combining these disclosures would not have required a leap of inventiveness. The POR argues that the Petition failed to sufficiently explain why it would have been obvious to combine these side-by-side disclosures. Paper 21, 9-17, 38-50. This argument is wrong for several reasons.

A. Lotus Notes' Query Builder Tool Teaches The Disputed Claim Elements And It Would Have Been Obvious To Combine Functionalities From Lotus Notes' Other Search Tools

As explained in the Petition, the Lotus Notes references (Ground 1) teach many of the claim elements within a single search tool and across different search tools. Paper 1, 12-15, 20-42. Indeed, the POR does not dispute that Lotus Notes' Query Builder tool allows a user to enter multiple search strings in a single search field separated by a string separator character (a comma). Paper 21, 29-30. While these similar disclosures for the Search Bar and Search Builder tools certainly reinforce the obviousness of the claims, they are not necessary.³

Moreover, combining these functionalities in a single tool was desirable and/or obvious to try. Paper 1, 7, 18-19, 23-25; EX1100, ¶55.

For example, as was known in the art, described by Lotus Notes, and acknowledged by the POR, a user had two options for entering search strings: either they could enter the strings in a single search field or separate search fields. EX1003, ¶¶40-41; EX1059, 161-164; EX1061, 140, 142; EX2020, ¶9; Paper 21, 3. As taught by the Lotus Notes references, the single search field is preferred when searching for just a few search strings. EX1061, 140 (explaining that the single-field Search

³ The Search Bar also satisfies the mapped claims, as explained in the Petition. Paper 1, 24 n.7; *see also id.*, 36, 62-63, 84; EX1098, 40:10-17.

Bar tool allows “you to find all the occurrences of a word (or a couple of words) very, very quickly”), 142; *see also* Paper 1, 7-8; EX1003, ¶¶40-44. Thus, when performing a search on only two search strings, as recited in the claims, a POSITA would have been motivated to use a single search field, as in the Search Bar and Query Builder. EX1100, ¶56.

As was also known in the art, described by Lotus Notes, and admitted by the POR, a user had two options for separating search strings when entering multiple search strings in a single search field: either they could separate the string with a single character (e.g., a comma as in the Query Builder) or a Boolean operator (e.g., an AND as in the Search Bar). EX1059, 162-163; EX1061, 140; EX2020, ¶9; Paper 21, 3; *see also* Paper 1, 24 n.7; EX1003, ¶89. As explained in the Petition, a POSITA would have understood that when performing an incremental search, a single character would be preferred at least because an incremental search is designed to minimize the number of characters the user has to enter before obtaining the desired result. Paper 1, 24 n.7; EX1003, ¶89. EX1100, ¶57.

Even if Lotus Notes did not expressly disclose the disputed claim elements within a single search tool (which it does), a POSITA would have been motivated with a reasonable expectation of success to combine the well-known functionality described in Lotus Notes’ cited search tools at least because they represented a limited number of well-known implementation options, each with its own

recognized advantages. *E.g.*, *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1331 (Fed. Cir. 2009) (disputed claim element would have been obvious to try because it was one of a “finite number of identified, predictable solutions”) (quotation omitted); *Recor Med., Inc. v. Medtronic Ireland Mfg. Unlimited Co.*, No. 2023-2251, 2025 WL 944511, at *4 (Fed. Cir. Mar. 27, 2025) (obvious-to-try theory may apply where ten alternatives identified in prior art because ten is “a sufficiently finite universe of options”). EX1100, ¶58.

**B. A POSITA Would Have Found It Obvious To
Combine The Functionality From The Entourage Search Tools**

As explained in the Petition, the Entourage references (Ground 2) teach performing an incremental search (e.g., in the Quick Find tool), searching for multiple search strings entered in a single search field (e.g., in the Advanced Find tool), and highlighting search strings in the results (e.g., in the Find tool). Paper 1, 43-48, 54-91. As also explained in the Petition, the highlighting functionality in the Find tool and multi-string search capability of the Advanced Find tool had known benefits: multi-string queries provide more targeted search results and search term highlighting directs the user to the relevant portion(s) of the results and gives the user more confidence in the results. Paper 1, 8, 59-61, 80-84; EX1003, ¶¶48-52, 138, 155, 188-194. Thus, a POSITA would have been motivated with a reasonable

expectation of success to combine these well-known functionalities from Entourage's search tools to achieve their known benefits. EX1100, ¶¶59-61.

The POR improperly advances an anticipation-type requirement by contending that a POSITA would not have combined the functionalities from Entourage's search tools merely because they are described in different tools. Paper 21, 46; EX2020, ¶¶74-76. Under the POR's logic, a claim would be unpatentable only if every element were expressly disclosed in a single embodiment of a single reference. That is the standard for anticipation, not obviousness. Moreover, Dr. Terveen explains that a POSITA would not read the references so rigidly and would have understood that, in general, it would be relatively trivial to mix and match the functionalities of Entourage's different search tools. EX1100, ¶¶59-61.

**C. Combining The Side-By-Side
Disclosures In The Entourage References
And The Lotus Notes References Is A Predictable
Variation That Does Not Require A Leap Of Inventiveness**

The Petition pointed to side-by-side disclosures in the Lotus Notes references and the Entourage references. For Ground 1, Wilcox describes Lotus Notes' Search Bar and Query Builder collectively in five pages of text (EX1059, 160-165) and Londergan describes the Search Bar and Search Builder sequentially on consecutive pages (EX1061, 140-142). For Ground 2, Schwartz similarly describes Entourage's Find, Advanced Find, and Quick Find tools side by side in consecutive pages. *E.g.*,

EX1004, 8-12, 161-164. The rationale to combine these disclosures is apparent because the references present these disclosures side by side, making the combination a “predictable variation” that does not “require a leap of inventiveness.” *Paice LLC v. Ford Motor Co.*, 681 F. App’x 904, 917 (Fed. Cir. 2017) (quoting *Boston Sci. Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)). The functionalities in these side-by-side disclosures relate to flexible software modules that could be readily combined. EX1100, ¶¶59-61. The POR fails to explain how these functionalities are incompatible.

IV. THE PRIOR ART TEACHES EVERY ELEMENT OF THE INDEPENDENT CLAIMS

As explained in the Petition, the prior art in each ground teaches every element of the independent claims. Paper 1, 20-42, 54-91. The POR disputes certain claim elements based on mischaracterizations of the Petition’s combinations, the prior art references’ teachings, the challenged claims, and the law.

A. The Ground 1 References Teach Elements [1.5], [1.10], And [1.13]

The Petition explained that Lotus Notes teaches element [1.5] (index data structure) because it discloses “indexing the computing system’s files in an index data structure (a full-text index),” thereby “allow[ing] you to find documents that contain various combinations of *text strings*.” Paper 1, 21 (quoting EX1059, 159). The Petition also explained that the claimed functionality was known in the art.

Paper 1, 8 (citing EX1013, EX1023, EX1032, EX1053-EX1055, EX1057, EX1059, EX1061), 21; EX1003, ¶¶46-47. The POR wrongly argues that the claims require indexing partial search strings and that the knowledge of a POSITA cannot supply a missing limitation. Paper 21, 29. Both assertions are incorrect.

The Federal Circuit has repeatedly held that the knowledge of a POSITA can supply a missing claim limitation when, as here, the knowledge of the POSITA is supported by prior art references, not just an expert's assertions. *Shockwave Med., Inc. v. Cardiovascular Sys., Inc.*, 142 F.4th 1371, 1378 (Fed. Cir. 2025); *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337 (Fed. Cir. 2020). Specifically, Dr. Terveen cited numerous prior art references evidencing that it was known that index data structures store associations between character strings to the associated files in which the strings are included. Paper 1, 8; EX1003, ¶¶48-52; EX1098, 17:1-18:2. This is fundamentally how they work. EX1003, ¶¶48-52, 84, 146-149.

Moreover, the claims do not recite or require indexing prefixes, as Haerberli admitted during deposition. EX1098, 42:25-43:9. Even if they did, indexing prefixes was known in the art and would have been obvious to implement when performing an incremental search, as explained by Dr. Terveen. EX1100, ¶¶16-17 (citing EX1018, EX1023, EX1061), ¶¶46-49. Further, a system that indexes only whole words inherently indexes prefixes because common words that would be indexed in

any system (e.g., the word “a”) are prefixes for other words (e.g., “an,” “and,” “Andrew,” etc.). EX1098, 25:11-27:1; EX1100, ¶64.

For element [1.10] (string separator character), the POR does not appear to dispute that the prior art references teach this element. Instead, the POR argues that a POSITA would not have combined the Lotus Notes references, which is wrong for the reasons explained above. *Supra* Section II. This also conflates two distinct inquiries: what the references teach and whether a POSITA would have combined the references.

For element [1.13] (incrementally updating search results), the POR repeats its assertion that a POSITA would not have been motivated with a reasonable expectation of success to incrementally search across files, which, as explained above, is wrong for several reasons. *Supra* Section II.

B. The Ground 2 References Teach Elements [1.8]-[1.10]

The Petition explained that Entourage “at least suggest[s] to a POSITA to receive multiple search strings in the single search field of Entourage’s incremental Quick Find search” and that a POSITA “would have been motivated to incorporate True’s express teachings to receive two search strings in the search field ... to provide more targeted searching, as was common sense and well known in the art.” Paper 1, 59-61. The POR argues that True does not disclose searching across files and repeats its incorrect assertion that True’s search does not necessarily locate

matches because the audio may not be 100% accurate. As explained above, True teaches searching across discrete transcript windows and discloses searching text that is 100% accurate. *Supra* Section II.C.2. Moreover, Entourage teaches searching across files. Paper 1, 44-47, 64-66; EX1003, ¶¶127-128, 160-166; EX1100, ¶¶23, 25-27. Whether or not True also does is immaterial.

V. THE PRIOR ART RENDERS THE DEPENDENT CLAIMS OBVIOUS

The disputed dependent claims relate to highlighting search strings in the results (claims 10-11) and searching within specific fields and/or file types (claims 4-7, 14-19). The Petition explained why these functionalities would have been obvious, especially in view of the knowledge of a POSITA. Paper 1, 31-33, 35-42, 74-78, 80-90. For example, as explained above in Section III.B, it was known that search term highlighting directs the user to the relevant portion(s) of the results and gives the user more confidence in the results. Paper 1, 8, 59-61, 80-84; EX1003, ¶¶48-52, 138, 155, 188-194. It was also known that searching within specific fields and/or file types helps narrow the search results and provide quicker responses, as explained by Dr. Terveen. EX1003, ¶¶31, 53, 105, 108, 116, 180, 183-185, 197-198, 200-201; EX1100, ¶65; EX2021, 163:19-176:21.

The POR repeats its incorrect assertion that the knowledge of a POSITA cannot be used to supply missing claim limitations (Paper 21, 31-37, 65-67), even though it does not dispute that the Petition and Dr. Terveen cited numerous prior art

references evidencing a POSITA's knowledge of search string highlighting and field- / file type-specific searching and their benefits.

For the highlighting claims, the POR also attempts to distinguish the prior art based on an improper implicit claim construction argument. Though the claims recite highlighting search strings in the same user interface as the search results, the POR improperly reads in a requirement that they be displayed in the same window. *E.g.*, EX1001, 29:56-30:28 (claim 1); Paper 21, 32-35, 49, 66. Consistent with how a POSITA would have understood the term "user interface," Haeberli admitted that a user interface can include multiple windows, not just one. EX1098, 18:19-20:5; EX1101, 162-163, 358. Thus, the POR's argument fails as a matter of claim construction. Further, it was known to highlight search terms in the same window as the results and would have been obvious to try as it was one of a limited number of known design choice options. EX1003, ¶¶49-51, 193; EX1100, ¶66; EX2021, 61:12-81:11, 158:14-161:9.

For the field and file-type claims, the POR alleges that Lotus Notes is deficient because it discloses the field-specific search in only the Form tool and not specifically for searching emails. Paper 21, 34-36. The Form tool, however, is available from the Search Bar and allows searching within specific fields. *E.g.*, EX1059, 167-168. And Dr. Terveen explained that it would have been obvious to a POSITA to allow searching within email-specific fields at least because this was

known in the art and because Lotus Notes discloses email-specific fields. *E.g.*, EX1003, ¶¶53, 65, 104-108. The POR also alleges that the Entourage mapping is deficient because it does not explain why it would have been obvious to search non-email documents. Paper 21, 65-66. But, as Dr. Terveen explains, Entourage's search techniques are generally applicable to any text-based file, and a POSITA would not read Entourage's teachings so rigidly as to be limited to searching only emails. *E.g.*, EX1003, ¶¶179-185; EX1100, ¶67.

VI. CONCLUSION

The challenged claims would have been obvious to a POSITA because they reflect the predictable combination of well-known search techniques implemented through routine software modifications. The POR's infeasibility arguments are based on a misreading of the claims and lack support in the record.

Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE WITH
TYPE-VOLUME LIMITATION PURSUANT TO 37 C.F.R. § 42.24**

This brief complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(1)(i).

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**CERTIFICATE OF SERVICE
IN COMPLIANCE WITH 37 C.F.R. § 42.6(e)(4)**

The undersigned certifies that on February 13, 2026, a complete copy of
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