

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UIPATH, INC.,

Petitioner,

v.

RULE 14 LLC.,

Patent Owner.

Case No. IPR2024-01304

U.S. Patent No. 9,229,977

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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PETITIONER’S EXHIBIT LIST

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Ex. 1003	Expert Declaration of Jaideep Srivastava, Ph.D.
Ex. 1004	<i>Curriculum Vitae</i> of Jaideep Srivastava, Ph.D.
Ex. 1005	J. Callan et al., <i>Searching Distributed Collections With Inference Networks</i> , Presented at the 18th Annual International Conference on Research and Development in Information Retrieval, 1995
Ex. 1006	Lu et al., <i>Measures in Collection Ranking Evaluation</i> , Technical Report TR-96-39, Computer Science Department, University of Massachusetts, 1996
Ex. 1007	French et al., <i>Comparing the Performance of Database Selection Algorithms</i> , Proceedings of the 22nd annual international ACM SIGIR conference on research and development in information retrieval
Ex. 1008	D’Souza et al., <i>Collection Selection for Managed Distributed Document Databases</i> , Information Processing & Management, Volume 40, Issue 3 (May, 2004)
Ex. 1009	U.S. Patent No. 6,018,733 (Kirsch et al.)
Ex. 1010	U.S. Patent Publication No. 2006/0106793 (Liang)
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Ex. 1014	U.S. Patent No. 7,765,228 to (Eichstaedt)
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Ex. 1016	WO Publication No. 01/65336 (Mellin)
Ex. 1017	U.S. Patent No. 5,721,902 (Schultz)
Ex. 1018	Infringement Contentions of Patent Owner in <i>Rule 14, LLC v. UiPath, Inc.</i> , Case No. 2:23-cv-627 (E.D. Tex.)
Ex. 1019	Affidavit of Nathaniel E. Frank-White
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Ex. 1022	U.S. Patent No. 8,121,997 to Raciborski
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Ex. 1026	U.S. Patent No. 7,720,870
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Ex. 1028	Declaration of Shari Hall White
Ex. 1029	Declaration of Desiree L. Wolf
Ex. 1030	U.S. Patent No. 6,243,713
Ex. 1031	IDS From U.S. Patent No. 6,243,713
Ex. 1032	Affidavit of Nathaniel E. Frank-White
Ex. 1033	Declaration of Chelsea A. Steadman

I. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Party-In-Interest

The real party-in-interest is the Petitioner, UiPath, Inc.

B. Related Matters

U.S. Patent No. 9,229,977 (the ‘977 Patent) is being asserted against Petitioner in *Rule 14, LLC v. UiPath, Inc.*, Case No. 2:23-cv-627 (E.D. Tex.) (“the Litigation”). U.S. Patent No. 10,108,679 and U.S. Patent No. 11,048,712 (the ‘712 Patent) -- each a descendant of the ‘977 Patent -- are also being asserted against Petitioner in the Litigation. The ‘712 Patent is currently being challenged in a separate IPR (IPR2024-01306). The ‘977 Patent was previously the subject of an action seeking a Declaratory Judgment of non-infringement filed by Petitioner in *UiPath, Inc. v. Rule 14, LLC and SPX Holdings LLC*, Case No. 3:24-cv-00097 (D. Nev.), which was voluntarily dismissed without prejudice.

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D. Standing

Petitioner certifies that the ‘977 Patent is eligible for *inter partes* review (IPR) and Petitioner is not barred or estopped from requesting an IPR.

II. INTRODUCTION

This IPR challenges claims 1-21 (“Challenged Claims”) of the ‘977 Patent. The ‘977 Patent claims a system in which a user submits a query to a plurality of data sources and, based on the results, selects one or more of the data sources to monitor for updates. These concepts existed for decades before the ‘977 Patent. None of the prior art relied on herein was before the United States Patent and Trademark Office during prosecution.

III. THE SPECIFICATION AND CLAIMS OF THE ‘977 PATENT

The ‘977 Patent describes “a data mining system” in which “a query” such as “a natural language query” is “generated by a user.” Ex. 1001, 4:9-13. The query is “expanded” by, for example, supplementing the query terms with synonyms. *Id.*,

4:17-23. Next, multiple “data sources” are searched using the query and “the results of the query are reviewed.” *Id.*, 4:27-32; 4:54. “If the results are satisfactory, specific data sources may be selected to be monitored” for updates. *Id.*, 4:54-56. Monitoring results are communicated to users by “establishing a communication channel,” such as “a message board, phone, SMS, or email” with user(s). *Id.*, 5:1-12; 12:20-35. These steps are recited in representative Claim 1 of the ‘977 Patent, below:

A method of analyzing data, comprising:
generating, via a first user, a query based at least in part on a topic of interest;
expanding search terms of the query;
executing the query on a plurality of data sources;
selecting at least one data source from the plurality of data sources, the at least one data source being selected when results of the query are greater than or equal to an accuracy thresholds;
monitoring, based on a set schedule, the at least one data source to extract data from the at least one data source when at least an update to stored data that matches the query, newly added data that matches the query, or a combination thereof; and
establishing a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source.

In Claim 1, the step in which data sources are “selected” recites “selecting at least one data source from the plurality of data sources, the at least one data source being selected when results of the query are greater than or equal to an accuracy

thresholds.”¹ The specification does not recite an “accuracy threshold” or “accuracy thresholds.” However, the specification equates the relevancy of the search results with the accuracy of the search results:

... As previously discussed, at the results module 502, the user selects relevant results for processing (e.g., calibration). That is, the user may judge the results for accuracy based on the intent of the query. *Id.*, 10:18-21 (emphasis added).

Similarly, in its infringement contentions in the Litigation, Patent Owner equated “an accuracy thresholds” with relevancy. Specifically, the Patent Owner’s infringement contentions state:

... UiPath Communication Mining selects at least one data source from the plurality of data sources, the at least one data source being selected when results of the query are greater than or equal to an accuracy thresholds, including by selecting a data source with information that is considered “most relevant” to the query. Ex. 1018, at 40 (emphasis added).

Thus, a “relevancy” threshold is an example of “an accuracy thresholds.” Ex. 1003, ¶¶28-30.

IV. THE PROSECUTION HISTORY OF THE ‘977 PATENT

The ‘977 Patent matured from Appl. No. 13/928,313, filed June 26, 2013. In the First Office Action, all claims were rejected as anticipated by US 2011/0047161

¹ The reference to “an accuracy thresholds” is grammatically awkward because “an” is singular while “thresholds” is plural. The specification does not refer to multiple accuracy thresholds being used for selection of data sources. Therefore, interpreting the claim to require multiple accuracy thresholds would exclude from the scope of the claim any disclosed embodiment(s) in the specification. Ex. 1003, at 11, note 2.

(“Myaeng”). Ex. 1002, at 148-159. In advance of an Interview that occurred on April 13, 2015, Applicant provided an Agenda with proposed claim amendments, stating, in part:

... claim 1 recites, in part, establishing, via the first user, a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source. ... Myaeng is silent on establishing a communication channel between two users ... Ex. 1002, at 143 (emphasis added).

After the Interview, Applicant filed a Reply in which the Applicant amended the claims with some (but not all) of the amendments proposed during the Interview. Ex. 1002, at 120-129. The amendments submitted with the Reply lacked the requirement that the communication channel be established with the second user “via the first user” (as proposed during the Interview), and instead simply recited establishing the communication channel with the second user (with no requirement that the channel with the second user be established via the first user.)

A Notice of Allowance was issued as the next Office communication.

V. CLAIM CONSTRUCTION

Claim terms are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art (POSITA). Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

The Petition must identify “[h]ow the challenged claim is to be construed.” 37 C.F.R. § 42.104(b)(3). Where it is apparent that claim construction may be hotly disputed in District Court proceedings, as is the case here, a Petitioner may present “alternative rationales for why the claims are unpatentable.” *See Google LLC v. Security First Innovations, LLC*, IPR2024-00214, Paper 16 at 12 (PTAB May 23, 2024). The rule “does not require Petitioner to express its subjective agreement regarding correctness of its proffered claim constructions or to take ownership of those constructions.” *Western Digital Corp. v. SPEX Techs., Inc.*, IPR2018-00084, Paper 14 at 11 (PTAB Apr. 25, 2018).

A. “generat[e/ing], via a first user, a query based at least in part on a topic of interest” [Claims 1, 10 and 19 of the ‘977 Patent]

The plain meaning of this term, consistent with the specification, requires that the query in question be generated by a human user. All the proposed grounds of rejection in the Petition satisfy this element as they all rely on prior art where queries are generated by human users.

The ‘977 Patent specification solely describes two alternatives for generating a query: (i) generation by a human user or, alternately (ii) generation by a “query generator,” which is a component of a general purpose computer. Ex. 1001, 4:12–16. The claims of the asserted patents plainly cover the first of these alternatives.

Accordingly, the claim should not be construed as covering query generation by a “query generator,” or other computing system.

In the Litigation, Patent Owner contends that a query generated “via a human user or generated via a query generator which may, for example, be via a robot or AI,” satisfied this claim limitation. Ex. 1018, at 20. Since the parties agree that the claims cover a human-generated query, and the prior art relied on in the Petition discloses human-generated queries, the Board need not resolve this dispute.

In view of complying with 37 C.F.R. § 42.104(b)(3), if a query within the context of the relevant claims could be generated by a “query generator” as asserted by the Patent Owner, then the claim would be subject to interpretation under 35 U.S.C. § 112(f) since “query generator” is a nonce term. *See Rain Computing, Inc. v. Samsung Electronics America, Inc.*, 989 F.3d 1002, 1005-1006 (2021). If construed in this manner, it would raise questions as to whether or not the specification provides sufficient structural support in the form of an algorithm so as to avoid a finding of indefiniteness. However, as explained above, because the term undisputedly covers queries generated by a human user and would be rendered invalid under this Petition with that understanding, the Panel need not reach any Section 112(f) issues.

B. “expand[ing]search terms of the query”

The specification describes “expanding the search terms of the query” as an exercise whereby a lexicographical analysis is used to “expand” the search terms. Ex. 1001, 4:17–21, 6:34–36 and 6:40–44. In the Litigation, Patent Owner has advanced an understanding of this term that is so broad as to be untethered to a lexicographical analysis, arguing that practically any action taken with respect to a query somehow constitutes “expansion” of the query. Ex. 1018, at 27-32. However, since the parties agree that the claims cover a lexicographical analysis, and the prior art relied on below discloses such an analysis, the Board need not resolve this claim construction dispute.²

C. “accuracy threshold”

The specification does not expressly define an “accuracy threshold.” In the Litigation, Patent Owner has contended that “any measurable threshold” constitutes an “accuracy threshold.” Petitioner’s position is that the plain meaning of the term requires that the threshold relate to some level of “accuracy.” However, since the

² UiPath previously contended in the Litigation that this claim element was governed by 35 U.S.C. § 112(f). UiPath has withdrawn this contention and does not believe that this term should be construed as governed by 35 U.S.C. § 112(f).

prior art relied below meets this element under either party's understanding, the dispute need not be addressed by the Board.³

VI. LEVEL OF ORDINARY SKILL IN THE ART

A POSITA as of August 2, 2012 (the claimed, but not conceded, priority date of the '977 Patent) would have had a working knowledge of techniques for querying and monitoring data sources as pertinent to the '977 Patent. A POSITA would have had a bachelor's degree in electrical engineering, computer science, or equivalent training, and approximately two years of work experience in software development with a basic knowledge of database searching techniques. Ex. 1003, ¶26.

VII. OVERVIEW OF PRIOR ART

A. The "Collection Selection" Problem

By 1995, hundreds of data sources (referred to as "collections") were available on the Internet, but it was impractical to search all of them for a given topic. The problem presented back in 1995 -- named the "collection selection" problem -- was how to narrow a search to a few useful collections. Ex. 1003, ¶35. As one author explained:

Users of commercial retrospective information retrieval systems have always faced the *collection selection* problem. The user must either search all collections or *choose the subset to be searched*.

³ UiPath reserves the right to assert that this claim term is indefinite and/or not supported by the written description in the Litigation, however, the Board need not address the issue in this Petition.

J. Callan et al., *Searching Distributed Collections With Inference Networks*, Presented at the 18th Annual International Conference on Research and Development in Information Retrieval, 1995 (the “Callan Paper”) (emphasis added) (Ex. 1005, at 1)⁴. The Callan Paper proposed the following four-step solution to the “collection selection” problem:

1. Use the query to retrieve a ranked list of collections,
2. Select the top group of collections,
3. Search the top group of selections, in parallel or sequentially, and
4. Merge the results from the various collections into a single ranking.

Id., at 2.

In 1996, the Callan Paper was cited (as reference 1) in Lu et al., *Measures in Collection Ranking Evaluation*, Technical Report TR-96-39, Computer Science Department, University of Massachusetts, 1996 (the “Lu Paper”)(Ex. 1006)⁵, which also described the “collection selection” problem:

As hundreds or even thousands of collections become available on the Internet, it is practically impossible to query all of them when searching for information on a given topic. ... Consequently the need to narrow the search to a few useful collections raises the issue of how to

⁴ The Callan Paper (Ex. 1005) has a copyright date of “© 1995” and was publicly available at least as of May 18, 2010 when cited in an issued patent. Ex. 1026 at 1; Ex. 1027, at 5, 9; Ex. 1028, at ¶¶ 3-9; 37 CFR § 1.11, Fed. R. Ev. 803(8).

⁵ The Lu Paper has a publication date of 1996 and was publicly available at least as of June 5, 2001 when cited in an issued patent. Ex. 1030 at 2; Ex. 1031 at 5; Ex. 1029, ¶¶ 2-7 (Exs. A-E).

locate the most useful collections. Several approaches have been proposed to solve this problem. ... In this paper, we survey the measures for collection ranking used in the current research ... Ex. 1006, at 1 (emphasis added).

The Lu Paper described several methods for ranking collections, including methods that scored collections based on relevancy. *Id.*, at 2-8; Ex. 1003, ¶37.

In 1999, the Lu Paper was cited (as reference 17) in French et al., *Comparing the Performance of Database Selection Algorithms*, Proceedings of the 22nd Annual International ACM SIGIR Conference On Research And Development In Information Retrieval (the “French Paper”) Ex. 1007, at 8⁶. There, the authors again addressed the “collection selection” problem by comparing two solutions known as “gGLOSS” and “CORI.” Ex. 1007, at 1-2; Ex. 1003, ¶38.

In 2004, the French Paper was cited⁷ in D’Souza et al., *Collection Selection for Managed Distributed Document Databases*, Information Processing & Management, Volume 40, Issue 3 (May, 2004) (Ex. 1008)⁸. There, the authors again addressed the “collection selection” problem, describing still further solutions that had emerged since the French Paper. In this regard, the authors stated:

⁶ The French Paper was publicly available at least as of March 29, 2004. Ex. 1032, ¶¶ 2-7; Ex. 1029, ¶¶ 8-18 (Exs. F-K).

⁷ See, list of References in D’Souza, Ex. 1008, at 19.

⁸ D’Souza was publicly available at least as of 2004 and a copy of D’Souza was obtained directly from the publisher. See Ex. 1033, ¶¶2-5.

Broadcasting queries to all collections could well be costly or impractical, thus it is attractive to first rank the collections in the database ... The user can then query the top-ranked collections directly ... Ranking the collections then provides a form of collection selection. Ex. 1008, at 2.

D’Souza et al. observed that long queries “generated by query expansion” are “better at collection selection.” *Id.*, at 4 (emphasis added).

By 2004, the “collection selection” problem had been written about extensively, and numerous solutions had been developed. The steps in Claim 1 that recite generating, via a first user, a query ... ; executing the query on a plurality of data sources; and selecting at least one data source from the plurality of data sources ... when results of the query are greater than or equal to an accuracy thresholds -- simply restate the “collection selection” problem and cover previous solutions. Also by 2004, the second step of Claim 1 -- expanding search terms of the query -- had been identified as beneficial for “collection selection.” *Id.*, at 4; Ex. 1003, ¶40.

B. U.S. Patent No. 6,018,733 - Kirsch

In 1997, Infoseek Corporation -- a search engine founded by Steve Kirsch -- filed an application that matured into U.S. Patent No. 6,018,733 entitled “Methods for Iteratively Performing Collection Selection In Full Text Searches.” (Kirsch) (Ex. 1009). Kirsch explained that “[w]hile access to much of the information available through the Internet is free for public use, numerous proprietary or fee-based access document collections exist.” Ex. 1009, 1:32-35. Kirsch noted that the “collection

selection” problem “is complicated further when the opportunity and desire exists to search any combination of public and private document collections.” *Id.*, at 2:21-23.

In Kirsch, a user query “formed using any combination of a free text” (*id.*, 6:40-43) is “expanded as appropriate into a list of specifically identified search terms.” *Id.*, 7:6-7. Kirsch disclosed a plurality of different “document collections,” each of which is a “data source.”⁹ Kirsch taught initially directing the query against multiple document collections. *Id.*, at 14:48-50 (“the user query 84 is preconditioned upon issuance from the user workstation 82 to specify the particular set of collections 88, 90, 92 that the query is to be resolved against.”) Kirsch taught that the user query was then “used to select a qualified set of most likely relevant document collections.” *Id.*, 6:29-30 and 10:19-21 (“the present invention supports automatic ... collection selection.”)

In Kirsch, the selection of a document collection from the set of collections was based on the document collection exceeding a relevance score and a rank. In order for a document collection to be selected, the collection needed to meet a “minimum level of relevance.” *Id.*, 12:11-12; 9:67-10:4. A further “post-search

⁹ Kirsch equates “document collections” with information (or data) sources. Ex. 1009, at 1:33-43 (“Private document collections are likely to continue to exist as significant sources of unique information.”)(emphasis added).

constraint” required a selected collection to rank high enough to fall within a “maximum number of collections returned.” *Id.*, 12:11-12; Ex. 1003, ¶43.

C. Learning Lexis

By 2001, Lexis had published “Learning lexis.com” (“Learning Lexis”) which set forth a “reliable roadmap” for using the lexis.com research service. Ex. 1011, at 2. Details of Learning Lexis are set forth in Section IX(I).

D. U.S. Patent Publication No. 2006/0106793 - Liang

U.S. Patent Publ. No. 2006/0106793 (“Liang”) (Ex. 1010) disclosed an interface through which a user could enter a natural language query (red box below):

Tool Bar Enable Hard Drive Search Hard Drive Search in New Window Search Hard Drive Only Options HELP

INTELLIGENT SEARCH ENGINE

I am looking for information from or on (☐ check all)

- ☐ Seller, Service Provider, Product Review
- ☐ Medicine and Health
- ☐ Companies and Businesses
- ☐ Money, Investment, Finances
- ☐ Learning and Research
- ☐ Marketing Research
- ☐ Government, Militaries
- ☐ Schools, Universities
- ☐ Travel, Entertainment, Sports
- ☐ Research Publications, Technologies, Standards
- ☐ Persons, Groups, Social Networks
- ☐ News

101

106

You may describe what you want to search using natural language:

Search using keywords

102

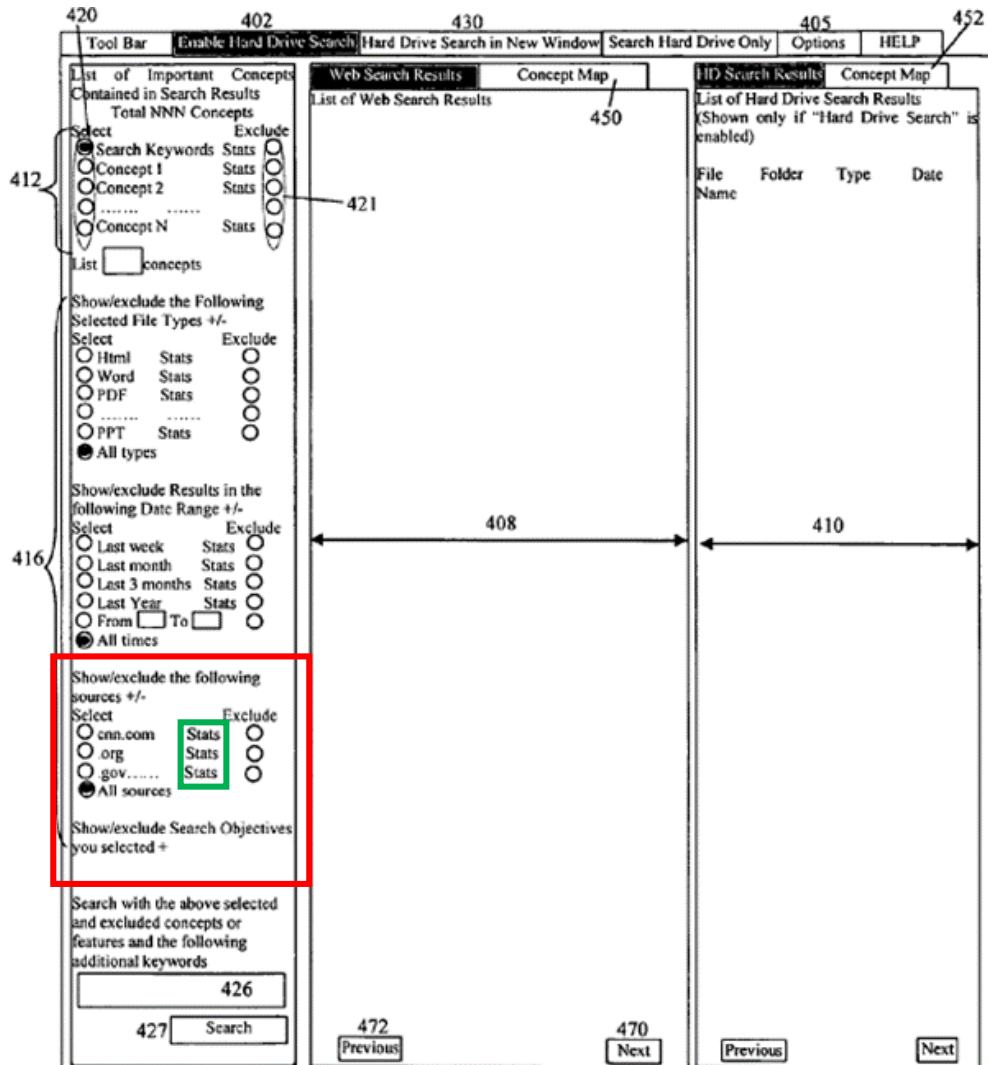
Use this file as a description of what I want to search

120 Browse 122 Search

Ex. 1010, Figure 1 (annotations added). Liang also taught expanding search

keywords using synonyms.¹⁰ Ex. 1010, [0013]; Ex. 1003, ¶47.

In connection with Figure 4, Liang taught execution of the query on multiple sources (see red box below):



Ex. 1010, Figure 1 (annotations added); Ex. 1003, ¶48.

¹⁰ Liang taught expanding search terms with “synsets.” Ex. 1010, [0013]. A synset is a set of synonyms. Ex. 1003, note 7.

Liang provides users functionality to monitor data sources for updates using the query, and to receive an alert (e.g., by email) when changes are detected. This aspect is disclosed in Figure 1 (reproduced below with Petitioner's annotations):

The screenshot shows a web interface titled "INTELLIGENT SEARCH ENGINE". At the top is a "Tool Bar" with links: "Enable Hard Drive Search", "Hard Drive Search in New Window", "Search Hard Drive Only", "Options", and "HELP". The main content area includes a section 101 with the text "I am looking for information from or on (☐ check all)" followed by a list of categories: "Seller, Service Provider, Product Review", "Medicine and Health", "Companies and Businesses", "Money, Investment, Finances", "Learning and Research", "Marketing Research", "Government, Militaries", "Schools, Universities", "Travel, Entertainment, Sports", "Research Publications, Technologies, Standards", "Persons, Groups, Social Networks", and "News". A bracket 104 groups the first six categories. Below this is a section 106 with the text "You may describe what you want to search using natural language:" and a button "Search using keywords". A large text input area 102 is below this. Another section 108 has the text "Use this file as a description of what I want to search" and a "Browse" button 122 next to a text input field 120. A "Search" button is to the right. Below this is a "More Options:" section with radio buttons for "Search for information that was updated" with options: "Anytime", "Past Week", "Past Month", "Past 3 months", "Past 6 Months", "Past Year", and "Past 3 Years". A bracket 110 groups these options. Below this is a section 110 with the text "You want this search to be active from" followed by a date input field "Today or Month Day Year to Month Day Year" and a note "(If no date is selected, it is treated as a one-time search)". A bracket 112 groups this section. At the bottom, a red box highlights a section 112 with the text "You will receive an alert on your desktop when new sources or changes are detected. If you want also to receive an email alert, please enter your email address" followed by an email input field.

With respect to Figure 1, Liang stated that “it offers a user ... the option to keep his search active for a period of time to monitor for new sources and changes to existing sources ... and when a change is detected, the option to ... send an email to an email account that the user provides in 112.” *Id.*, [0052] (emphasis added). Liang also taught that “the monitoring frequency may be chosen by a pull-down menu.” *Id.*, [0347] (emphasis added).

Liang further taught techniques for visualization of search results, as shown for example in Figure 9 of the reference (red box added):

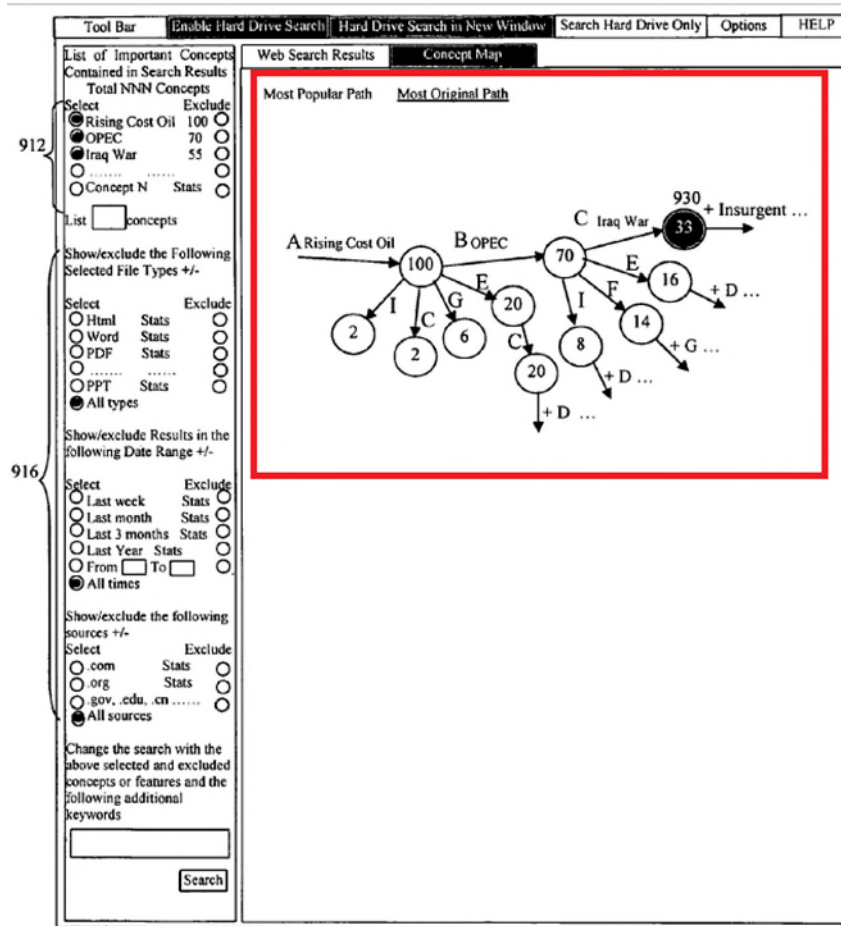


Figure 9

E. U.S. Patent No. 7,765,228 (Eichstaedt)

U.S. Patent No. 7,765,228 to Eichstaedt et al. taught servers that “compare old query results” to “current content item(s)” after a “predefined period” and deliver an email alert to the user with the new content item. Ex. 1014, 8:19-20, 8:37-54 and Figures 5-6.

F. U.S. Patent No. 7,844,603 (Lucovsky)

U.S. Patent 7,844,603 to Lucovsky disclosed mechanisms for a first user to share search results with a second user via an email, a message board, an instant

message and a blog. Ex. 1015, at Figures 4-9.

G. WO Publication No. 01/65336 (Mellin)

WO Publication No. 01/65336 to Mellin taught the use of an email address directed to a group in order to facilitate dissemination of information to all members of the group. Ex. 1016, at 3:24-26.

H. U.S. Patent No. 5,721,902 (Schultz)

U.S. Patent No. 5,721,902 to Schultz taught that a results list can be sent from a server to a user computer over a communication channel. The user provides feedback by clicking on a particular search result causing the server to return the corresponding document to the user over the same communication channel used to send the search results list to the user. Ex. 1017, 14:13-15:16; Ex. 1003, ¶57.

I. U.S. Patent No. 7,043,482 (Vinsonneau)

U.S. Patent No. 7,043,482 to Vinsonneau taught a method for querying data banks where the number of bots used to process search queries depended on the volume of data being searched. Ex. 1020, 4:8-9.

J. U.S. Patent No. 9,418,139 (Moulinier)

U.S. Patent No. 9,418,139 to Moulinier taught translation of a natural language query from one language to another. Ex. 1021, 4:10-14 and 6:3-57.

VIII. SUMMARY OF GROUNDS

Ground	Claim(s)	Combinations of References Rendering the Challenged Claims Invalid Under 35 U.S.C. §103
1	1, 2, 4-6, 8, 10-11, 13-15, 17 and 19-20	Kirsch, Eichstaedt and Lucovsky
2	1, 4, 6, 8, 10, 13, 15, 17 and 19	Kirsch, Eichstaedt and Mellin
3	4, 5, 13, 14 and 21	Kirsch, Eichstaedt, Lucovsky and Schultz
4	2, 11 and 20	Kirsch, Eichstaedt, Mellin and Schultz
5	3 and 12	Kirsch, Eichstaedt, Lucovsky and Liang
6	7 and 16	Kirsch, Eichstaedt, Lucovsky, Schultz and Moulinier
7	9 and 18	Kirsch, Eichstaedt, Lucovsky, and Vinsonneau
8	9 and 18	Kirsch, Eichstaedt, Mellin and Vinsonneau
9	1, 2, 5, 6, 8, 10, 11, 14, 15, 17 and 19-21	Learning Lexis, Kirsch and Lucovsky
10	4 and 13	Learning Lexis, Kirsch, Lucovsky and Schultz
11	3 and 12	Learning Lexis, Kirsch, Lucovsky and Liang
12	7 and 16	Learning Lexis, Kirsch, Lucovsky and Moulinier
13	9 and 18	Learning Lexis, Kirsch, Lucovsky and Vinsonneau
14	1, 3, 4, 10, 12, 13 and 19	Liang and Lucovsky
15	1-6, 8, 10-15, 17 and 19-21	Liang, Lucovsky and Kirsch
16	1, 10 and 19	Liang, Kirsch and Mellin
17	2, 5, 11, 14 and 20-21	Liang, Kirsch, Mellin and Schultz
18	7 and 16	Liang, Lucovsky and Moulinier
19	7 and 16	Liang, Lucovsky, Kirsch and Moulinier
20	9 and 18	Liang, Lucovsky and Vinsonneau
21	9 and 18	Liang, Lucovsky, Kirsch and Vinsonneau

IX. ALL CHALLENGED CLAIMS ARE OBVIOUS

A. Ground 1 - Claims 1, 2, 4-6, 8, 10, 11, 13-15, 17 And 19-20 Are Obvious Over Kirsch, Eichstaedt And Lucovsky

1. Claim 1

All elements of Claim 1 are met by Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶60.

a. Element 1.1 - “A method of analyzing data”

To the extent the preamble is limiting, Kirsch teaches a method for searching databases, which maps to “[a] method of analyzing data.” Ex. 1009, 7:47-49 (search terms are provided “for analysis against a collection meta-index 16.”)(emphasis added). Kirsch also teaches that the “user query 12 is then used ... to select some number of most likely relevant documents from the identified collection set.” Ex. 1009, 6:34-37. When Kirsch selects the “most likely relevant documents from the identified collection set,” it is also “analyzing data.” Ex. 1003, ¶61.

b. Element 1.2 - “generating, via a first user, a query based at least in part on a topic of interest”

Kirsch teaches that “a user query 12 may be preferentially formed using “any combination of a free text syntax,” such as “growing orchids indoors.” *Id.*, 6:40-43. The formation of “user query 12” directed to “growing orchards outdoors” maps to

“generating, via a first user, a query based at least in part on a topic of interest” in the claims. Ex. 1003, ¶62.

c. Element 1.3 - “expanding search terms of the query”

Kirsch teaches that the “search terms are thus ... expanded as appropriate into a list of specifically identified search terms,” (*id.*, 7:6-7), which maps to “expanding search terms of the query” in the claims. Ex. 1003, ¶63.

d. Element 1.4 - “executing the query on a plurality of data sources”

Kirsch teaches searching a plurality of different “document collections,” each of which is a “data source.” Kirsch equates each document collection with a “source of unique information” which corresponds to a “data source” (see note 2, *supra*):

... Private document collections are likely to continue to exist as significant sources of unique information. *Id.*, 1:33-43 (emphasis added).

Kirsch teaches that the query is initially directed against multiple document collections (which map to “a plurality of data sources” in the claim.) *Id.*, at 14:48-50 (“the user query 84 is preconditioned upon issuance from the user workstation 82 to specify the particular set of collections 88, 90, 92 that the query is to be resolved against”); Ex. 1003, ¶¶64-65.

e. Element 1.5 - “selecting at least one data source from the plurality of data sources, the at least one data source being selected when results of

the query are greater than or equal to an accuracy thresholds”

Kirsch teaches that “a user query 12 is used to select a qualified set of most likely relevant document collections” (*id.*, 6:29-30 and 10:19-21 (“the present invention supports automatic ... collection selection”)) which maps to “selecting at least one data source from the plurality of data sources” in the claims. Ex. 1003, ¶65.

As explained in Section III, a “relevancy” threshold is an example of “an accuracy thresholds.” Kirsch teaches that in order for a document collection to be selected, the document collection must meet a “minimum level of relevance.” *Id.*, 2:12; 9:67-10:4 (discussing “minimum relevance ranking threshold.”) A further “post-search constraint” in Kirsch required a selected collection to rank high enough to fall within a “maximum number of collections returned.” *Id.*, 12:11-12. The “minimum level of relevance,” “minimum relevancy ranking threshold” and requirement that a selected collection rank high enough to fall within a “maximum number of collections returned” in Kirsch, individually or collectively, map to “an accuracy thresholds” in the claims. Ex. 1003, ¶67.

- f. Element 1.6 - “monitoring, based on a set schedule, the at least one data source to extract data from the at least one data source when at least an update to stored data that matches the query, newly added data that matches the query, or a combination thereof”**

Eichstaedt teaches providing an email notification (or alert) to a user “when new information becomes available regarding ... search results.” Ex. 1014, 2:5-15. Eichstaedt teaches that “queries can be applied to new content information ... as the new content information becomes available.” *Id.*, 2:43-45. In order to prepare alerts, a poller server “wakes up after a predefined period” (e.g., after each “15 minute” slot elapses) and compares “old query results to the current content item(s). For example, if a current content item is different from an old query result, the poller server can replace the old query result with the current content item. ... The poller server also sends a request to the delivery server” which delivers “an alert with the content item.” *Id.*, 7:67, 8: 14-21, 8:28-54, 12:38-41 and Figures 5-6. Ex. 1003, ¶68.

Eichstaedt’s disclosures of (i) applying an old query to new content information after a predefined period (e.g., after expiration of 15 minute slots) and (ii) delivering an alert to a user with the new content item, map to “monitoring, based on a set schedule, the at least one data source to extract data when at least an update to stored data that matches the query,” in the claim. Ex. 1003, ¶69.

Kirsch and Eichstaedt are both directed to search query technology. It would have been obvious to a POSITA to incorporate Eichstaedt’s monitoring functionality into Kirsch, so that a user could receive periodic updates of new search results from the “selected document collections” in Kirsch. Ex. 1003, ¶¶70-71.

g. Element 1.7 - “establishing a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source”

As explained in Section III, “establishing a communication channel” includes sending a message via email to user(s). Ex. 1001, 5:1-12. Thus, sending an email alert with updated query results is an example of “establishing a communication channel ... based at least in part on the data extracted from the at least one monitored data source,” as claimed. Ex. 1003, ¶72.

During prosecution, the Applicant made clear that the establishing of the communication channel with the second user could be performed “via the first user.” See, Section IV. While the Applicant later broadened the claim by deleting the requirement that the communication channel be established with the second user “via the first user,” the prosecution history (as well as the plain meaning of the claim language) demonstrate that establishing the communication channel with the second user via the first user is within the scope of the claim. Ex. 1003, ¶¶73-74.

Lucovsky discloses a first user sharing search results with a second user via an email, message board, instant messaging and a blog. Ex. 1015, Figures 4-6 and 7-9. Kirsch, Eichstaedt and Lucovsky are all directed to search query technology. It would have been obvious to incorporate Lucovsky’s search results sharing

techniques with Eichstaedt and Kirsch, so that a first user could share updates with a second user. Ex. 1003, ¶75.

To the extent this element requires that the communication channel be established with a different user without traversing the user submitting the query, the limitation is taught by Eichstaedt. Eichstaedt discloses that when new content matching a query is identified, a communication that includes the update is sent not only to the user that generated the query, but also to other users “who desire the same, or very similar, query results.” Ex. 1014, 4:13-51. Sending an update to any one of the “other users” maps to “establishing a communication channel with a second user.” Ex. 1003, ¶76.

Claim 1 is obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶77.

2. Claims 10 and 19

Claims 10 and 19 recite the limitations of method Claim 1 in the format of an apparatus or computer program product. Claim 10 further recites “a memory unit” and “at least one processor ... configured” to perform the recited functions, and Claim 19 further recites “a non-transitory computer-readable medium having program code recorded thereon” to perform the recites functions. These aspects of Claims 10 and 19 are met by Kirsch. Ex. 1009, 6:24-29 (“The methodology 10 is preferably implemented as an application program ... on ... networked computer systems.”) A POSITA would have understood a networked computer system to

include memory coupled to a processor. Accordingly, Claims 10 and 19 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶78-79.

3. Claims 2, 11 and 20

Claims 2, 11 and 20 contain substantively identical limitations. The analysis below of Claim 2 also applies to Claims 11 and 20. Ex. 1003, ¶80.

a. Element 2.1 - “analyzing the extracted data”

Kirsch teaches that the document list returned from the selected collection(s) may be refined “based on preferences established from the user workstation 82 ... such as minimal acceptable relevancy score, total number of documents identified, maximum number of documents ...The refined document list is then provided ... to the user workstation 82. Thus, the end user can analyze the report 121 and selectively retrieve identified documents” Ex. 1009, 15:50-59 (emphasis added). Refining the document list based on user preferences is “analyzing” data. Similarly, Kirsch states that the user analyzes the document list, which also maps to “analyzing” data. Ex. 1003, ¶81.

As noted above, Eichstaedt teaches extracting data as part of the process of monitoring for updates. It would have been obvious to apply Kirsch’s teachings for refining and/or analyzing a document list to Eichstaedt so that user preferences could be used to refine (or narrow) the subject matter of alerts. Ex. 1003, ¶82.

b. Element 2.2 - “receiving feedback from the user based at least in part on the established communication channel”

As mentioned in Section IX(A)(1)(g), Lucovsky discloses a first user sharing search results with a second user via an email. An example of such an email is depicted in Figure 5 (shown below):

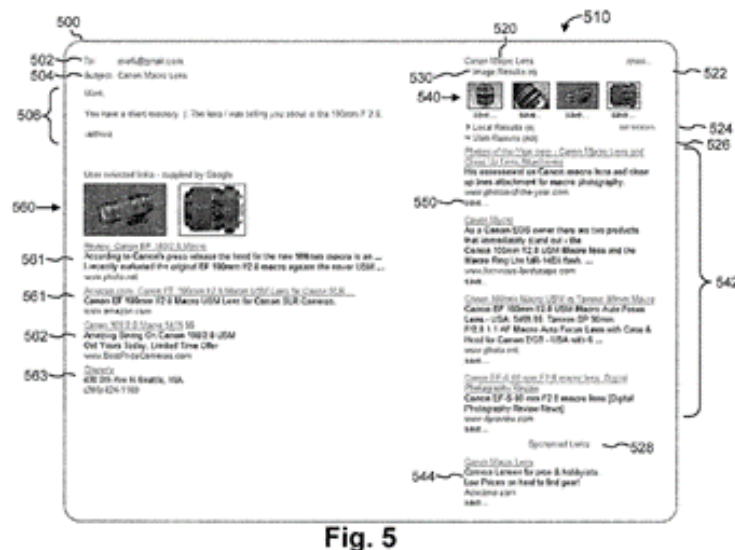
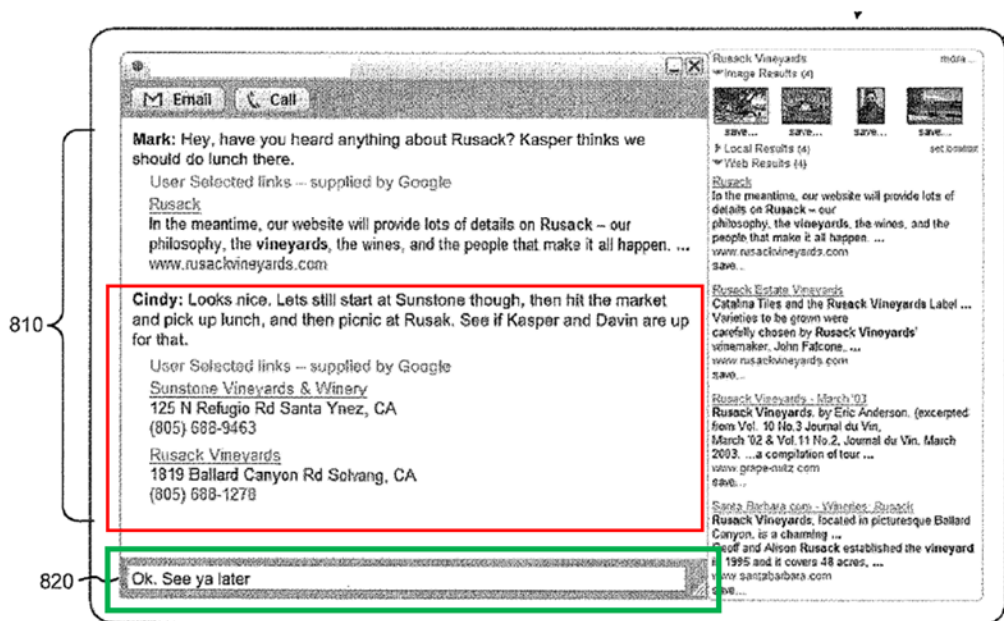


Fig. 5

Figure 8 of Lucovsky (shown below with Patent Owner’s annotations), discloses a user interface through which one user (Cindy) sends an email with search results (red box below) to a second user (Mark). Lucovsky discloses that the second user (Mark) responds to the first user’s email with the search results with the message “OK, See ya later” (green box below).



The responsive message (green box above) maps to “receiving feedback from the user based at least in part on the established communication channel” in the claim. Claims 2, 11 and 20 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶84-85.

4. Claims 4 and 13

Claims 4 and 13 contain substantively identical limitations. The analysis below of Claim 4 also applies to Claim 13. Ex. 1003, ¶86.

a. Element 4.1 - “expanding the query comprises expanding the search terms to include at least misspellings, synonyms, sub-topics, antonyms, or a combination thereof”

Kirsch teaches that “[c]ommon variably represented terms ... are also equivalently recognized; online being made equivalent to “on line” and “on-line” ...

The various search terms are thus reduced and expanded as appropriate into a list of specifically identified search terms.” Ex. 1009, 6:64-7:7. Expanding the query to include “equivalently recognized” search terms maps to “expanding the search terms to include ... synonyms,” as claimed. Claims 4 and 13 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶87-88.

5. Claims 5, 14 and 21

Claims 5, 14 and 21 contain substantively identical limitations. The analysis below of method Claim 5 also applies to Claims 14 and 21. Ex. 1003, ¶89.

a. Element 5.1 - “refining the search terms based at least in part on the executed query, and in which the monitoring is performed to monitor for matches to a refined query “

Lucovsky teaches that the “user may continue to edit the content, enter or refine search queries.” Ex. 1015, 7:49-50. (emphasis added). It would have been obvious to apply a refined (narrowed) query as taught in Lucovsky to the monitoring taught in Eichstaedt in order to narrow the updates to those reflected by a refined query. Claims 5, 14 and 21 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶90-91.

6. Claims 6 and 15

Claims 6 and 15 contain substantively identical limitations. The analysis below of Claim 6 also applies to Claim 15. Ex. 1003, ¶92.

a. Element 6.1 - “ the plurality of data sources include open-source data sources that are publicly available and closed-source data sources that at not publicly accessible”

Kirsch applies its teachings to document collections that include (i) “information available through the Internet [that] is free for public use” (which maps to “open-source data sources”), and (ii) “proprietary or fee-based access document collections” (which map to “closed-source data sources.”) Ex. 1009, 1:33-42. Claims 6 and 15 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶93-94.

7. Claims 8 and 17

Claims 8 and 17 contain substantively identical limitations. The analysis below of Claim 8 also applies to Claim 17. Ex. 1003, ¶95.

a. Element 8.1 - “the plurality of data sources are pre-defined”

The algorithm in Kirsch is applied to a “list of likely most relevant collections” (Ex. 1009, 9:66) or “a constrained set of collections” (*Id.*, 11:19-23), either of which maps to a plurality of “pre-defined” data sources. Claims 8 and 17 are obvious over Kirsch, Eichstaedt and Lucovsky. Ex. 1003, ¶¶96-97.

B. Ground 2 - Claims 1, 4, 6, 8, 10, 13, 15, 17 And 19 Are Obvious Over Kirsch, Eichstaedt And Mellin

As explained in Sections IX(A)(1)(a)-(f), Elements 1.1 - 1.6 of Claim 1 are met by Kirsch and Eichstaedt. Instead of relying on Lucovsky for Element 1.7 as set

forth in Ground 1 above, Ground 2 maps Element 1.7 (“establishing a communication channel with a second user ...”) to Mellin which taught the use of a group email address to facilitate collaboration among members of a group. *See*, Mellin (Ex. 1016), at 3:24-26. In a case where the author of the query (mapped to “a first user” in the claim) was part of a group collaboration, it would have been obvious for the author to designate a group email address to receive search result updates (based on Eichstaedt) so that results were distributed to all collaborators. Any collaborator on the group email address other the author of the search query maps to “a second user.” Accordingly, Claim 1 is obvious over Kirsch, Eichstaedt and Mellin. Ex. 1003, ¶¶98-99.

The additional limitations of Claims 10 and 19 are met by Kirsch. *See*, Section IX(A)(2).

The additional limitations of Claims 4 and 13 are met by Kirsch. *See*, Section IX(A)(4).

The additional limitations of Claims 6 and 15 are met by Kirsch. *See*, Section IX(A)(6).

The additional limitations of Claims 8 and 17 are met by Kirsch. *See*, Section IX(A)(7).

Accordingly, Claims 4, 6, 8, 10, 13, 15, 18 and 19 are also obvious over Kirsch, Eichstaedt and Mellin. Ex. 1003, ¶¶100-103.

C. Ground 3 - Claims 4, 5, 13, 14 and 21 Are Obvious Over Kirsch, Eichstaedt And Lucovsky, In View Of Schultz

1. Claims 4 and 13

Claims 4 and 13 recite expanding the query to include synonyms. To the extent this feature is not taught in Kirsch as explained in Section IX(A)(4)(a), Schultz teaches expansion of a query term using a semantic network. The term “is applied to a semantic network in step 142d to determine expansion words ... the term “semantic network” means a database in which each term carries with it semantic information such as... synonym information.” Ex. 1017, 23:42-48. Thus, Schultz taught expanding search terms with synonyms. Ex. 1003, ¶104.

Kirsch, Eichstaedt, Lucovsky and Schultz are all directed to search query technology. It would have been obvious to incorporate Schultz’s query expansion techniques with the other references so that a user could apply an expanded query including synonyms to Kirsch’s document collections. Claims 4 and 13 are obvious over Kirsch, Eichstaedt and Lucovsky, in view of Schultz. Ex. 1003, ¶¶105-106.

2. Claims 5, 14 and 21

Claims 5, 14 and 21 recite refining the search terms based on the executed query and monitoring using the refined query. To the extent this claim element is not taught by Lucovsky as set forth in Section IX(A)(5)(a), Schultz teaches performance of a “recursive” search, i.e., a search query “performed only on the

results of a prior query.” Ex. 1017, 14:4-7. A POSITA would have understood the recursive query to include “refined” search terms that are directed to searching within the prior search results. Ex. 1003, ¶107.

Kirsch, Eichstaedt, Lucovsky and Schultz are all directed to search query technology. It would have been obvious to apply a refined (narrowed) query as taught in Schultz to the querying and monitoring taught in Kirsch and Eichstaedt, respectively, in order to narrow the updates to those reflected by the refined query. Claims 5, 14 and 21 are also obvious over Kirsch, Eichstaedt and Lucovsky, in view of Schultz. Ex. 1003, ¶¶108-109.

D. Ground 4 - Claims 2, 11 and 20 Are Obvious Over Kirsch, Eichstaedt And Mellin, In View Of Schultz

Claims 2, 11 and 20 contain substantively identical limitations. The analysis below of Claim 2 also applies to Claims 11 and 20. Ex. 1003, ¶110.

1. Element 2.1 - “analyzing the extracted data”

The feature is taught by, or obvious in view of, Kirsch and Eichstaedt as set forth in Section IX(A)(3)(a). Ex. 1003, ¶111.

2. Element 2.2 - “receiving feedback from the user based at least in part on the established communication channel”

As explained above in Section IX(B), it would have been obvious in view of Mellin (Ex. 1016) for an author of a query to designate a group email address to

receive search result updates so that the updated search results were distributed to all collaborators. Ex. 1003, ¶112.

Schultz (Ex. 1017) teaches that a results list can be sent from a server to a user computer. The channel used to send the results to the user maps to “the established communication channel.” Schultz teaches that, using the search results displayed on the user’s computer, the user can click on a search result and the server will return the corresponding document to the user over the same communication channel. In this scenario, when the user (e.g., a collaborator in Mellin’s group email address) clicks on a particular result, the server receives “feedback” (in the form of the selected search result) from the user. This “feedback” is sent back to the server using the same communication channel that the server used to send the search results list to the user. By sending the feedback on the same communication channel as was used to send the search results list (“the established communication channel”), the feedback is received based in part on the established communication channel. Ex. 1017, 14:13-15:16; Ex. 1003, ¶113.

Kirsch, Eichstaedt and Schultz are all directed to search query technology. It would have been obvious to incorporate Schultz’s retrieval techniques with the other references so that a user could retrieve individual documents responsive to query using the same platform that provided the query results to the user. Claims 2, 11 and

20 are obvious over Kirsch, Eichstaedt and Mellin, in view of Schultz. *Id.*, ¶¶114-115.

E. Ground 5 - Claims 3 And 12 Are Obvious Over Kirsch, Eichstaedt And Lucovsky, In View Of Liang

Claims 3 and 12 contain substantively identical limitations. The analysis below of Claim 3 also applies to Claim 12. Ex. 1003, ¶116.

Claim 3 depends from Claim 2. As set forth in Section IX(A)(3), Claim 2 is obvious over Kirsch, Eichstaedt And Lucovsky. *Id.*, ¶117.

1. Element 3.1 - “visualizing at least the extracted data, the analyzed data, or a combination thereof”

Liang (Ex. 1010) teaches visualization of search results using graphical diagrams (see Figure 9 of Liang below - red box added).

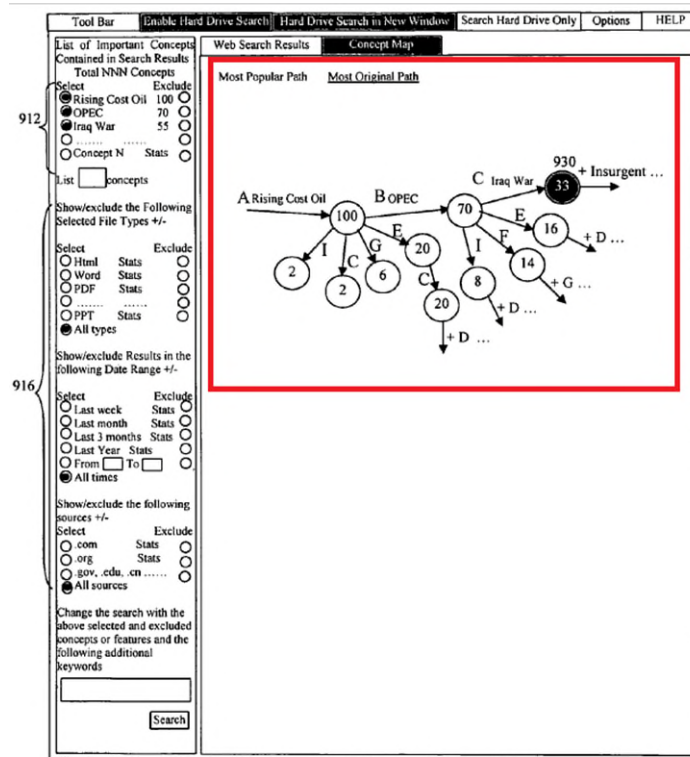


Figure 9

Kirsch, Eichstaedt, Lucovsky and Liang are all directed to search query technology. It would have been obvious to incorporate Liang's visualization techniques with the other references so that a user could visualize search results. Claims 3 and 12 are obvious over Kirsch, Eichstaedt and Lucovsky, in view of Liang. Ex. 1003, ¶¶118-120.

F. Ground 6 - Claims 7 And 16 Are Obvious Over Kirsch, Eichstaedt And Lucovsky, In View Of Schultz And Moulinier

Claims 7 and 16 contain substantively identical limitations. The analysis below of Claim 7 also applies to Claim 16. Ex. 1003, ¶121.

a. Element 7.1 - “the query is a natural language query, and further comprising translating the query to a system understood language”

Schultz teaches that the “search query is preferably in a natural language format.” Ex. 1017, 4:8-9. Moulinier taught translation of a natural language query from one language to another. Ex. 1021, 4:10-14 and 6:3-57; *see also* Ex. 1001, at 9:50-52 (“The language translator 408 may translate the query elements and/or the results from English to another language.”) Ex. 1003, ¶122.

Kirsch, Eichstaedt, Lucovsky, Schultz and Moulinier are all directed to search query technology. It would have been obvious to have a user enter a natural language search query as taught in Schultz and then convert the natural language query into a Boolean format for processing in Kirsch. The approach would make Kirsch more user-friendly for users who prefer not to formulate a Boolean search.¹¹ Alternatively, it would also have been obvious to apply Moulinier’s language translation techniques to Schultz’s natural language query.¹² In a case where Kirsch’s document collections were indexed in one language (e.g., English) and the first user had French as her/her native language, a POSITA would have been

¹¹ *See*, Ex. 1001, 9:55-58 (discussing conversion of query to “system-understood operations, such as Boolean operations.”)

¹² *See*, Ex. 1001, 9:48-53 (discussing translation of query “from English to another language.”)

motivated to use Moulinier's language translation techniques with Schultz/Kirsch, so as to permit the user to submit a natural language query in his/her native language. Ex. 1003, ¶¶123-124.

G. Ground 7 - Claims 9 and 18 Obvious Over Kirsch, Eichstaedt And Lucovsky, And Further In View Of Vinsonneau

Claims 9 and 18 are contain substantively identical limitations. The analysis below of Claim 9 also applies to Claim 18. Ex. 1003, ¶125.

Claim 9 depends from Claim 1. As set forth in Section IX(A)(1), Claim 1 is obvious over Kirsch, Eichstaedt and Lucovsky. *Id.*, ¶126.

1. Element 9.1 - “the monitoring comprises deploying extractors to each of specific data source, a number of extractors being dynamic based at least in part on a traffic volume of each specific data source”

Vinsonneau (Ex. 1020) taught a method for querying data banks where the number of bots used to process search queries depends on the volume of data being searched. *Id.*, 4:8-9. Vinsonneau and Eichstaedt are both directed to search technology. In view of Vinsonneau, it would have been obvious to dynamically scale the number of extractors (or “poller servers”) in Eichstaedt for a particular data source based on traffic volume in order to improve the performance of Eichstaedt as traffic volume varied. Claims 9 and 18 are obvious over Kirsch, Eichstaedt and Lucovsky, in view of Vinsonneau. Ex. 1003, ¶¶127-128.

H. Ground 8 - Claims 9 and 18 Obvious Over Kirsch, Eichstaedt And Mellin, And Further In View Of Vinsonneau

Claims 9 and 18 are contain substantively identical limitations. The analysis below of Claim 9 also identically to Claim 18. Ex. 1003, ¶129.

Claim 9 depends from Claim 1. As set forth in Section IX(B), Claim 1 is obvious over Kirsch, Eichstaedt and Mellin. With respect to the additional limitation of Claim 9, as explained in Section IX(G), it would have been obvious in view of Vinsonneau to dynamically scale the number of extractors (or “poller servers”) in Eichstaedt for a particular data source based on traffic volume. Claims 9 and 18 are obvious over Kirsch, Eichstaedt and Mellin, in view of Vinsonneau. Ex. 1003, ¶¶130-131.

I. Ground 9 - Claims 1, 2, 5-6, 8, 10-11, 14, 15, 17 and 19-21 Are Obvious Over Learning Lexis, Kirsch And Lucovsky

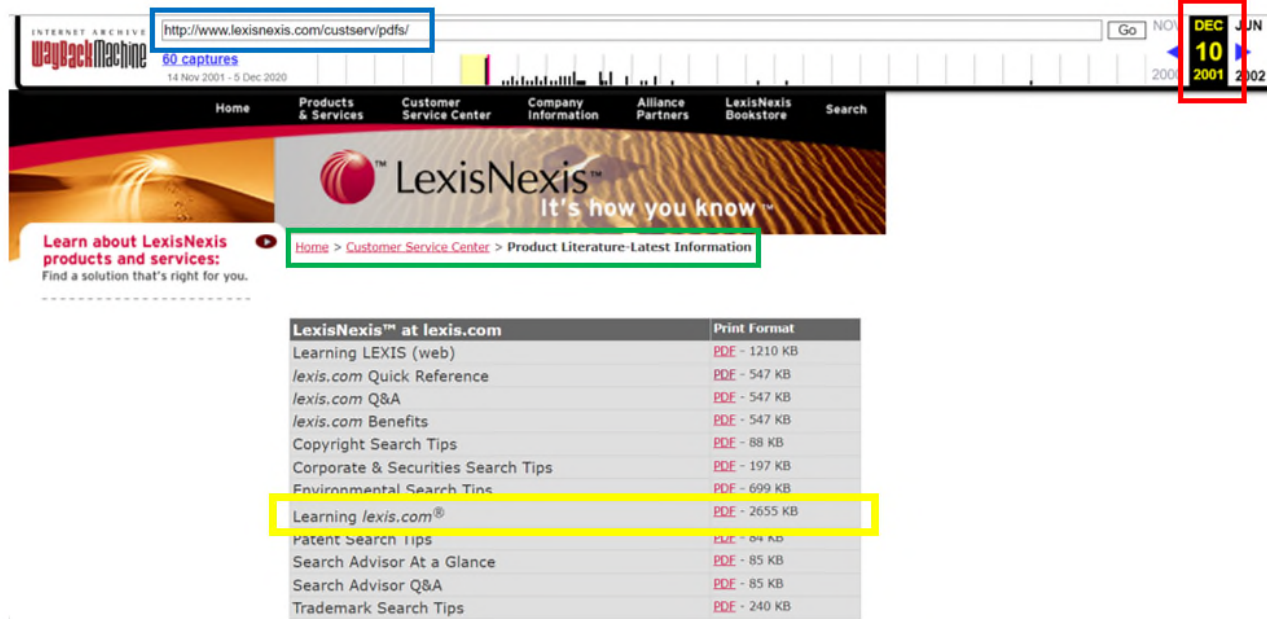
1. Learning Lexis Qualifies As Prior Art

The ‘977 Patent identified “Lexis” as a database system that predated the patent. Ex. 1001, 4:52-53. By 2001, “LexisNexis handled over 400,000 searches each working day.” Ex. 1023, at 6.

By 2001, Lexis had published “Learning lexis.com” (“Learning Lexis”) which set forth a “reliable roadmap” for using the lexis.com service. Ex. 1011, at 2. Learning Lexis bears a copyright date of 2000. *Id.*, at 35. In addition, evidence from

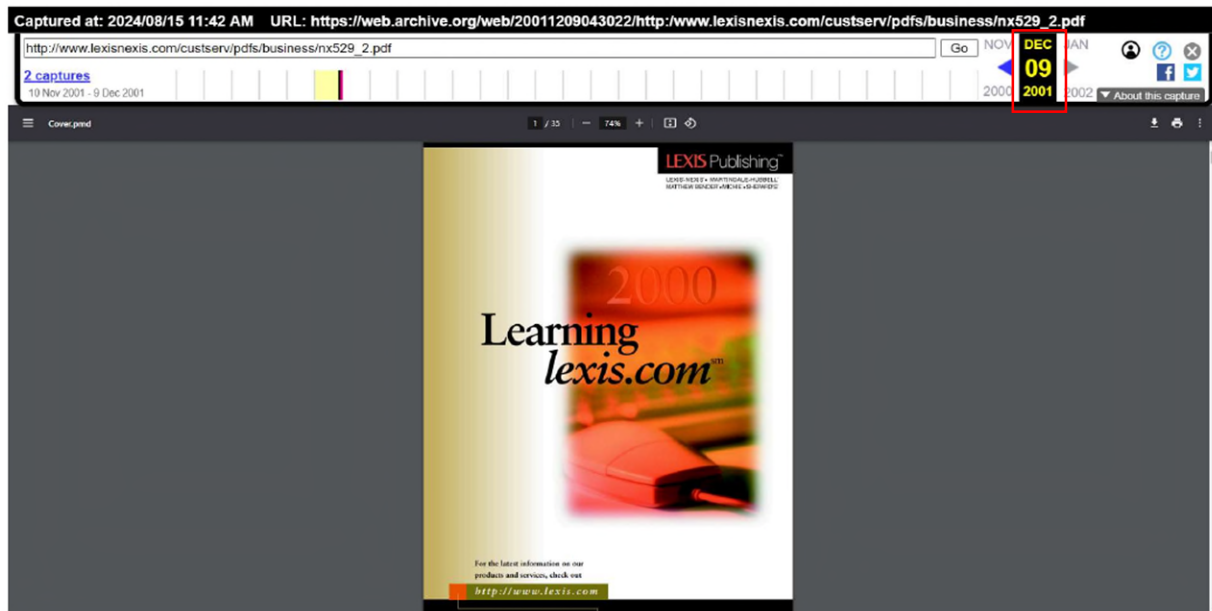
the Wayback Machine Internet Archive discussed below demonstrates that Learning Lexis was available for download on the www.lexisnexis.com website in 2001.

Attached as Ex. 1012 and reproduced below is a printout from the Wayback Machine Internet Archive of the “Product Literature-Latest Information” page (green box) of www.lexisnexis.com (blue box) on December 10, 2001 (red box). (See Ex. 1019, at 6, Ex. A; Ex. 1029, ¶¶19-25, Ex. M.)



Attached as Ex. 1013 and reproduced below is a printout from the Wayback Machine Internet Archive obtained by clicking the PDF button for “Learning *lexis.com*®” (see yellow box in diagram above) on the archived “Product Literature-Latest Information” page (Ex. 1012), which evidences that a user was indeed directed to a pdf of “Learning *lexis.com*®” upon clicking the PDF button for

“Learning *lexis.com*®” on the “Product Literature-Latest Information” page in December, 2001. (See Ex. 1019, at 9-45, Ex. B; Ex. 1029, ¶¶19-25, Ex. N):



It bears noting that the screen capture date for the PDF illustrated in Ex. 1013 is December 9, 2001 (see red **box** above), which is within a day of the screen capture date of the “Product Literature-Latest Information” page shown in Exhibit 1012, namely December 10, 2001.

Ex. 1019 is an Affidavit from a representative of the Internet Archive attesting to the authenticity of the Learning Lexis links and documents.

A person interested in understanding prior art search solutions would have recognized Lexis as a leading provider of such solutions, would have known to look on the Lexis website (www.lexisnexis.com website) for information about how

Lexis operated, and could have easily located Learning Lexis from the link on the “Product Literature-Latest Information” page of that website. Ex. 1003, ¶137.

The public accessibility of Learning Lexis is further evidenced by the fact that it was cited in an Information Disclosure Statement submitted in connection with prosecution of U.S. Patent No. 7,412,463:

(12)	United States Patent Mitchell et al.	(10) Patent No.: (45) Date of Patent:	US 7,412,463 B2 Aug. 12, 2008
(54)	DYNAMIC LEGAL DATABASE PROVIDING HISTORICAL AND CURRENT VERSIONS OF BODIES OF LAW	5,740,549 A 5,761,662 A 5,794,236 A 5,815,302 A 5,819,273 A	4/1998 Reilly et al. 6/1998 Dusan 8/1998 Mehrie 9/1998 Bennett et al. 10/1998 Vom et al.
(75) Inventors:	Fred C. Mitchell , Princeton, NJ (US); Peter Musea , Belle Mead, NJ (US); James Michael Snyder , Mount Holly, NJ (US)	(Continued)	
(73) Assignee:	Bloomberg Finance L.P.	FOREIGN PATENT DOCUMENTS	
		AU	199857414 B2 8/1998
OTHER PUBLICATIONS			
William McClaren et al., Using Westmate, version 7.2 for Windows 95 and Windows NT, 1999, pp. 1-29.*			
Lexis-Nexis, Learning Lexis, A Handbook for Modern Legal Research, 1998, pp. 40-41.*			
Martin, P., "Digital Law: Some Speculations On The Future Of Legal Information Technology," dated May 1995, accessed at http://www.law.cornell.edu/papers/fut95fnl.htm (Mar. 20, 2001), pp. 1-14.			
"Push Technology/Webcasting," Searchwebmanagement.com Definitions, dated Jul. 31, 2001, accessed at http://searchwebmanagement.techtarget.com/sDefinition/0,,sid27_gci213345,00.html (May 29, 2002), pp. 1-4.			
Bruce, Tom, "Legal Information, Open Models And Current Practice", dated Jun. 6, 1995, accessed at http://www.lexum.umontreal.ca/en/equips/technologie/conferences/dac/bruce/bruce.html (Mar. 23, 2001), pp. 1-10.			
Bloomberg Professional display screen, "Market Monitors," dated Dec. 10, 2001, 8 pp.			
Westlaw Research Guide, West Group (Feb. 2001) pp. 111-134.			
FindLaw, http://web.archive.org/web/20001201222600/my.findlaw.com/ , Dec. 2000) 7 pgs.			
Learning Lexis.com, Lexis Publishing, Dayton OH (2000), pp. 1-32.			
Premise Software User manual, west publishing Company, St. Paul, MN (1989), 10 pgs.			

Ex. 1024, at 1-2 (red box added). Attached as Exhibit 1025 is copy of the Learning Lexis document retrieved from the file history of U.S. Patent 7,412,463, confirming that the document submitted to the Patent Office in connection with prosecution of U.S. Patent 7,412,463 is the same as the one relied on by Petitioner herein. See Ex. 1028, ¶¶ 10-16, Ex. B.

Learning Lexis qualifies as a printed publication under 35 U.S.C. §102.

2. Claim 1

a. Element 1.1 - “A method of analyzing data”

Learning Lexis describes performing research using the “lexis.com” service, which includes selecting sources (blue box), searching document collections (red box), and retrieving and reviewing documents (green box), all of which map to “analyzing data.”



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Ex. 1011, at 1, 3 (annotations added); Ex. 1003, ¶138.

b. Element 1.2 - “generating, via a first user, a query based at least in part on a topic of interest”

As illustrated below, Learning Lexis teaches that a user generated query is entered into a search box (see **yellow** box below). The query can either be in either a boolean format (**red** box) or natural language format (**blue** box). In the example shown below, the “topic of interest” corresponds to “employee drug tests” (**green** box).

Completing the Search Terms Form

1. Select the search format you want to use. Choose from:
Terms and Connectors (known as Boolean search logic), which uses words and connectors to create phrases and concepts based on specific rules of search logic. The search for appropriate documents is based on the specific words and combinations of words in the search request. Each word or one of its alternatives must appear in each document retrieved. For example, to find documents concerning employee drug tests, you might use this search request: *drug /15 test or screen /10 employ!*
For more information on how to use Terms and Connectors searching, see page 9.

Or

Natural Language (known as the FREESTYLE™ feature), which lets you create your own search description with natural language (meaning just as you would use in normal conversation), removing the need for using connectors and search logic. Use Natural Language when you want to research conceptual issues rather than highly specific topics and/or are starting to research a complex issue and you are unsure of what words to use.

The screenshot shows the Lexis.com search interface. At the top, there are navigation links: Change Client, Options, Feedback, Sign Off, Help. Below these are tabs for Search, Search Advisor, Get a Document, Check a Citation, ECLIPSE™, and History. The 'Search' tab is active. Under the 'Search' tab, there is a 'Sources' section with a link to 'All Sources : Federal Legal - U.S. : Federal Cases, Combined Courts'. The main search area is titled 'Enter Search Terms'. It has two radio buttons: 'Terms and Connectors' (selected) and 'Natural Language'. Below these is a large text input box, which is highlighted with a yellow box. To the right of the input box is a 'Search' button. Below the input box, there is a section for 'Use connectors to show relation of terms (cat or feline, jane w/3 doe) more--'. There are two checkboxes: 'Suggest Words and Concepts for Entered Terms' and 'Restrict Search Using Document Segments'. At the bottom, there is an 'Optional: Restrict by Date' section with a radio button for 'No Date Restrictions' and fields for 'From' and 'To'.

Terms and Connectors

Natural Language

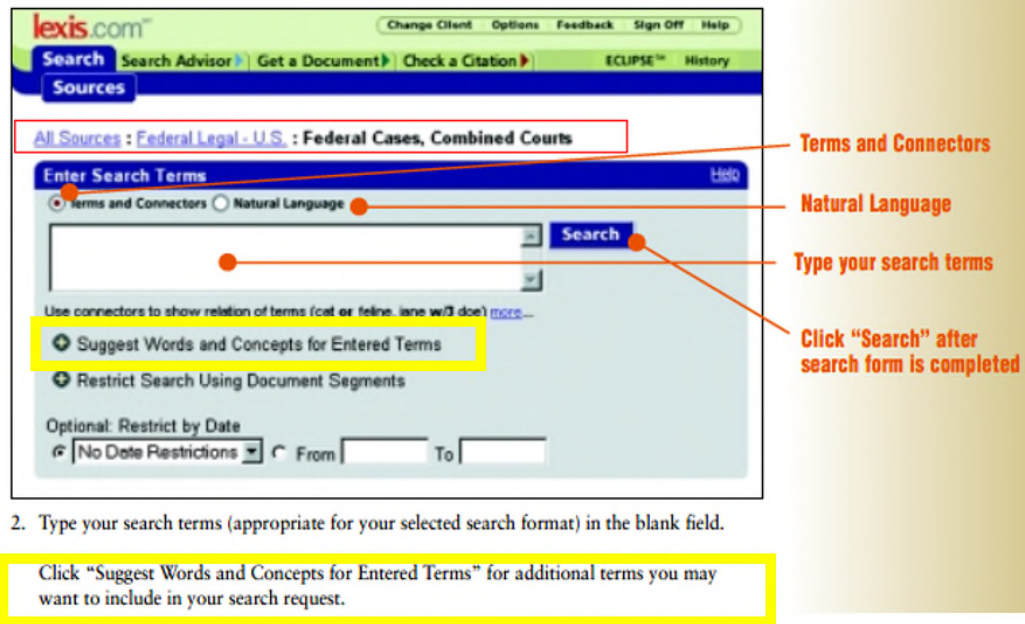
Type your search terms

Click "Search" after search form is completed

Ex. 1011, at 10 (**yellow**, **red**, **blue** and **green** boxes added); Ex. 1003, ¶139.

c. Element 1.3 - “expanding search terms of the query”

Learning Lexis included functionality for suggesting additional terms to incorporate into the query, which maps to “expanding search terms” in the claim:



Ex. 1011, at 10 (yellow boxes added); Ex. 1003, ¶140.

Learning Lexis also included functionality for automatically searching for terms that “are equivalent to each other,” which also maps to “expanding search terms” in the claim. Ex. 1003, ¶141.

H.U.D. = HUD Thursday = Thurs eighty = 80 certiorari = cert	Equivalents The <i>lexis.com</i> service automatically searches for some words and abbreviations that are equivalent to each other. If you use one in a search request, <i>lexis.com</i> will search for all equivalents. For example, <i>cal</i> will automatically find <i>Cal</i>, <i>Calif.</i> and <i>California</i>.
--	--

Ex. 1011, at 13.

d. Element 1.4 - “executing the query on a plurality of data sources”

Learning Lexis discloses various options for source selection, one of which involved use of a “source hierarchy.”

Select a source

You have several options for selecting a source. You can:

- choose a source from the list of sources you recently used;
- find a source by specifying the name of the source;
- explore sources through the source hierarchy; or
- use the LEXIS® Search Advisor (a source selection tool for area-of-law case finding).



Explore Sources

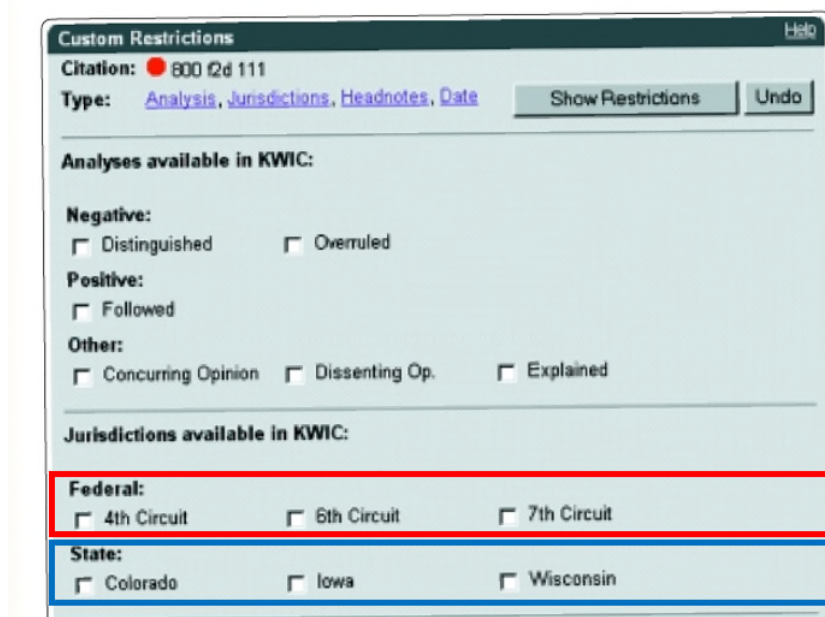
Exploring sources is useful when you’re unsure of the ultimate source you want to use for your research. As the name of the method implies, you explore by pointing and clicking through the source hierarchy until you reach the source you want. Each selection you make by clicking on the source name takes you deeper into the source hierarchy and a “trail” of your selection displays. A “trail” may look like this:
Combined Federal & State Case Law – U.S.: All Courts – By State: CA Federal & State Cases

Click on the source name to choose and advance through the hierarchy. To retrace your selection steps, click on the Back arrow button on your browser bar.

Ex. 1011, at 6-7 (**yellow** boxes added); Ex. 1003, ¶142.

In one of the examples shown above, a hierarchy of sources included “Combined Federal & State Case Law -US” at the top of the hierarchy. A POSITA would have understood that the “Combined Federal & State Case Law -US” collection represented a combination of individual collections (or data sources) each of which represented the Federal and State cases for a particular state jurisdiction (e.g., “CA Federal & State Cases”). Ex. 1003, ¶143.

In another of the examples shown above, a hierarchy of sources included “Federal Legal - U.S.” at the top of the hierarchy. The “Federal Legal - US” collection represented a combination of individual collections (or data sources) each of which represented the cases for a jurisdiction corresponding to a particular Federal Circuit such as the 4th, 6th or 7th Circuit (see **red** box below). Ex. 1003, ¶144.



Ex. 1011, at 31 (red and blue boxes added).

In another of the examples in Learning Lexis, a hierarchy of sources included “States Legal - U.S.” at , e.g., at the top of the hierarchy. The “States Legal - US” collection represented a combination of individual collections each of which represented the cases for a particular state jurisdiction such as Colorado, Iowa or Wisconsin (see blue box above). Ex. 1003, ¶145.

To the extent it is not explicitly taught in Learning Lexis that each such “Combined” collection was implemented using a combination of individual collections (or data sources), it would have been obvious (e.g., a design choice) to have implemented the technology disclosed in Learning Lexis in that way. Ex. 1003, ¶146.

Whenever a user selected the top of a source hierarchy (for example, “Combined Federal & State Case Law -US”) for executing a query, the user was necessarily selecting all of the data sources (e.g., one for each state jurisdiction) represented in the hierarchy for execution of the query. In this way, Learning Lexis disclosed “executing the query on a plurality of data sources,” as claimed. Ex. 1003, ¶147.

- e. **Element 1.5 - “selecting at least one data source from the plurality of data sources, the at least one data source being selected when results of the query are greater than or equal to an accuracy thresholds”**

As described in connection with Element 1.6 below, Learning Lexis disclosed an “ECLIPSE Feature” that allows a user monitor a source for updates. Ex. 1011, at 26. In a case where a user selected the top of a source hierarchy (for example, “Combined Federal & State Case Law -US”) for initially running a query, it would have been obvious to use the teachings of Kirsch to select a source (e.g., a collection limited to the specific state jurisdiction) from within the hierarchy to monitor for updates. For example, if an initial query directed to “employee drug tests” indicated that all or most of the pertinent cases were being litigated in a particular state, it would make sense to limit the ongoing monitoring of caselaw developments in the topic to developments in that particular state. It would have been obvious to use the

teachings of Kirsch to automatically select such a data source for ongoing monitoring. Ex. 1003, ¶148.

Like Learning Lexis, Kirsch discloses initially querying a plurality of data sources. Kirsch teaches that the query is initially directed against multiple document collections (which map to “a plurality of data sources.”) *See*, Ex. 1009, at 14:48-50. Kirsch teaches that “a user query 12 is used to select a qualified set of most likely relevant document collections.” Ex. 1009, 6:29-30. The selection of “a qualified set” of document collections in Kirsch maps to “selecting at least one data source from the plurality of data sources” in the claim. As discussed in Section IX(A)(1)(e), *supra*, Kirsch teaches that selection of the document collection is based on the collection exceeding a “minimum level of relevance” and a “minimum relevancy ranking threshold,” which map to “an accuracy thresholds.” Ex. 1003, ¶149.

It would have been obvious to apply Kirsch’s collection techniques to the system taught in Learning Lexis. A POSITA would have been motivated to use the collection selection techniques in Kirsch to narrow the combined sources searched in Learning Lexis in an initial query to a single data source or a subset of the combined sources for ongoing monitoring. Ex. 1003, ¶150.

- f. Element 1.6 - “monitoring, based on a set schedule, the at least one data source to extract data from the at least one data source when at least an update to stored data that matches the**

**query, newly added data that matches the
query, or a combination thereof”**

Learning Lexis disclosed an “ECLIPSE Feature” that allows a user “to follow development of topics of interest.” The feature allows a user to “automatically save and re-run searches for updates” at periodic intervals, and receive the updates by, e.g., email.

The ECLIPSE™ Feature

The ECLIPSE feature is an electronic clipping service that allows you to follow the development of topics of interest to you. You can have *lexis.com* automatically save and re-run searches for updates at daily, business daily, weekly, or monthly intervals. ECLIPSE results can be viewed online or e-mailed to you.

Each time your search is processed, an ECLIPSE search only gives you the new, updated information and doesn't retrieve the documents you've already seen.

Click “Save As
ECLIPSE” at the top
of the document you
are viewing to set up a
new ECLIPSE search.

Ex. 1011, at 26; Ex. 1003, ¶151.

As noted in the discussion of Element 1.5 above, in a case where a user selected the top of a source hierarchy such as “Combined Federal & State Case Law -US” for initially running a query, it would have been obvious to use the teachings

of Kirsch to select a source (e.g., a collection limited to the specific state jurisdiction) from within the hierarchy to monitor for updates. Using the ECLIPSE function in Learning Lexis to periodically re-run the query on the data source selected by Kirsch and receive new results via email maps to “monitoring, based on a set schedule, the at least one data source to extract data from the at least one data source when” either “at least an update to stored data” or “newly added data” matches the query. Ex. 1003, ¶152.

g. Element 1.7 - “establishing a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source”

Learning Lexis teaches that updates extracted by the “ECLIPSE Feature” can be sent by email (red box) below:

The ECLIPSE™ Feature

The ECLIPSE feature is an electronic clipping service that allows you to follow the development of topics of interest to you. You can have *lexis.com* automatically save and re-run searches for updates at daily, business daily, weekly, or monthly intervals. ECLIPSE results can be viewed online or e-mailed to you.

Each time your search is processed, an ECLIPSE search only gives you the new, updated information and doesn't retrieve the documents you've already seen.

Save ECLIPSE™

Name:

Source: Congressional Bills and Bill Tracking - Current Congress - LEGIS,BILLS

Terms: s 33

Frequency

☐ Daily ☐ Weekly

☐ Business Days (M-F) ☒ Monthly Day of Month:

Delivery

☒ Online only

☒ * Email

Notification

☐ * Email

* Email Distribution is subject to [Terms and Conditions](#)

Click “Save As ECLIPSE” at the top of the document you are viewing to set up a new ECLIPSE search.

Ex. 1011, at 26 (red box added); Ex. 1003, ¶153.

Learning Lexis also discloses that documents from search results may be emailed “to yourself or to others.”

Email Delivery

To email documents in your search results to yourself or to others click “Email” on any search results page to specify the documents you want to delivery, the format, and the email address or addresses (separate addresses with commas or spaces). You can also add a brief note that will appear at the top of the email, and specify whether you want a cover page and end page.

Ex. 1011, at 34 (red box added). In the case where a user specifies an email address of another person to receive updates generated using the ECLIPSE Feature, Learning Lexis discloses “establishing a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source.” Ex. 1003, ¶¶154-155.

To the extent this element is not expressly taught by Learning Lexis, it would have been obvious in view of Lucovsky. As explained in Section IX(A)(1)(g), Lucovsky (Ex. 1015) discloses a first user sharing search results with a second user via an email, message board, instant messaging and a blog. Learning Lexis and Lucovsky are both directed to search query technology. It would have been obvious to incorporate Lucovsky’s search results sharing techniques with Learning Lexis so

that a first user could share updates with a second user. Claim 1 is obvious over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶156-157.

3. Claims 10 and 19

As noted in Section IX(A)(2), Claim 10 further recites “a memory unit” and “at least one processor ... configured” to perform the recited functions, and Claim 19 further recites “a non-transitory computer-readable medium having program code recorded thereon” to perform the recited functions. These limitations would have been obvious over Learning Lexis. The images on Learning Lexis are of a user interface on a computer screen. Ex. 1011, e.g., at 4. A POSITA would have understood that such a computer screen is coupled to a processor and memory, and that the search tools in Learning Lexis would have been implemented in software code stored in memory and executed by a processor. Claims 10 and 19 are obvious over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶158-159.

4. Claims 2, 11 and 20

As explained above in Section IX(A)(3), the additional limitations of Claims 2, 11 and 20 are taught by Lucovsky and/or Kirsch. It would have been obvious to apply the techniques for analyzing data and providing feedback in Kirsch and Lucovsky to Learning Lexis, in order to permit users to communicate with each other about search results. Claims 2, 11 and 20 are obvious over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶160-161.

5. Claims 5, 14 and 21

Learning Lexis teaches adding terms to refine a query. Ex. 1011, at 23. Learning Lexis also describes a “FOCUS Feature” which allows a user to identify “words within the documents in your search results even if those words were not part of your original search request.” *Id.* These aspects of Learning Lexis map to “refining the search terms based at least in part on the executed query.” Furthermore, it would have been obvious to apply the monitoring and alert features of Learning Lexis to the refined query. Ex. 1003, ¶162.

To this extent this element is not expressly taught in Learning Lexis, this element is taught by Luckovsky. As explained above in Section IX(A)(5), the additional limitations of Claims 5, 14 and 21 are taught by Lucovsky. Claims 5, 14 and 21 are obvious over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶163-164.

6. Claims 6 and 15

As explained in Section IX(A)(6), the additional limitations of Claims 6 and 15 are taught by Kirsch. It would have been obvious to apply the teachings of Learning Lexis to document collections that include both public use and proprietary information, as taught in Kirsch. Ex. 1009, 1:33-42. A POSITA would have been motivated to implement these aspects of Kirsch in Learning Lexis in order to allow for searching of both public and private collections. Claims 6 and 15 are obvious

over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶165-166.

7. Claims 8 and 17

As explained above in Section IX(A)(7), the additional limitations of Claims 8 and 17 are taught by Kirsch. Claims 8 and 17 are obvious over Learning Lexis, Kirsch and Lucovsky. Ex. 1003, ¶¶167-168.

J. Ground 10 - Claims 4 And 13 Are Obvious Over Learning Lexis, Kirsch And Lucovsky, In View Of Schultz

As explained in Section IX(C)(1), the additional limitations of Claims 4 and 13 are taught by Schultz. It would have been obvious to incorporate Schultz's query expansion techniques with Learning Lexis, Lucovsky and Kirsch so that a user could apply an expanded query including synonyms to Kirsch's and/or Learning Lexis's document collections. Claims 4 and 13 are also obvious over Learning Lexis, Kirsch and Lucovsky, in view of Schultz. Ex. 1003, ¶169.

K. Ground 11 - Claims 3 and 12 Are Obvious Over Learning Lexis, Kirsch And Lucovsky, In View Of Liang

As explained in Sections IX(I)(2) and IX(I)(3), the limitations of Claims 1 and 10 are rendered obvious by Learning Lexis, Kirsch and Lucovsky. In addition, as explained in Section IX(E), the additional limitations of Claim 3 and 12 (visualizing search results) are taught by Liang. Learning Lexis, Kirsch and Liang are all directed to search query technology. It would have been obvious to incorporate Liang's

visualization techniques with Learning Lexis and Kirsch so that a user could visualize search results. Ex. 1003, ¶¶170.

L. Ground 12 - Claims 7 and 16 Are Obvious Over Learning Lexis, Kirsch, Lucovsky And Moulinier

Claims 7 and 16 depend from Claims 1 and 10, respectively. As explained in Sections IX(I)(2) and IX(I)(3) above, the limitations of Claims 1 and 10 are met by Learning Lexis, Kirsch and Lucovsky. As explained above in Section IX(I)(2)(b), natural language searching (as recited in Claims 7 and 16) is taught by Learning Lexis. Moulinier taught translation of a natural language query from one language to another. Ex. 1021, 4:10-14 and 6:3-57. Ex. 1003, ¶171.

Learning Lexis, Kirsch, Lucovsky and Moulinier are directed to search query technology. It would also have been obvious to apply Moulinier's language translation techniques to Learning Lexis's natural language query. In a case where Learning Lexis's/Kirsch's document collections are indexed in English and the first user had French as her/her native language, a POSITA would have been motivated to use Moulinier's language translation techniques with Learning Lexis/Kirsch, so the user could submit a natural language query in his/her native language. Claims 7 and 16 are obvious over Learning Lexis, Kirsch, Lucovsky and Moulinier. Ex. 1003, ¶¶172-173.

M. Ground 13 - Claims 9 and 18 Are Obvious Over Learning Lexis, Kirsch, And Lucovsky, And Further In View Of Vinsonneau

As explained in Section IX(I)(2), the limitations of Claims 1 and 10 are rendered obvious by Learning Lexis, Kirsch and Lucovsky. In addition, as explained in Section IX(G), the limitations of Claims 9 and 18 are taught by Vinsonneau. It would have been obvious to combine Vinsonneau's dynamic scaling techniques with the monitoring techniques in Learning Lexis in order to improve the performance of the Lexis system as traffic volume varied. Ex. 1003, ¶¶174-175.

N. Ground 14 - Claims 1, 3, 4, 10, 12-13 And 19 Are Obvious Over Liang And Lucovsky

1. Claim 1

a. Element 1.1 - "A method of analyzing data"

To the extent the preamble is limiting, Liang teaches a method of analyzing data. Ex. 1010, at [0167] ("this invention uses ... to analyze search results ...") Ex. 1003, ¶176.

b. Element 1.2 - "generating, via a first user, a query based at least in part on a topic of interest"

Figure 1 of Liang teaches that a user can search using a natural language query:

The screenshot shows a web browser window titled "INTELLIGENT SEARCH ENGINE". The browser's address bar contains "Tool Bar", "Enable Hard Drive Search", "Hard Drive Search in New Window", "Search Hard Drive Only", "Options", and "HELP". The main content area has the title "INTELLIGENT SEARCH ENGINE" in bold. Below the title, there is a section labeled "I am looking for information from or on (☐ check all)" with a list of categories: Seller, Service Provider, Product Review; Medicine and Health; Companies and Businesses; Money, Investment, Finances; Learning and Research; Marketing Research; Government, Militaries; Schools, Universities; Travel, Entertainment, Sports; Research Publications, Technologies, Standards; Persons, Groups, Social Networks; and News. A red bracket on the left side of this list is labeled "101". Below the categories, there is a red rectangular box containing the text "You may describe what you want to search using natural language:". To the right of this box is a button labeled "Search using keywords" with the number "106" above it. Below the red box is a large empty rectangular area labeled "102". At the bottom of the interface, there is a section labeled "Use this file as a description of what I want to search" with a text input field labeled "120", a "Browse" button labeled "122", and a "Search" button.

Id., Fig. 1 (annotations added). The natural language search query entered by the user in Liang maps to “generating, via a first user, a query based at least in part on a topic of interest.” Ex. 1003, ¶177.

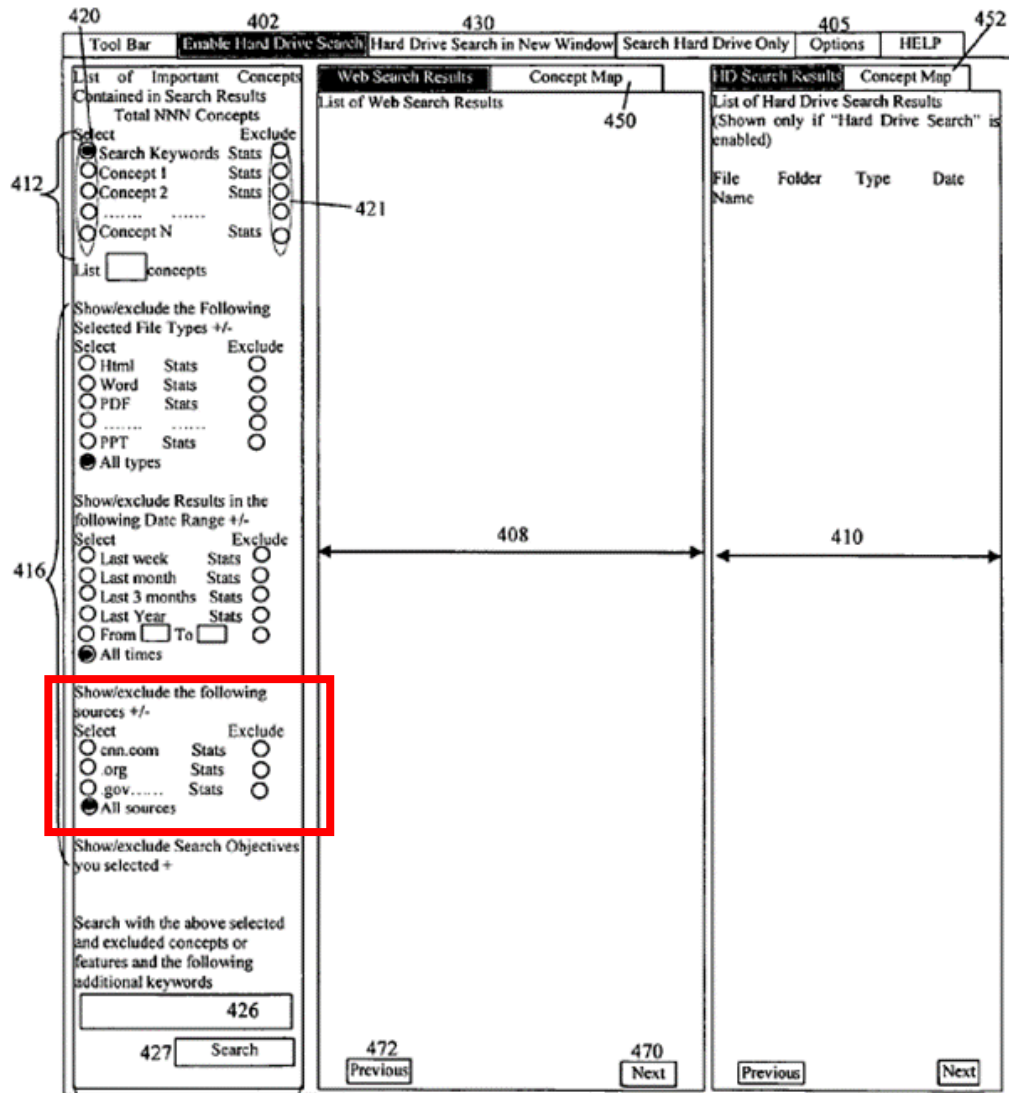
c. Element 1.3 - “expanding search terms of the query”

Liang “broadens a search by expanding search keywords into concepts comprising of the synsets, hypemym, and/or hyponym/troponym of a keyword ...,” which maps to “expanding search terms of the query” in the claim. *Id.*, [0013]; Ex. 1003, ¶178.

d. Element 1.4 - “executing the query on a plurality of data sources”

Liang teaches execution of a query on multiple sources (see red box below). Liang suggests initially executing the query on a plurality of data sources, after

which the user is provided with the option to narrow the number of data sources used for the query.

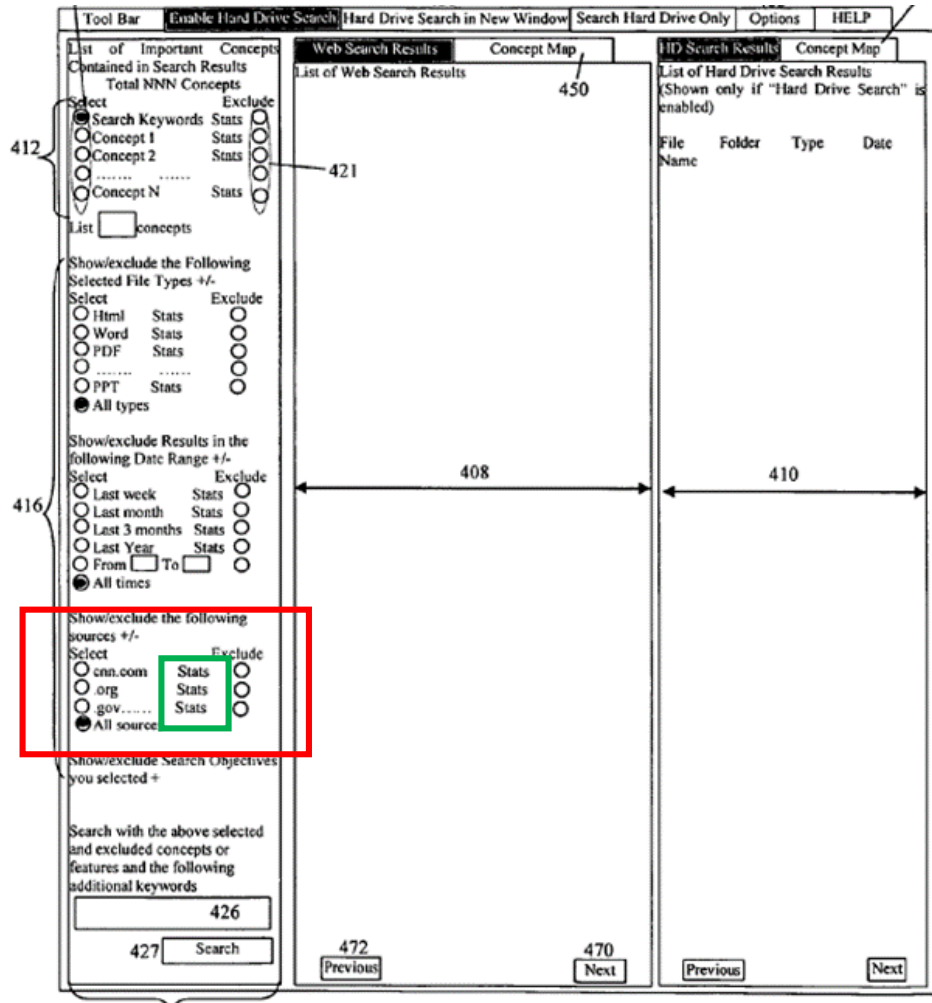


Ex. 1010, Figure 4 (annotations added). In describing Figure 4, Liang states that the “sections 416 allow a user to *filter* the search results by other filtering features such as file types, dates of modification, *sources*, among other things.” Ex. 1010, [0178] (emphasis added). In order for a user to be able to filter based on *sources* (plural) in

Liang, the query would first need to have been executed on a plurality of sources. The fact that the “All Sources” box is checked in Figure 4 further suggests that the initial query is applied to multiple data sources. In any event, it would have been obvious for a user of Liang to direct an initial search to multiple sources, so as to identify relevant information from multiple sources. Ex. 1003, ¶179.

- e. **Element 1.5 - “selecting at least one data source from the plurality of data sources, the at least one data source being selected when results of the query are greater than or equal to an accuracy thresholds”**

Liang provides “Stats” (green box) for each of the data sources that were searched:



Ex. 1010, Figure 4 (annotations added). Liang explains that these “Stats” correspond to statistics, such as “the total number of appearances of an important concept in the search results.” Ex. 1010, [0184]. The number of appearances of a concept for a particular source corresponds to an “accuracy” parameter for each source. Liang’s system automatically “selects the first S, where S is a positive integer and can be set by default or by user” sources “from which the most number of web pages and files are retrieved in the search results.” Ex. 1012, [0229]. These selected sources in Liang correspond to sources with query results (e.g., number of retrieved web pages and

files) greater than or equal to an accuracy threshold (the top “S” sources). Ex. 1003,
¶180.

- f. **Element 1.6 - “monitoring, based on a set schedule, the at least one data source to extract data from the at least one data source when at least an update to stored data that matches the query, newly added data that matches the query, or a combination thereof”**

Figure 1 of Liang teaches alerting a user by email when “changes are detected.”

The screenshot displays the 'INTELLIGENT SEARCH ENGINE' web interface. At the top is a 'Tool Bar' with links: 'Enable Hard Drive Search', 'Hard Drive Search in New Window', 'Search Hard Drive Only', 'Options', and 'HELP'. The main heading is 'INTELLIGENT SEARCH ENGINE'. Below it, a section labeled 101 asks 'I am looking for information from or on (☐ check all)' and lists various categories with radio buttons: Seller, Service Provider, Product Review; Medicine and Health; Companies and Businesses; Money, Investment, Finances; Learning and Research; Marketing Research; Government, Militaries; Schools, Universities; Travel, Entertainment, Sports; Research Publications, Technologies, Standards; Persons, Groups, Social Networks; and News. A bracket labeled 104 groups the first six categories. Below this, a section labeled 106 allows searching 'using natural language' (with a large text area 102) or 'using keywords'. A section labeled 120 contains a text input field and a 'Browse' button (122). A 'Search' button is also present. The 'More Options:' section includes radio buttons for 'Search for information that was updated' with options: Anytime, Past Week, Past Month, Past 3 months, Past 6 Months, Past Year, and Past 3 Years (grouped by bracket 108). It also includes a date range selector for 'You want this search to be active from' (grouped by bracket 110). A section labeled 112, highlighted with a red box, states: 'You will receive an alert on your desktop when new sources or changes are detected. If you want also to receive an email alert, please enter your email address' followed by an email input field. Below this are two checkboxes: 'Check here to enable Concept Following to expand the search' (with a 'Select depth: Following Concepts for' input field and bracket 116) and 'Check here to enable Link Following to expand the search' (with a 'Select depth: Following Links for' input field and bracket 118). A final 'Search' button is at the bottom.

Ex. 1010, Figure 1 (annotations added). With respect to Figure 1, Liang “offers a user ... the option to keep his search active ... to monitor for ... changes to existing sources ... and when a change is detected, the option to ... send an email to an email account that the user provides in 112.” Ex. 1010, [0052] (emphasis added). Liang also teaches that “the monitoring frequency may be chosen by a pull-down menu.” Ex. 1010, [0347] (emphasis added). The “monitoring frequency” in Liang maps to “monitoring, based on a set schedule.” Ex. 1003, ¶181.

g. Element 1.7 - “establishing a communication channel with a second user based at least in part on the data extracted from the at least one monitored data source”

As explained in Sections III and IX(A)(1)(g) sending an email alert with updated query results is an example of “establishing a communication channel ... “ and (ii) this element covers establishing the communication channel with the second user “via the first user.” *See also*, Section IV.

Lucovsky (Ex. 1015) discloses a first user sharing search results with a second user via an email, message board, instant messaging and a blog. *Id.*, Figures 4-6, 7 and 8-9. Liang and Lucovsky are all directed to search query technology. It would have been obvious to incorporate Lucovsky’s search results sharing techniques with Liang, so that a first user could share updates with a second user. Ex. 1003, ¶¶182-183.

Claim 1 is obvious over Liang and Lucovsky. *Id.*, ¶184.

2. Claims 10 and 19

As noted in Section IX(A)(2), Claims 10 and 19 respectively recite “a memory unit” and “a non-transitory computer-readable medium having program code recorded thereon,” in each case to perform the recited functions. These limitations are met by Liang. Ex. 1010, [0039] (“the corresponding apparatus element may be configured in hardware, software, firmware or combinations thereof.”) A POSITA would have understood “hardware, software” or “combinations thereof” to include memory that stored software code executed by a processor. Claims 10 and 19 are obvious over Liang and Lucovsky. Ex. 1003, ¶¶185-186.

3. Claims 3 and 12

The limitations of Claims 3 and 12 recite visualization of search results. As explained in Section IX(E), Liang (Ex. 1010) teaches visualization of search results. Claims 3 and 12 are obvious over Liang and Lucovsky. *Id.*, ¶¶187-188.

4. Claims 4 and 13

The limitations of Claims 4 and 13 recite “expanding the search terms to include ... synonyms.” Liang states that it “broadens a search by expanding search keywords into concepts comprising of the synsets ... of a keyword ...” Ex. 1010, [0013]. A “synset” is a synonym set. Claims 4 and 13 are obvious over Liang and Lucovsky. Ex. 1003, ¶¶189-190.

O. Ground 15 - Claims 1-6, 8, 10-15, 17 And 19-21 Are Obvious Over Liang, Lucovsky And Kirsch

1. Claims 1, 10 and 19

As set forth in Sections IX(N)(1) and (2), the limitations of Claims 1, 10 and 19 are obvious in view of Liang and Lucovsky. *Id.*, ¶191.

a. Element 1.4

With respect to Element 1.4 (*see* Section IX(N)(1)(d)), to the extent Liang does not teach executing the query on multiple data sources, it would have been obvious in view of Kirsch (Ex. 1009). As described in Section IX(A)(1)(d), Kirsch teaches that a query is initially directed against multiple document collections (which map to “a plurality of data sources” in the claim.) *See*, Ex. 1009, at 14:48-50. Kirsch further teaches that “a user query 12 is used to select a qualified set of most likely relevant document collections.” Ex. 1009, 6:29-30. The selection of “a qualified set” of document collections in Kirsch maps to “selecting at least one data source from the plurality of data sources.” Ex. 1003, ¶192.

Liang and Kirsch are both directed to search technology. A POSITA would have been motivated to apply Liang’s query to Kirsch’s different document collections in order to identify (from a larger set of collections) a subset of collections most relevant to the query, as taught in Kirsch. *Id.*, ¶193.

b. Element 1.5

With respect to Element 1.5 (*see* Section IX(N)(1)(e)), to the extent this feature is not expressly taught in Liang, it would have been obvious in view of Kirsch. Kirsch teaches in order for a document collection to be selected, the document collection must meet a “minimum level of relevance.” *Id.*, 2:12; 9:67-10:4. A further “post-search constraint” in Kirsch required a selected collection to rank high enough to fall within a “maximum number of collections returned.” *Id.*, 12:11-12. The “minimum level of relevance,” “minimum relevancy ranking threshold” and requirement that a selected collection rank high enough to fall within a “maximum number of collections returned” in Kirsch, individually or collectively, map to “an accuracy thresholds.” Ex. 1003, ¶194.

It would have been obvious to use the collection selection techniques in Kirsch to narrow the sources searched in Liang to ones selected using Kirsch’s techniques. A POSITA would have been motivated to use the metrics from Kirsch to narrow the set of sources in Liang in order to filter out less relevant sources. *Id.*, ¶195.

c. Element 1.6

It would have been obvious to apply Liang’s monitoring to the “qualified set” of data sources selected using Kirsch’s collection selection techniques. A person would have been motivated to limit the number of data sources used for monitoring to those data sources meeting Kirsch’s metrics in order avoid identification of less relevant results during the monitoring. *Id.*, ¶196.

Claims 1, 10 and 19 are obvious over Liang and Kirsch. *Id.*, ¶197.

2. Claims 2, 11 and 20

Claims 2, 11 and 20 contain substantively identical limitations. The analysis below of method Claim 2 also applies to Claims 11 and 20. *Id.*, ¶198.

a. Element 2.1 - “analyzing the extracted data”

Liang taught analyzing search results which maps to “analyzing the extracted data” in the claim. *See*, Ex. 1010, at [0167]. Alternatively, it would have been obvious to apply Liang’s techniques for analyzing search results to “the extracted data” resulting from Liang’s monitoring techniques. As a further alternative, as set forth in Section IX(A)(3)(a), this element is taught by Kirsch. Ex. 1003, ¶199.

b. Element 2.2 - “receiving feedback from the user based at least in part on the established communication channel”

As mentioned above in Section IX(A)(3)(b), Lucovsky discloses a first user sharing search results with a second user via an email, followed by the recipient of the email responding to the first user. Such a response maps to “receiving feedback from the user based at least in part on the established communication channel.” *Id.*, ¶200.

Liang, Kirsch and Lucovsky are directed to search technology. It would have been obvious to apply Lucovsky’s email techniques for sharing search results with Liang and Kirsch so as to permit a first user to share search results with a second

user. Claims 2, 11 and 20 are obvious over Liang, Kirsch and Lucovsky. *Id.*, ¶¶201-202.

3. Claims 3 and 12

The limitations of Claims 3 and 12 (visualization of search results) are met by Liang. *See*, Section IX(E)(1), *supra*. Claims 3 and 12 are obvious over Liang, Lucovsky and Kirsch. *Id.*, ¶203.

4. Claims 4 and 13

The limitations of Claims 4 and 13 are taught by Liang. *See*, Section IX(N)(4). Alternatively, Kirsch teaches expanding the search terms to include synonyms. *See*, Section IX(A)(1)(c). Claims 4 and 13 are obvious over Liang, Lucovsky and Kirsch. *Id.*, ¶204.

5. Claims 5, 14 and 21

The limitations of Claims 5, 14 and 21 are met by Lucovsky. *See*, Section IX(A)(4). It would have been obvious to incorporate Lucovsky's search refinement techniques into Liang and Kirsch, so that a user could refine search terms based on the query and monitor for matches to the refined query. Claims 5, 14 and 21 are obvious over Liang, Kirsch and Lucovsky. *Id.*, ¶205.

6. Claims 6 and 15

The limitations of Claims 6 and 15 are taught by Kirsch. *See*, Section IX(A)(6). It would have been obvious to apply Liang's teachings to document

collections that include both (i) “information available through the Internet [that] is free for public use” (which maps to “open-source data sources” in the claim) and (ii) “proprietary or fee-based access document collections” (which map to “closed-source data sources” in the claim), as taught in Kirsch. Ex. 1009, 1:33-42. A POSITA would have been motivated to implement these aspects of Kirsch in Liang in order to allow Liang to search both public and private collections. Claims 6 and 15 are obvious over Liang, Lucovsky and Kirsch. Ex. 1003, ¶¶206-207.

7. Claims 8 and 17

The limitations of Claims 8 and 17 are met by Kirsch. *See*, Section IX(A)(7). It would have been obvious to use Kirsch’s “list of most relevant collections” with Liang in order to streamline the identification of relevant data sources in Liang. Claims 8 and 17 are obvious over Liang, Lucovsky and Kirsch. *Id.*, ¶208.

P. Ground 16 - Claims 1, 10 And 19 Are Obvious Over Liang, Kirsch And Mellin

As explained in Sections IX(O)(1), Elements 1.1 - 1.6 of Claim 1 are met by Liang and Kirsch. Ground 10 maps Element 1.7 (“establishing a communication channel with a second user ...”) to Mellin which taught the use of a group email address to facilitate collaboration among members of a group. *See*, Mellin (Ex. 1016), at 3:24-26. In a case where the author of the query (mapped to “a first user” in the claim) was part of a group collaboration, it would have been obvious for the

author to designate a group email address to receive search result updates so that the updated search results were distributed to all collaborators. Any collaborator on the group email address other than the author of the search query maps to “a second user” in the claim. Claim 1 is obvious over Liang, Kirsch and Mellin. Ex. 1003, ¶¶210-211.

The additional limitations of Claims 10 and 19 are met by Liang. *See*, Section IX(N)(2). Claims 10 and 19 are also obvious over Liang, Kirsch and Mellin. *Id.*, ¶212.

Q. Ground 12 - Claims 2, 5, 11, 14 And 20-21 Are Obvious Over Liang, Kirsch And Mellin, In View Of Schultz

1. Claims 2, 11 and 20

Claims 2, 11 and 20 contain substantively identical limitations. The analysis below of Claim 2 also applies to Claims 11 and 20. *Id.*, ¶213.

The elements of Claim 1 are met by Liang, Kirsch and Mellin. *See*, Section IX(P). *Id.*, ¶214.

a. Element 2.1 - “analyzing the extracted data”

This feature is taught by, or obvious in view of, both Liang and Kirsch. *See*, Section IX(O)(2)(a); *id.*, ¶215.

b. Element 2.2 - “receiving feedback from the user based at least in part on the established communication channel”

As explained above in Section IX(B), it would have been obvious in view of Mellin (Ex. 1016) for an author of a query to designate a group email address to

receive search result updates so that the updated search results were distributed to all collaborators. Any collaborator on the group email address other the author of the search query maps to “a second user” in the claim. Ex. 1003, ¶216.

As explained in Section IX(D)(2), Schultz (Ex. 1017) teaches “feedback” sent back to the server using the same communication channel that the server used to send the search results list to the user, which maps to feedback that is received based in part on the established communication channel. *Id.*, ¶217.

Liang, Kirsch and Schultz are all directed to search query technology. It would have been obvious to incorporate Schultz’s retrieval techniques with the other references so that a user could retrieve individual documents responsive to query using the same platform that provided the query results to the user. Claims 2, 11 and 20 are obvious over Liang, Kirsch and Mellin, in view of Schultz. *Id.*, ¶¶218-219.

2. Claims 5, 14 and 21

Claims 5, 14 and 21 contain substantively identical limitations. The analysis below of Claim 5 also applies to Claims 14 and 21. *Id.*, ¶220.

The elements of Claim 1 are met by Liang, Kirsch and Mellin. *See*, Section IX(P); *id.*, ¶221.

Schultz teaches performance of a “recursive” search, i.e., a search query “performed only on the results of a prior query.” Ex. 1017, 14:4-7. A POSITA would

have understood the recursive query to include “refined” search terms that are directed to searching within the prior search results. *Id.*, ¶222.

Liang, Kirsch and Schultz are all directed to search query technology. It would have been obvious to apply a refined (narrowed) query as taught in Schultz to the querying and monitoring taught in Liang and/or Kirsch in order to narrow the updates to those reflected by the refined query. Claims 5, 14 and 21 are obvious over Liang, Kirsch, Mellin and Schultz. *Id.*, ¶¶223-224.

R. Ground 18 - Claims 7 and 16 Are Obvious Over Liang, Lucovsky And Moulinier

Claims 7 and 16 depend from Claims 1 and 10, respectively, and further recite that the query is a natural language query and the query is translated into a system understood language. As explained in Section IX(N)(1)(b), Liang teaches that a user can search using a natural language query. Moulinier taught translation of a natural language query from one language to another. Ex. 1021, 4:10-14 and 6:3-57; Ex. 1003, ¶225.

Liang, Lucovsky and Moulinier are all directed to search query technology. It would have been obvious to apply Moulinier’s language translation techniques to Liang’s natural language query. In a case where Liang’s document collections were indexed in one language (e.g., English) and the first user had French as her/her native language, a POSITA would have been motivated to use Moulinier’s language

translation techniques with Liang, so as to permit the user to submit a natural language query in his/her native language. Claims 7 and 16 are obvious over Liang, Lucovsky and Moulinier. *Id.*, ¶¶226-227.

S. Ground 19 - Claims 7 and 16 Are Obvious Over Liang, Lucovsky, Kirsch And Moulinier

Claims 7 and 16 depend from Claims 1 and 10, and further recite that the query is a natural language query and the query is translated into a system understood language. As explained in Section IX(N)(1)(b), Liang teaches that a user can search using a natural language query. Moulinier taught translation of a natural language query from one language to another. Ex. 1021, 4:10-14 and 6:3-57; Ex. 1003, ¶228.

Liang, Lucovsky, Kirsch and Moulinier are all directed to search query technology. It would also have been obvious to apply Moulinier's language translation techniques to Liang's natural language query. In a case where Kirsch's/Liang's document collections were indexed in one language (e.g., English) and the first user had French as her/her native language, a POSITA would have been motivated to use Moulinier's language translation techniques with Liang, so as to permit the user to submit a natural language query in his/her native language. *Id.*, ¶¶229-230.

T. Ground 20 - Claims 9 and 18 Are Obvious Over Liang, Lucovsky And Vinsonneau

Claims 9 and 18 contain substantively identical limitations. The analysis below of Claim 9 also applies to Claim 18. *Id.*, ¶231.

As set forth in Section IX(N), the limitations of Claim 1 are taught by Liang and Lucovsky. In addition, as set forth in Section IX(G), the limitations of Claims 9 and 18 are taught in Vinsonneau. It would have been obvious to combine Vinsonneau's dynamic scaling techniques with Liang's monitoring techniques in order to improve the performance of Liang as traffic volume varied. Claims 9 and 18 are obvious over Liang, Lucovsky and Vinsonneau. *Id.*, ¶¶232-233.

U. Ground 21 - Claims 9 and 18 Are Obvious Over Liang, Lucovsky And Kirsch In View Of Vinsonneau

Claims 9 and 18 contain substantively identical limitations. The analysis below of Claim 9 also applies to Claim 18. *Id.*, ¶234.

As set forth in Section IX(O), the limitations of Claim 1 are taught by Liang, Lucovsky and Kirsch. In addition, as set forth in Section IX(G), the limitations of Claims 9 and 18 are taught in Vinsonneau. It would have been obvious to combine Vinsonneau's dynamic scaling techniques with Liang's monitoring techniques in order to improve the performance of Liang as traffic volume varied. Claims 9 and 18 are obvious over Liang, Lucovsky and Kirsch in view of Vinsonneau. *Id.*, ¶¶235-236.

X. THE PARALLEL LITIGATION DOES NOT WARRANT DISCRETIONARY DENIAL

Regardless of any factors that otherwise apply, “the PTAB will not discretionarily deny institution of an IPR or PGR in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.” *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation*, 7 (USPTO Dir. June 21, 2022). Petitioner stipulates that, should the Board institute review, Petitioner will not pursue in parallel district court proceedings the same grounds as in the Petition or any grounds that could have reasonably been raised in the petition. Thus, the issues raised in this Petition and the Litigation will not overlap.

In addition, there has been minimal investment by the Court and parties in the Litigation, and the claims have not been construed.

Finally, discretionary denial is not warranted because this Petition presents compelling evidence of unpatentability.

XI. CONCLUSION

Petitioner respectfully requests that the Board institute an IPR and enter a final written decision finding the Challenged Claims unpatentable.

Respectfully submitted,

Dated: September 16, 2024

By: /Michael F. Snyder/
Michael F. Snyder
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Counsel for Petitioner
UiPath, Inc.

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Petition complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 13,994 words, excluding the parts of this Patent Owner's Response that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this Petition.

Dated: September 16, 2024

By: /Michael F. Snyder /
Michael F. Snyder
Registration No. 58,347

Counsel for Petitioner
UiPath, Inc.

CERTIFICATE OF SERVICE

The undersigned certifies that pursuant to 37 C.F.R. § 42.6(e), a copy of the foregoing **PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**, the associated **Power of Attorney**, and **Exhibits 1001-1033** was served via UPS Overnight Delivery on September 16, 2024 to the Patent Owner's counsel of record as follows:

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