

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UIPATH, INC.,

Petitioner,

v.

RULE 14 LLC.,

Patent Owner.

Case No. IPR2025-00623
U.S. Patent No. 10,108,679

**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

Exhibit No.	Description
Ex. 1001	U.S. Patent No. 10,108,679
Ex. 1002	File History of U.S. Patent Appl. 14/960,309, filed Dec. 4, 2015
Ex. 1003	Provisional Appl. No. 61/679,024
Ex. 1004	Expert Declaration of Jaideep Srivastava, Ph.D.
Ex. 1005	<i>Curriculum Vitae</i> of Jaideep Srivastava, Ph.D.
Ex. 1006	U.S. Patent No. 9,288,123 (Safford)
Ex. 1007	U.S. Patent No. 8,909,771 (Heath)
Ex. 1008	U.S. Patent No. 9,769,085 (Laribi)
Ex. 1009	Provisional Application No. 61/643,114, filed May 4, 2012
Ex. 1010	U.S. Patent No. 7,051,098 (Masters)
Ex. 1011	U.S. Patent No. 8,010,524 (Chen)
Ex. 1012	U.S. Patent No. 5,721,902 (Schultz)
Ex. 1013	U.S. Patent No. 7,315,861 (Seibel)
Ex. 1014	U.S. Patent No. 9,418,139 (Moulinier)
Ex. 1015	Gravano et al., <i>Precision and Recall of GLOSS Estimators for Database Discovery</i> , Proceedings Of The International Conference On Parallel And Distributed Information Systems, pp. 103-106, 1994 (Gravano)
Ex. 1016	Infringement Contentions of Patent Owner
Ex. 1017	ISBN Lookup results for ISBN No. 0-8186-6400-2 for Text, <i>Proceedings of 3rd International Conference on Parallel and Distributed Information Systems</i>
Ex. 1018	Text, <i>Proceedings of 3rd International Conference on Parallel and Distributed Information Systems</i> , 28-30 Sept. 1994, selected pages (ISDN No. 0-8186-6400-2)
Ex. 1019	International Search Report (ISR) for International Application No. PCT/US98/18844, International Application No. WO1999014691A1, dated December 8, 1998
Ex. 1020	Bibliographic data from Espacenet for XP 002085758, for <i>Precision and Recall of GLOSS Estimators for Database Discovery</i>

Exhibit No.	Description
Ex. 1021	Webpage from IEEE Explore Database, for <i>Precision and Recall of GLOSS Estimators for Database Discovery</i>
Ex. 1022	United States Reissue Patent No. RE45752 and file history
Ex. 1023	U.S. Patent No. 7,725,452 (Randall)
Ex. 1024	Declaration of Shari Hall White • Exhibit A: IDS from United States Reissue Patent No. RE45752 • Exhibit B: <i>Precision and Recall of GLOSS Estimators for Database Discovery</i>, submitted to USPTO
Ex. 1025	Declaration of Desiree L. Wolf • Exhibit A: Web page, https://ieeexplore.ieee.org/document/331726 • Exhibit B: Web page, https://ieeexplore.ieee.org/xpl/conhome/997/proceeding • Exhibit C: Web page, https://ieeexplore.ieee.org/xpl/conhome/997/proceeding?isnumber=7843&sortType=vol-only-seq&pageNumber=2 • Exhibit D: Web page, https://isbnsearch.org/ • Exhibit E: Web page, https://isbnsearch.org/isbn/0818664002 • Exhibit F: Web page, https://worldwide.espacenet.com/?locale=EN_ep • Exhibit G: https://worldwide.espacenet.com/searchResults?ST=singleline&locale=en_EP&submitted=true&DB=&query=XP002085758 • Exhibit H: Web page, https://worldwide.espacenet.com/nplReferenceDetails/biblio?CC=XP&NR=002085758&KC=&FT=E&DB=&locale=en_EP&ND=1&II=0
Ex. 1026	Declaration of Daniel H. Golub

Exhibit No.	Description
	• Ex. A: Copy of <i>Precision and Recall of GLOSS Estimators for Database Discovery</i>, purchased from https://ieeexplore.ieee.org/document/331726 • Ex. B: Purchase email receipt for text, <i>Proceedings of 3rd International Conference on Parallel and Distributed Information Systems</i>, 28-30 Sept. 1994
Ex. 1027	U.S. Patent Publ. No. 2010/0246797
Ex. 1028	U.S. Patent Publ. No. 2006/0253427
Ex. 1029	U.S. Patent No. 8,448,084
Ex. 1030	International Publ. No. WO 2011/139643
Ex. 1031	U.S. Patent Publ. No. 2013/0014258
Ex. 1032	Joint Claim Construction Chart in Civil Action 23-cv-00627
Ex. 1033	Docket Control Order in Civil Action 23-cv-00627
Ex. 1034	Docket for Judge Gilstrap's Cases Listed for September 22, 2025 Trial Date

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

A. Real Party-In-Interest

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

B. Related Matters

U.S. Patent No. 10,108,679 ('679 Patent) is asserted against Petitioner in *Rule 14, LLC v. UiPath, Inc.*, 2:23-cv-627 (E.D. Tex.) ("the Litigation"). U.S. Patent No. 9,229,977 (the '977 Patent) which is the parent of the '679 Patent, and U.S. Patent No. 11,048,712 (the '712 Patent) which is a descendant of the '977 Patent, are also being asserted against Petitioner in the Litigation. The '977 Patent and the '712 Patent are currently being challenged in IPR2024-001304 and IPR2024-01306, respectively. The '977 Patent was 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*, 3:24-cv-00097 (D. Nev.), which was voluntarily dismissed without prejudice.

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Please address all correspondence to lead and back-up counsel. Petitioner consents to email service as noted above and asks Patent Owner to do the same.

D. Standing

Petitioner certifies that the '679 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 1-20 (the "Challenged Claims") of the '679 Patent.

III. THE '679 PATENT OVERVIEW

The '679 Patent describes "a data mining system" in which "a query" is used for searching social media postings. Ex. 1001, 4:16-20; 4:31-58. A data source is "selected to be monitored" for updates if there is a "correlation" between the query and the results provided by such data source, *e.g.*, if the search results are "relevant" or "accurate." *Id.*, 4:59-61 and 6:57-64. The selected data sources are monitored for

updates matching the query, and when there is a match, “a data extractor extracts the data” which is analyzed to identify, *e.g.*, a “sentiment” expressed by a customer about a company’s product on social media. *Id.*, 4:62-5:2, 7:49-52 and 15:38-41.

The extractors “may be bots or crawlers” deployed on social media. *Id.*, 7:25-30. The number of bots or crawlers “deployed for a data source increases when activity on the data source increases” which “allows for on-demand scaling of resources and deployment of multiple extractors that may be processed in parallel.” *Id.*, 7:25-30, 14:10-12 and 14:54-65.

IV. PROSECUTION HISTORY OF THE ‘679 PATENT

In response to the first three office actions, the Applicant made amendments and arguments which failed to result in an allowance. See, Ex. 1002, 349-362; 462-475; 617-625. The Applicant responded to the last office action by amending claim 1 to include elements 1.6-1.9 (identified in Sections X(A)(1)(e)-(h) below). *Id.*, at 233-238. A Notice of Allowance issued thereafter.

V. EFFECTIVE FILING DATE OF THE CLAIMS OF THE ‘679 PATENT

The ‘679 Patent is a continuation-in-part of Appl. No. 13/928,313, filed June 26, 2013, which claimed priority to Provisional Appl. No. 61/679,024. Provisional Appl. No. 61/679,024 was a one-page marketing document that fails to support any

of the Challenged Claims. See, Ex. 1003, at 14; Ex. 1004, ¶34. Thus, the effective filing date of the Challenged Claims is no earlier than June 26, 2013.¹

VI. CLAIM CONSTRUCTION

Other than as noted below, the claims should generally be given their ordinary and customary meaning as understood by a POSITA.

A. “expand[ing]search terms of the query” [Claim 6]

This term should be interpreted as “applying a lexicon to add additional terms to the search query.” Ex. 1001, ‘679 Patent, 4:21-30; 6:37-49; 9:43-59. Patent Owner contends no construction is necessary. Ex. 1032, at 3. Since the prior art discloses a lexicographical analysis such as a semantic network that expands search terms of a query, the Board need not resolve this claim construction dispute. Ex. 1004, ¶35.

B. “extractors” [Claim 8]

This term should be interpreted as “applications that monitor and extract data from user-specified locations or sources of interest (e.g., data source).” Ex. 1001, ‘679 Patent, 4:65-5:2; 7:9-35. The user-specified locations or sources may be the data sources to which the original query is applied. Patent Owner contends no construction is necessary. Ex. 1032, at 3. Since the prior art discloses applications

¹ Petitioner does not concede that the claims of the '679 Patent are supported by Appl. No. 13/928,313, filed June 26, 2013.

that monitor and extract data from user-specified sources of interest, the Board need not resolve this claim construction dispute. Ex. 1004, ¶37.

C. “[establishing/establish] a... communication channel” [Claim 1, 11, 16]

This term should be interpreted as “set[ting] up a communication channel for later communication with a user or user device.” Ex. 1001, 5:6-21; 8:29-54. Patent Owner contends that no construction is necessary. Ex. 1032, at 3. Since the prior art discloses setting up a communication channel for later communication with a user, the Board need not resolve this claim construction dispute. Ex. 1004, ¶38.

D. “generat[e/ing], via an entity, a query based at least in part on a topic of interest” [Claims 1, 11 and 16]

The meaning of this term as used in the '679 Patent requires that the query be generated via an entity, meaning an organization, which would include a human user acting on behalf of the entity. Ex. 1001, Claim 10 (referring to “entity user”). In the Litigation, the parties dispute whether the claim *also* covers queries generated by a computer and, if so, whether the claim is indefinite when interpreted that way. Ex. 1032, at 4. Since the prior art discloses or renders obvious queries generated by an entity (including a human user acting on behalf of an entity), the Board need not resolve this claim construction dispute. Ex. 1004, ¶39.

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. Because the term undisputedly covers queries generated by an entity (including a human user acting on behalf of an entity) and would be rendered invalid under this Petition with that understanding, the Panel need not reach any Section 112(f) issues.

E. “entity” [Claims 1, 10-11, 16]

This term should be interpreted as “a separate organization such as businesses or police, not any user.” Ex. 1001, ‘679 Patent, at 6:13-18; Ex. 1002, 219-221, 223, 463. A human user can act on behalf of an “entity” but other users (not associated with the entity) are outside the scope of an “entity.” While Patent Owner contends that no construction of this term is necessary, the Patent Owner’s Infringement Contentions are consistent with Petitioner’s proposed construction. Ex. 1032, at 4; Ex. 1016, 15-32. Since the prior art discloses or renders obvious operation by a separate organization such as a business, the Board need not resolve this dispute. Ex. 1004, ¶40.

F. Terms Identified By Petitioner As Indefinite In The Litigation

As a result of Patent Owner's overly broad infringement positions in the Litigation, including as set forth in the Infringement Contentions, Petitioner contends that the scope of certain claim limitations (discussed below) is indefinite for the purpose of determining infringement in the Litigation. However, those indefiniteness arguments do not "render it logically impossible" to determine that the prior art satisfies the limitations in this proceeding. As explained in *Intel Corp. v. Qualcomm*, 21 F.4th 801, 813 (Fed. Cir. 2021):

[I]t is not always impossible to adjudicate a prior-art challenge, one way or the other, just because some aspect of a claim renders the claim indefinite. *See Samsung*, 948 F.3d at 1355 (noting that indefiniteness "does not necessarily preclude the Board from addressing the patentability of the claims on section 102 and 103 grounds"). The indefiniteness of a limitation... precludes a patentability determination only when the indefiniteness renders it logically impossible for the Board to reach such a decision.

Here, it is not logically impossible for the Board to reach a decision because each of the limitations covers at least some subject matter where the Petitioner and Patent Owner agree, and which is met by the prior art.

By analogy, while the precise boundary line dividing New York and New Jersey is disputed, it is undisputed that the City of Trenton (many miles south of the disputed border) is within New Jersey. Such is the case for each term discussed below. While the outer contours of the scope of the claim coverage is subject to

dispute in the Litigation, such indefiniteness does not “render it logically impossible” to adjudicate this case because a person of ordinary skill in the art (POSITA) would understand that there is subject matter (analogous to Trenton) within the disputed contours that is met by the prior art.

1. “determine[e/ing] an extraction rate for extracting the data, the extraction rate indicating an amount of the data that is extracted over a first time period” (Claims 1, 11 and 16)

The outer contours of this limitation are unclear because the ‘679 Patent does not, for example, clearly delineate between metrics that do and do not constitute an extraction rate. The ‘679 Patent does not clarify if the ratio of the quantity of data extracted over a given time divided by the volume of traffic analyzed during the same time is an “extraction rate.” Petitioner maintains that this term covers determining a quantity of data output by the extraction process over a period of time. Patent Owner agrees. Ex. 1016, 105-110; 453; 728; Ex. 1004, ¶43.

2. “determine[e/ing] a first processing rate for processing the extracted data with a number of parallel processors, the first processing rate indicating an amount of extracted data that is processed over a second time period” (Claims 1, 11 and 16)

The outer contours of this limitation are unclear because the ‘679 Patent does not clearly delineate between the types of data “processing” used and not used for determining “a first processing rate.” It is unclear whether processing the extracted data to identify duplicative entries would constitute “processing the extracted data”

for purposes of determining a first processing rate. Petitioner maintains that this term covers determining a quantity of extracted data analyzed over a second period of time to determine a sentiment. Patent Owner agrees. Ex. 1016, 110-115; 134; Ex. 1004, ¶44.

3. “[to] dynamically adjust the number of parallel processors for analyzing the extracted data based on the extraction rate to obtain a second processing rate that is greater than the first processing rate” (Claims 1, 11 and 16)

The outer contours of this limitation are unclear because the ‘679 Patent does not clearly delineate the specifics of how any “parallel processors” would be adjusted, or clearly delineate between arrangements that are and are not within the scope of “parallel processors.” Nonetheless, Petitioner maintains that this term covers dynamically adjusting “parallel processors” that are distinct processors operating in parallel. Ex. 1001, 25:61–64; 27:16–19; 28:24–27; Ex. 1004, ¶45.

4. “accuracy threshold[s]” (Claim 6)

The outer contours of this limitation are unclear because the ‘679 Patent does not clearly delineate between what thresholds of other metrics are within and not within the scope of “accuracy threshold[s].” It is unclear whether a threshold of a metric that measures the percentage of retrieved documents from the database that had one or more keywords included in the query, would constitute an “accuracy threshold[s].” Petitioner maintains that this term covers a threshold of a metric that

measures for a given database the percentage of retrieved documents that were actually relevant (not false positives) to a query. Ex. 1002, at 360-361; Ex. 1004, ¶46.

VII. LEVEL OF ORDINARY SKILL IN THE ART

A POSITA as of June 26, 2013 would have had a working knowledge of techniques for querying and monitoring data sources, and scaling processors based on load, as pertinent to the '679 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. 1004, ¶28.

VIII. PETITION PRIOR ART

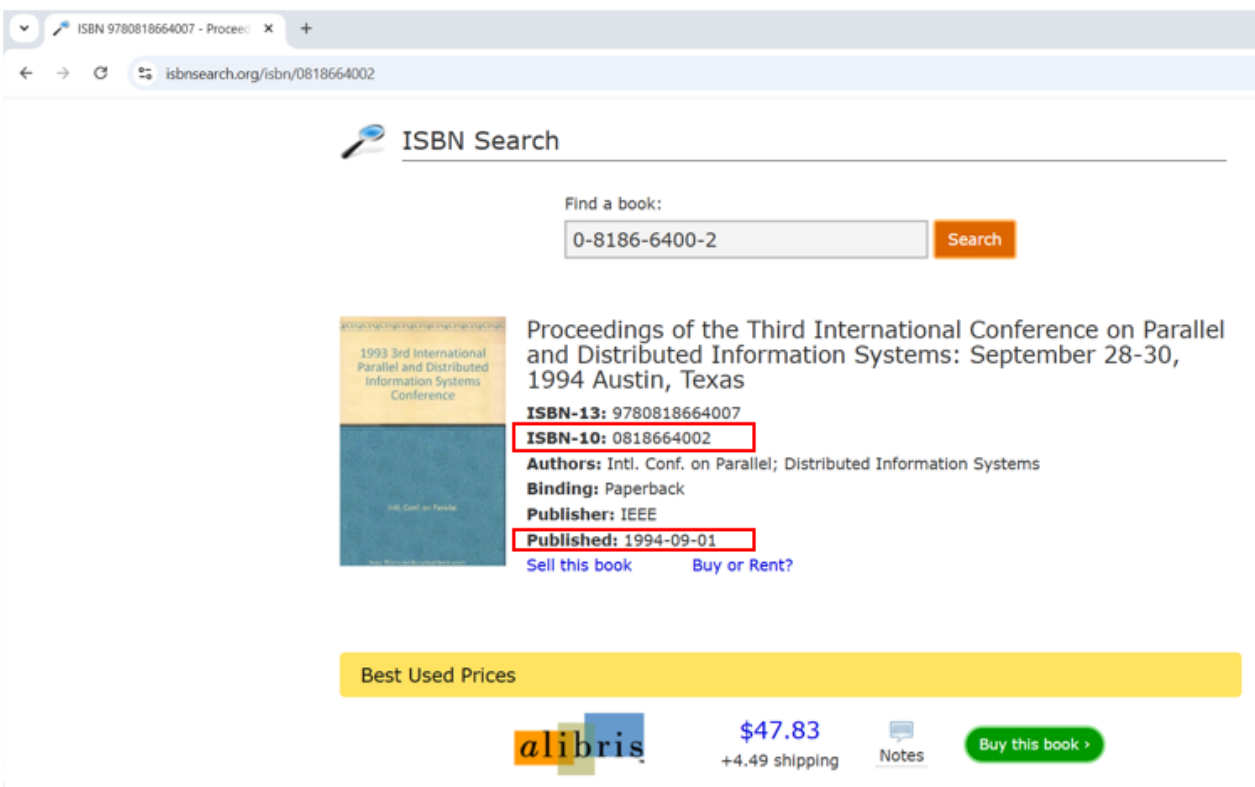
The priority dates of the references relied on herein predate June 26, 2013. The priority dates of two references are discussed below.

A. U.S. Patent 9,769,085 (Laribi)

Laribi (Ex. 1008) was filed on May 3, 2013, which predates June 26, 2013. Laribi claimed priority to Provisional Application 61/643,114, filed May 2, 2012 (Ex. 1009), and at least one claim of Laribi and aspects of Laribi relied on herein are supported by Laribi's Provisional Application. Ex. 1004, ¶47(c).

B. Gravano et al., *Precision and Recall of GLOSS Estimators for Database Discovery* (Gravano)

Gravano (Ex. 1015; Ex. 1026 (Ex. A)) is a printed publication, publicly available before the priority date of the '679 Patent. Gravano was published by the IEEE in "Proceedings of 3rd International Conference on Parallel and Distributed Information Systems," September 28-30, 1994 and catalogued under ISBN No. 0-8186-6400-2. Ex. 1004, ¶47(j); Exs. 1017; Ex. 1018.



Ex. 1017; Ex. 1025 (Exs. D & E). Excerpts of the text showing a copyright date of 1994 is attached as Ex. 1018 (see Ex. 1026, Ex. B).



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On December 8, 1998, Gravano was located by the European Patent Office and cited in the International Search Report (ISR) for International Application No. PCT/US98/18844:

INTERNATIONAL SEARCH REPORT		
		Int. Application No PCT/US 98/18844
C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
A	GRAVANO L ET AL: "Precision and recall of GIOSS estimators for database discovery" PROCEEDINGS OF THE THIRD INTERNATIONAL CONFERENCE ON PARALLEL AND DISTRIBUTED INFORMATION SYSTEMS (CAT. NO.94TH0668-4), PROCEEDINGS OF 3RD INTERNATIONAL CONFERENCE ON PARALLEL AND DISTRIBUTED INFORMATION SYSTEMS, AUSTIN, TX, USA, 28-30 SEPT. 1994, pages 103-106, XP002085758 ISBN 0-8186-6400-2, 1994, Los Alamitos, CA, USA, IEEE Comput. Soc. Press, USA see page 103, left-hand column, paragraph 1 - page 104, left-hand column, paragraph 3	1,10,15, 24,28
A	"PARCI ARCHITECTURE" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 38, no. 3, 1 March 1995, pages 13-18, XP000507963 see the whole document -----	1,10,15, 24,28

Ex. 1019, at 46. The ISR referenced Gravano by its ISBN number (green arrow), and an “XP” number (blue arrow) used by the EPO for cataloging references.



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Ex. 1020; Ex. 1025 (Exs. F-H). By 2002, Gravano was also available on the IEEE Xplore website:



Ex. 1021; Ex. 1025 (Exs. A-C). Further, Gravano was cited to the USPTO on March 25, 2005 during the prosecution of RE45752, and a copy of Gravano is part of the publicly available prosecution history thereof. *See* 37 CFR § 1.11; Ex. 1022, at 303-305; Ex. 1024 (Exs. A & B).

PTO/SB/08A (08-03)



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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				<i>Application Number</i>	11/027,585
				<i>Filing Date</i>	December 29, 2004
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				<i>Art Unit</i>	2171
				<i>Examiner Name</i>	Not Yet Assigned
<i>Attorney Docket Number</i>	017900-000720US				
Sheet	1	of	1		

U.S. PATENT DOCUMENTS+					
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	AA	GRAVANO, Luis et al.; "Precision and Recall of G/OSS Estimators for Database Discovery"; 1994, <u>Proceedings of the Third International Conference on Parallel and Distributed Information Systems</u> , IEEE Computer Society, pp. 103-106.	
	AB	GRAVANO, Luis et al.; "Precision and Recall of G/OSS Estimators for Database Discovery"; 1994, <u>Stanford University Technical Note No. STAN-CS-TN-94-10</u> , 17 pages.	

Before the '679 Patent priority date, Gravano was published, indexed and catalogued with both an ISBN number and an XP number, available on the IEEE database, and was not only "locatable" by interested persons, but had actually been found by such persons. Ex. 1004, ¶47(j).

IX. SUMMARY OF GROUNDS

Ground	Claim(s)	Combinations of References Rendering the Challenged Claims Invalid Under 35 U.S.C. §103
1	1, 2, 8-12, 15-16 and 19-20	Safford, Chen and Laribi
2	3, 13, 17	Safford, Chen and Laribi
3	4, 14, 18	Safford, Chen, Laribi and Siebel
4	6-7	Safford, Chen, Laribi, Schultz and Gravano
5	5	Safford, Chen, Laribi, Schultz and Moulinier
6	1, 2, 8-12, 15-16 and 19-20	Safford, Chen and Masters
7	3, 13, 17	Safford, Chen, and Masters
8	4, 14, 18	Safford, Chen, Masters and Siebel
9	6-7	Safford, Chen, Masters, Schultz and Gravano
10	5	Safford, Chen, Masters, Schultz and Moulinier
11	1, 2, 8-12, 15-16 and 19-20	Heath, Randall and Laribi
12	3, 13, 17	Heath, Randall, Laribi and Chen
13	4, 14, 18	Heath, Randall, Laribi and Siebel
14	6-7	Heath, Randall, Laribi, Schultz and Gravano
15	5	Heath, Randall, Laribi, Schultz and Moulinier

X. ALL CHALLENGED CLAIMS ARE OBVIOUS

A. Ground 1 - Claims 1, 2, 8-12, 15-16 and 19-20 Are Obvious Over Safford, Chen and Laribi

1. Claim 1

All elements of Claim 1 are met by Safford, Chen and Laribi. Ex. 1004, ¶48.

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

To the extent the preamble is limiting, Safford discloses techniques for analyzing social media accounts (“data”) associated with a particular entity. Ex. 1006, 3:14-18 (discussing “analyzing the social signals...”); Ex. 1004, ¶49.

b. Element 1.2 - “generating, by an entity, a query based at least in part on a topic of interest”

Safford teaches techniques for identifying social media accounts associated with a company or brand, mapping to a “topic of interest.” Ex. 1006, 3:28-36; 6:3-26. Safford identifies social media accounts associated with a company or brand by comparing keywords in messages posted on the social media accounts to “a topic cluster of keywords... derived from the social signals generated by the company account that markets the brand.” *Id.*, 15:39-41; Ex. 1004, ¶50. In Safford, “messages” refer to “any communications exchanged via a social network... and any content or information that may be associated with the communication. Ex. 1006, 3:48-54. Messages may comprise posts, blogs, Tweets, re-tweets, sentiment indicators, emails, text messages, videos, wall posts, comments, photos, links, or the like, or any combination thereof.” *Id.* The “brand” (or the name of the company that markets the brand or a specific product name) in Safford is “a topic of interest.” Ex. 1004, ¶50.

In the '679 Patent, a query comprises one or more key words or search terms. Ex. 1001, 7:22-23 (referring to “the key words of the query”); 7:53-55; 24:1-3.² Therefore, Safford’s “topic cluster of keywords” for a brand is a “query based at least in part on a topic of interest.” A POSITA would have understood such a cluster of key words to include the name of the name brand itself as a keyword, as inclusion of the name of the brand as one of the keywords would be necessary to identify posts mentioning the brand. Ex. 1004, ¶51.

Alternatively, it would have been obvious based on Chen to include the name of the brand itself as a keyword to effectively identify posts discussing the brand. Ex. 1011, 6:32-34 (“for a set of brands, the query should include all the brand names and possible variations of those brand names.”) Ex. 1004, ¶52. Chen and Safford both related to methods for monitoring online sentiments associated with a particular product/brand. Ex. 1006, 5:20-23; Ex. 1011, 5:11-17. A POSITA would have been motivated to incorporate Chen’s use of the name of the brand as a keyword in Safford’s cluster of keywords. Ex. 1004, ¶52.

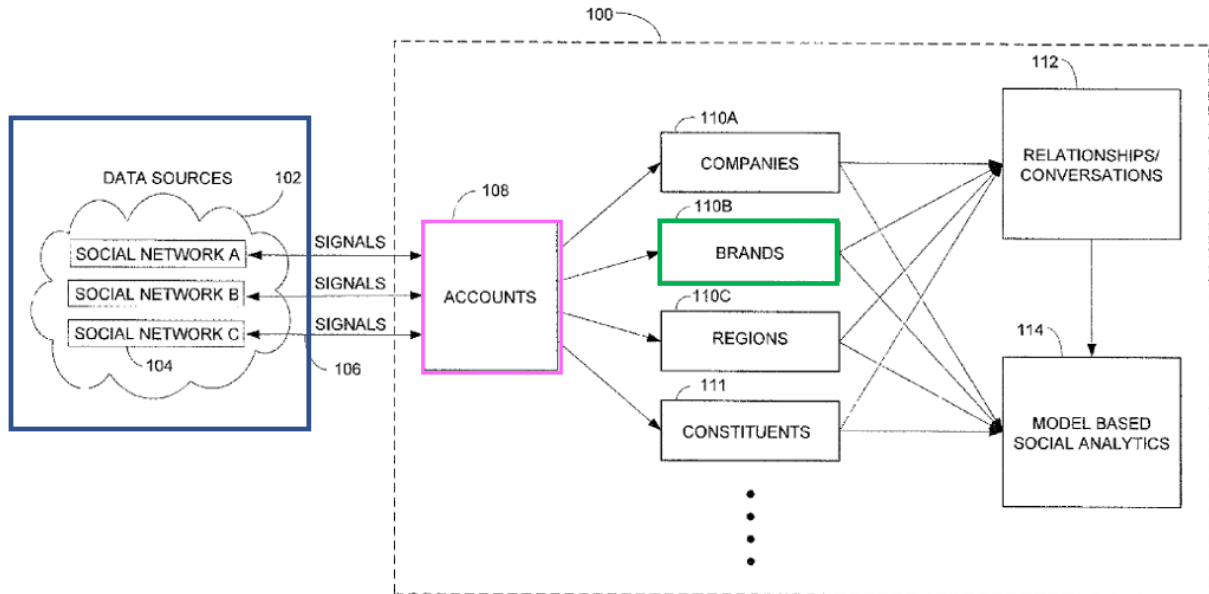
² Safford states that “a topic cluster of keywords may be derived from the social signals generated by the company account that markets the brand.” Ex. 1006, 15:37-41. It would have been obvious for the keywords in Safford to have been derived from the social signals by a person, such as an employee of the company. Ex. 1004, ¶51, n. 2.

With respect to the query being generated “by an entity,” Safford contemplates a platform that analyzes social media information on behalf of a plurality of companies. Ex. 1006, 3:33-36. It would have been obvious for a company (e.g., “an entity”) to implement Safford’s platform internally to eliminate the need to engage an outside vendor to analyze social media information associated with the company. Ex. 1004, ¶53.

c. Element 1.3 - “executing the query on a plurality of data sources”

Each social media account that is probed by Safford maps to a “data source.” Ex. 1001, 5:62-64; 15:37-41; 18:17-23; Ex. 1004, ¶54.

Safford (alone or combined with Chen) compares keywords that include the name of a brand (“executing a query”) against social media accounts (“a plurality of data sources”) throughout social networks to identify particular social media accounts that refer to the brand (“topic of interest.”) Ex. 1006, 3:19-24, 28-36 and 55-67; Ex. 1004, ¶55. The process in Figure 2 of Safford is annotated below:



In Figure 2, “data sources 102 [blue box] may comprise one or more social networks 104, such as Twitter®, Facebook®...” *Id.*, 3:19-24. By comparing keywords to “posts, blogs, Tweets,... or the like” in the data sources 102 [blue box], Safford identifies particular social media accounts 108 [pink box] that refer to a particular brand 110 [green box]. *Id.*, 3:48-67. Safford identifies social media accounts associated with a particular company or brand by comparing keywords in messages posted on the social media account to “a topic cluster of keywords” associated with the brand. *Id.*, 6:22-28 (“[A] user of an account may post or send a message that discusses a particular company, brand, etc. The analytic system may compare keywords in the message with keyword topic clusters associated with the company and/or brand”) and 15:22-41. Safford’s comparing of keywords associated with a company/brand (executing the query) against content posted on social media

accounts (plurality of data sources) maps to “executing the query on a plurality of data sources.” Ex. 1004, ¶56.

- d. Element 1.4 - “selecting, by the entity, a data source from the plurality of data sources for monitoring based on a correlation between the data source and the topic of interest, the correlation determined based on results of the executed query”**

Within the social media accounts associated with a company/brand, Safford identifies for periodic monitoring social media accounts (data sources) that correspond to “a source, influencer or advocate for the company,” mapping to “selecting, by the entity, a data source from the plurality of data sources for monitoring.” Ex. 1006, 12:15-20. Ex. 1004, ¶57.

Safford teaches, alone or with Chen, selection of social media accounts that correspond to a source, influencer or advocate for the company (data sources) based on a correlation between the data source (the social media account of “an advocate,” “a detractor” or “an influencer”) and the topic of interest (company/brand), where the correlation is determined based on results of the executed query (whether the social media account has posts with keywords correlated to or matching the identity of the company/brand). Ex. 1004, ¶58.

Regarding “a correlation between the data source and the topic of interest,” the ‘679 Patent teaches that a social media post is determined to be relevant when

there is “data on the data source that match the query and/or the keywords of the query.” Ex. 1001, 7:53-55. Selecting a social media account (data source) for monitoring based on whether the social media account includes keywords associated with a company/brand (topic of interest) maps to “selecting... a data source from the plurality of data sources for monitoring based on a correlation between the data source and the topic of interest.” Like the ‘679 Patent, one criterion used by Safford to select social media accounts for monitoring includes comparing keywords (corresponding to “the topic of interest”) in messages posted on social media accounts to a topic cluster of keywords associated with the company/brand. Safford performs “selecting... a data source from the plurality of data sources for monitoring” based at least in part “on a correlation between the data source and the topic of interest.” Ex. 1004, ¶59.

Safford teaches additional criteria (beyond a correlation between the data source and the topic of interest)³ are used for determining whether to select a social media account for monitoring, including use of a sentiment analysis to determine

³ Claim 1 of the ‘679 Patent is open-ended, and encompasses systems like Safford that perform “selecting... a data source from the plurality of data sources for monitoring” based on criteria that include both “a correlation between the data source and the topic of interest” and further criteria such as where the data source corresponds to “an advocate,” “a detractor” or “an influencer” of the company or brand. Ex. 1004, ¶60, fn. 3.

whether a given social media account corresponds to “an advocate,” “a detractor” or “an influencer” with respect to a company/brand. Ex. 1006, 16:41-62. Once such a social media account is identified, Safford deploys a “collector” to start “periodically polling the account. *Id.*, 6:60-64; Ex. 1004, ¶60.

- e. **Element 1.5 - “monitoring, based on a set schedule, the data source for matches to the query to extract data from the data source when at least... newly added data matches the query”**

Element 1.6 - “extracting data from the data source when at least... the newly added data matches the query”

Safford teaches “collectors” that “may be automatically configured to start periodically polling” the selected accounts. Ex. 1006, 12:18-20. “Periodically polling” the selected social media accounts in Safford teaches or renders obvious “monitoring, based on a set schedule, the [selected] data source” in the claim. Safford’s “collectors” that periodically poll the identified social network accounts function to collect (or “extract”) data resulting from the period polling. Ex. 1006, at 12:15-36; Ex. 1004, ¶61.

A POSITA would have understood that Safford (either alone or with Chen) taught “collectors” that periodically poll specific social media accounts representing, e.g., “an advocate,” “a detractor” or “an influencer” of the company/brand, including “extracting” data from messages posted on the social accounts having, among other

things, keywords (query) matching the company/brand name. Safford (either alone or with Chen) teach or render obvious, “monitoring... the data source for matches to the query... when... newly added data matches the query” and “extracting data from the data source when... the newly added data matches the query.” Ex. 1004, ¶62.

f. Element 1.7 - “determining an extraction rate for extracting the data, the extraction rate indicating an amount of the data that is extracted over a first time period”

As noted, Safford, alone or with Chen, monitors social media accounts associated with a company/brand and extracts information from them when new messages mentioning the company/brand are posted to the accounts. *See*, discussion of Elements 1.5 and 1.6, *supra*. Safford monitors the rate at which new messages associated with a company/brand are generated. Ex. 1006, 32:37-40. “Determining an extraction rate for extracting the data” would have been obvious based on Safford and Laribi as explained below. Ex. 1004, ¶63.

Safford discloses two interrelated processes implemented in a “cloud-based computing and storage” environment, the extraction and subsequent analysis of information from social media accounts. Ex. 1006, 9:32-34 (discussing “cloud-based environment”); 13:7-12 (“Collectors 320 may also extract metadata associated with the signals. For example, a Tweet message may contain a mention tag identifying the new phone. The collectors extract and store the mention tag with the Tweet

message. *The analytic system* may use the mention tag to associate the signal with a contextual dimension...”). Generally, Figure 13 of Safford illustrates extraction of data and Figure 18 of Safford describes the subsequent analysis of that data. A POSITA would have understood that Safford’s analysis process was dependent on Safford’s extraction process, because Safford can only analyze data that was previously extracted. Ex. 1004, ¶64.

Laribi teaches a “performance monitoring service” that monitored performance metrics of “data collection” applications as well as “data analysis” applications in a cloud-based environment. *See* Ex. 1008, Abstract; 1:21-27; 11:32-35; *see also, Id.*, 12:14-16; 13:7-24. Laribi taught monitoring such performance metrics to provision or deprovision instances of an application. *Id.*, 1:31-46, 1:51-2:2; 2:7-10; Both Safford and Laribi are directed to data extraction and analysis in a cloud-based environment. Ex. 1004, ¶65.

Laribi teaches monitoring applications based on load. Ex. 1008, 2:19-23 A POSITA would have understood that the extracted data in Safford corresponded to the load on Safford’s subsequent data analysis process. Ex. 1004, ¶66.

In view of Laribi, a POSITA would have been motivated to monitor the load on Safford’s data analysis process (the load corresponding to the rate of extracted data being provided to such data analysis process) for provisioning additional instances of Safford’s data analysis application at times when the rate of extracted

data (or load) was high, and deprovision instances of Safford's data analysis application when the rate of extracted data (or load) was low to conserve resources and/or power. Ex. 1008, 58:18-44, 61:34-43; Ex. 1004, ¶67. As explained in Laribi:

In one embodiment of a method of *adaptive* application provisioning, an appliance... may monitor... server or virtual server load,... An administrator may set a policy identifying a first threshold, such as 80%, above which additional machines may be provisioned... Similarly, the administrator may set a second threshold, such as 20%, below which the number of machines may be reduced Ex. 1008, 58:18-34 (emphasis added).

* * *

...the above systems and methods may be used to reduce power requirements... Shutting down these machines may allow for conservation of energy when servers are not needed.... *Id.*, 61:34-42 (emphasis added).

Safford recognized that the rate at which new messages associated with a company/brand are generated will vary (Ex. 1006, 32:37-40), and that, upon brand sentiment falling below a threshold, a message would be sent to a manager so that the manager could *launch a social media campaign* to address the sentiment drop. The message would also include a prediction of how much the overall *signal (message) count was predicted to increase*. Ex. 1006, 33:31-45. Safford taught to expect an increase in the number of messages being generated upon a sharp change in sentiment. Ex. 1004, ¶68.

By June 2013, companies understood the need to respond rapidly to issues arising on social media relating to their brands. Ex. 1004, ¶69 (citing Ex. 1027, ¶[0021]). A company/brand would have been motivated to quickly analyze new messages being generated on social media so that issues such as a sharp decline in sentiment could be addressed rapidly. A POSITA would therefore have been motivated to deploy Safford's system using Laribi's techniques which allowed the platform to scale up its capacity to analyze messages when the generation (and extraction) rate of such messages was high, and scale down such capacity when the message generation (and extraction) rate was slow to conserve computer resources and/or power, as taught in Laribi. Ex. 1004, ¶¶69-70; Ex. 1008, 58:18-44, 61:34-61. It would have been obvious in view of Laribi to determine "an extraction rate for extracting the data, the extraction rate indicating an amount of the data that is extracted over a first time period" in Safford, so as to monitor the load on Safford's subsequent data analysis process for the purpose of adaptively provisioning or deprovisioning a number of instances of Safford's data analysis application. Ex. 1004, ¶¶69-70.

- g. Element 1.8 - "determining a first processing rate for processing the extracted data with a number of parallel processors, the first processing rate indicating an amount of extracted data that is processed over a second time period"**

Laribi teaches provisioning/deprovisioning instances of an application based on multiple metrics. Ex. 1008, 1:60-62. Laribi also teaches that its “performance monitoring service” monitors performance metrics of both “data collection” and “data analysis” applications. *Id.*, 11:32-35. A POSITA would have understood that monitoring performance of a data analysis application includes monitoring the rate of data processed by the application. In view of Laribi, it would have been obvious to monitor the data processing rate of Safford’s data analysis (or processing) application and adaptively provision instances thereof to ensure that the data processing rate of Safford’s data analysis application was sufficient to timely process data being provided thereto by Safford’s data collection (or extraction) process. Ex. 1004, ¶71.

As explained below in connection with Element 1.9, the “second time period” in the claim corresponds to a time when Safford’s data analysis application is performing at a processing rate (corresponding to the “first processing rate” in the claim) that is insufficient to timely analyze the load of extracted data being provided to Safford’s data analysis application by Safford’s data collection (extraction) operation. Ex. 1004, ¶72. In Figure 37 of Safford, reproduced annotated below, during Monday and Tuesday, the signal count remained below 4.5 (red line) and, accordingly, an operator of the Safford’s platform would deploy sufficient resources to analyze a signal count of 4.5 (corresponding to the “first processing rate” in the

claim) but would not deploy excess resources as doing so would be a waste of resources and power, as taught in Larbi. Ex. 1008, 61:34-42; Ex. 1004, ¶72.

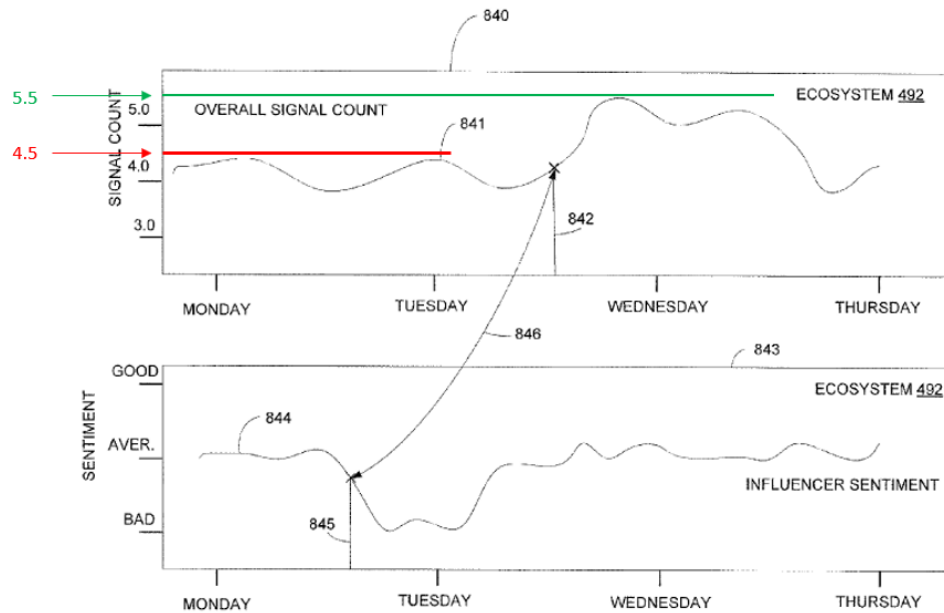


FIG. 37

As shown, there is a rise in the signal count to about 5.5 by Wednesday (green line) coinciding with a drop in sentiment the previous day. At that point, the resources previously deployed to analyze a signal count of 4.5 (such resources operating at the claimed “first processing rate”) would be insufficient to timely analyze the load of extracted data being provided to Safford’s data analysis application by Safford’s data collection (extraction) operation given the increased signal count from 4.5 to 5.5. Ex. 1004, ¶72.

Laribi teaches that, when there are multiple instances of an application, each application can run in parallel on a separate processor. Ex. 1008, 17:6-15 and 39:1-4. In view of Laribi, it would have been obvious to implement Safford’s data

analysis process by deploying multiple instances of the application on parallel processors which scale as the number of applications scale. Ex. 1004, ¶73.

h. Element 1.9 “dynamically adjusting the number of parallel processors for analyzing the extracted data based on the extraction rate to obtain a second processing rate that is greater than the first processing rate”

In view of Laribi, a POSITA would have been motivated to dynamically⁴ provision additional instances of Safford’s data analysis application on parallel processors when Safford’s data analysis application was performing at a processing rate (the “first processing rate”) that was insufficient to timely analyze the load of extracted data being provided to Safford’s data analysis application by Safford’s data extraction operation. Ex. 1004, ¶74.

Referring to Safford Figure 37 (reproduced again below), there was a rise in the signal count to about 5.5 by Wednesday (green line), coinciding with a drop in sentiment the previous day. Ex. 1004, ¶75.

⁴ Petitioner reserves the right to assert that “dynamically” as used in the claims of the '679 Patent is indefinite in the Litigation.

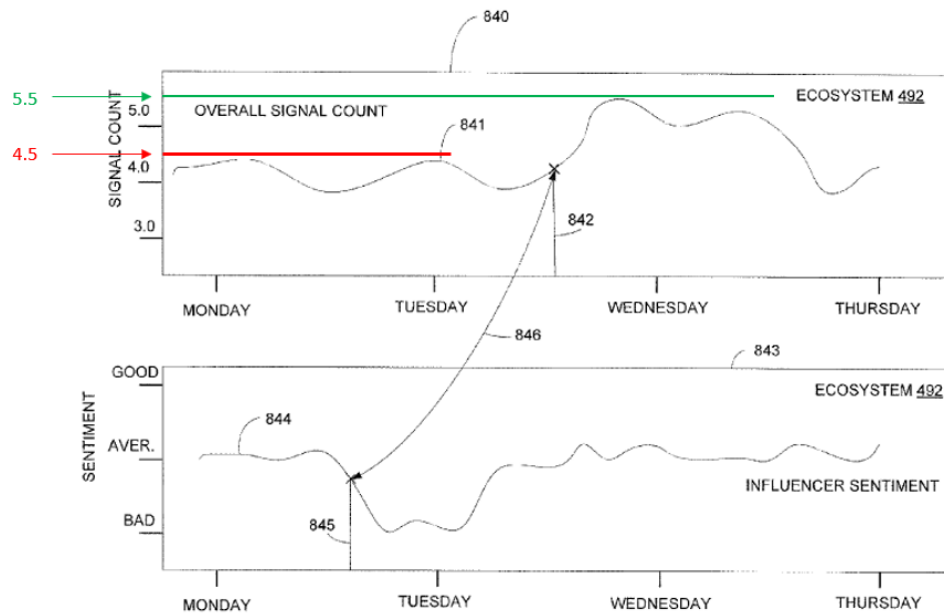


FIG. 37

Given the motivation to rapidly address issues arising on social media, once the signal count increased to 5.5, the operator of Safford's platform would have been motivated to extract the messages at an increased rate. To meet this design goal, a POSITA would have looked to Laribi's techniques for provisioning additional instances of the data extraction application when the rate of data generated on social media was high (to ensure that the messages being generated were extracted in a timely manner), and deprovisioning instances of the application when the rate of data generated was low to conserve resources and/or power. Ex. 1008, 58:18-44, 61:34-43; Ex. 1004, ¶76.

When the extraction rate in Safford/Laribi combination increased to match a signal count of 5.5, the data analysis resources previously deployed to analyze messages extracted at a rate corresponding to a signal count of 4.5 would be

insufficient to timely analyze the load of extracted data being provided. Given the motivation to rapidly address issues arising on social media, the company would have been motivated to analyze incoming messages at an increased rate to facilitate a rapid response on social media. Ex. 1006, 33:31-45. To meet this design goal, a POSITA would have looked to Laribi's techniques to provision additional instances of Safford's data analysis application when the rate of data extracted was high (e.g., an overall signal count of 5.5), and to dep provision instances of Safford's data analysis application when the rate of data being extracted was low (e.g., an overall signal count of 4.5) to conserve resources and/or power. Ex. 1008, 58:18-44, 61:34-43; Ex. 1004, ¶77.

Subsequent to provisioning additional instances of Safford's data analysis application when the rate of data extracted from social media was high (e.g., an overall signal count of 5.5, (which correlates to "dynamically adjusting the number of parallel processors for analyzing the extracted data based on the extraction rate"), the Safford/Laribi system will achieve a faster data analysis processing rate (or "second processing rate") that is greater than "the first processing rate" to, e.g., timely analyze an overall signal count of 5.5. Ex. 1008, 1:60-62, 11:32-35, 58:18-44, 61:34-43; Ex. 1004, ¶78.

i. Element 1.10 - “analyzing, with the parallel processors, the extracted data to determine at least one of a sentiment...”

Safford teaches analyzing an extracted social media post or account to assign a “sentiment score” to the social media post or account. Ex. 1006, 8:43-46, 9:3-5, 16:12-14 and 16:41-45. In the Safford/Laribi system discussed in connection with Elements 1.8 and 1.9 above, the analysis is performed on parallel processors. Ex. 1008, 17:6-11; Ex. 1004, ¶79.

j. Element 1.11 - “establishing a two-way communication channel, between at least the entity that selected the data source for monitoring and a user device of a user that provided the data to the data source, based on the analysis of the extracted data”

Safford’s system classifies certain social media accounts that have been associated with a company into “advocates” or “influencers” based on the analysis of the extracted data. Ex. 1006, 19:58-20:6. Safford also teaches that “a company can allocate personnel to interact with important advocate accounts” and influencer accounts. *Id.*, 20:14-15; 20:20-28 (“[t]he coffee company may assign more personnel to the influencer account 111D in an attempt to convert the influencer into an advocate 111A.”); Ex. 1004, ¶80.

A POSITA would have understood that “interact[ing] with important advocate accounts” and “influencers” in Safford would have included “establishing a two-

way communication channel” between the company/brand and the advocate or influencer (in either case, the “user that provided the data to the data source”) because such a communications channel would have been required to exchange messages or posts between the company/brand and the advocate or influencer on the social media platform hosting the advocate or influencer, and/or using email or texts. *See* Ex. 1001, 5:16-17 (message board and email as examples of communication channels). Social media platforms (e.g., Twitter discussed in Safford) had direct messaging functionality that provided an established communication channel through which one user directly communicated with another user. Ex. 1029, 14:39-43; Ex. 1030 ¶[0100]; Ex. 1031 ¶¶[0025]-[0026]. It would have been obvious for the company/brand to communicate with the advocate or influencer via, e.g., email, texts, a message board and/or direct messaging on social media since the advocate or influencer is known to be reachable on social media. Ex. 1004, ¶81.

The claimed “entity that selected the data source for monitoring” maps to, e.g., the “coffee company” disclosed in the example (discussed above) described in Safford. Ex. 1006, 20:20-28. In Safford, the platform performs identification of the advocate/influencer on behalf of the coffee company, and then coffee company assigns personnel to communicate with the advocate account. It would have been obvious for the coffee company to implement Safford’s platform internally, in which case the “two-way communication channel” would be between “the entity (coffee

company) that selected the data source (advocate account) for monitoring and a user device of a user (owner of the advocate/influencer account) that provided the data to the data source.” Ex. 1004, ¶82.

k. Element 1.12 - “transmitting, from the entity via the two-way communication channel, a first message directed to the user device based on the analysis of the extracted data” and

Element 1.13 - “receiving, from the user device via the two-way communication channel, a second message in response to the first message directed to the user device”

A POSITA would have understood that “interact[ing] with important advocate accounts” or “attempt[ing] to convert the influencer into an advocate” in Safford would have included transmitting messages to, and receiving responses from, the advocate/influencer via the two-way communication channel (e.g., the social media platform). Ex. 1006, 20:14-15, 20:20-28. It would have been obvious to interact with advocates and influencers in Safford using a back and forth in which the company/brand reached out to the advocate/influencer (“transmitting... a first message to the user device”) and the advocate/influencer responded with feedback (“receiving... a second message in response to the first message). The company/brand would have been motivated to receive such feedback, for example, as part of the launching of “a social media campaign... to address the issues associated with the sentiment drop” (Ex. 1006, 33:31-45) and/or in order to better

service its customer base and build better relationships with advocates/influencers. Ex. 1004, ¶83.

Claim 1 is obvious over Safford, Chen and Laribi. Ex. 1004, ¶84.

2. Claims 11 and 16

The additional limitations of Claim 11 (“a memory unit” and “at least one processor... configured” to perform the recited functions), and Claim 16 (“a non-transitory computer-readable medium having program code recorded thereon” to perform recited functions), are met by Safford. Ex. 1006, 39:14-25. Claims 11 and 16 are obvious over Safford, Chen and Laribi for the reasons discussed with respect to claim 1. Ex. 1004, ¶85.

3. Claims 2 and 12 - “visualizing the extracted data”

Figure 32 of Safford “depicts an example visualization of a Social Business Graph (SBG) 760 identifying the strength of constituent accounts for a company... The circles on the graph represent the constituent accounts, such as... advocate accounts (A), influencer accounts (I), and detractor accounts (D).” Ex. 1006, 29:30-39 (emphasis added). The visualized constituent accounts reflect the “extracted data.” *Id.*, 19:58-60. Figures 31 and 33-38 depict other examples where Safford visualizes the extracted data. Claims 2 and 12 are obvious over Safford, Chen and Laribi. Ex. 1004, ¶86.

4. Claim 8 - “the monitoring comprises deploying extractors to the data source, a number of extractors based at least in part on a traffic volume of the data source”

Laribi discloses a method for automatically scaling a number of instances of an application based on metrics and a threshold. In Laribi, the metric is monitored with respect to the threshold to provision or deprovision instances of the application. Ex. 1008, 1:31-46, 1:51-2:2 and 2:7-10. Among other metrics used for scaling instances of an application, Laribi teaches “monitoring... one or more metrics identifying a load across the plurality of instances of the application.” *Id.*, 2:18-20. In Safford, the load on the extraction process (performed by “collectors”) corresponds to the volume of traffic from which data is to be collected. In view of Laribi, it would have been obvious to scale the number of instances of the Safford’s collection application (each of which monitors and extracts data from source(s) of interest) based on the volume of traffic, in order to dynamically adjust the number of instances of the application being deployed “based at least in part on a traffic volume of the data source.” A POSITA would have been motivated to dynamically adjust the number of instances of the collectors being deployed so as to match the extraction capacity of number of instances to the current traffic load, in order to ensure timely extraction of the data. Claim 8 is obvious over Safford, Chen and Laribi. Ex. 1004, ¶87.

5. Claims 9, 15 and 20 - “in which the two-way communication channel comprises at least one of... social media”

As explained in connection with Element 1.11 above, Safford teaches or renders obvious use of social media as “the two-way communication channel.” Claims 9, 15 and 20 are obvious over Safford, Chen and Laribi. Ex. 1004, ¶88.

6. Claim 10

a. Element 10.1 - “further comprising analyzing, by an entity user corresponding to the entity, the results of the query in view of the topic of interest and a sub-topic of interest”

As explained in connection with Element 1.2 above, in Safford the “topic” maps to a “brand or company.” In Safford, the social media account of a specific “advocate” of the brand or company maps to “a sub-topic of interest.” Ex. 1006, 16:41-64, 12:15-20, and Figure 31; Ex. 1004, ¶89.

b. Element 10.2 - “determining, by the entity user, the correlation between the data source and the topic of interest based on the analysis of the results of the query”

As explained in connection with Element 1.4 above, Safford alone or with Chen teaches selecting data sources (specific social media accounts related to the company/brand) based on a correlation between the data source and the topic of interest (based on whether messages posted on the social accounts have keywords

matching the company/brand). Claim 10 is obvious over Safford, Chen and Laribi. Ex. 1004, ¶90.

7. Claim 19 - “the plurality of data sources are predefined”

As explained in connection with Elements 1.3 and 1.4 above, each social media account probed by Safford corresponds to one of a “plurality of data sources,” and based on probing, Safford identifies specific social media accounts for monitoring. Safford discloses “predefining” social media accounts to be probed. Safford discloses that “[a]ccounts 108 and signals 106 may be associated with contextual dimensions, such as companies 110A” and “[v]alues of contextual dimensions 110 may be identified *a priori* or...” Ex. 1006, 3:55-62. It would have been obvious to predefine a list of social media accounts to be probed before beginning the probing process so that the probing tasks could be efficiently divided in advance amongst the computer resources performing the probing. Claim 19 is obvious over Safford, Chen and Laribi. Ex. 1004, ¶91.

B. Ground 2 - Claims 3, 13 and 17 Are Obvious Over Safford, Chen, Laribi and Chen

As explained in Sections X(A)(1) and X((A)(2), Claims 1, 11 and 16 are obvious over Safford, Chen and Laribi. Claims 3, 13, and 17 depend from Claims 1, 11 and 16, respectively, and contain substantively identical limitations. The analysis below of Claim 3 also applies to Claims 13 and 17. Ex. 1004, ¶92.

1. Element 3.1 - “refining search terms of the query based at least in part on the executed query, and in which the monitoring is performed to monitor for matches to a refined query”

Chen taught refinement of search terms, disclosing methods for monitoring electronic media and alerting an organization about negative information posted with respect to the organization’s brand, that broad queries concerning a brand may not be “extremely precise,” and suggested that a generic brand name such as “‘Dove’® could be *refined* as ‘*Dove*’ ® *within 10 words of ‘chocolate,*’” in order to eliminate “irrelevant information.” Ex. 1011, Title, 1:33-39, and 5:11-16 and 6:39-41 (emphasis added). Safford and Chen are both directed to methods for monitoring online activity pertaining to a particular brand. A POSITA would have motivated to apply Chen’s query refinement techniques to Safford’s cluster of keywords in order to reduce irrelevant information identified by the keywords, and would have had a reasonable expectation of success with respect to the combination. The concept of refining search queries was well known by the 2013 priority date. A POSITA would have known to (and been motivated to) modify (or “refine”) an original query used in Safford if the query yielded too many irrelevant results or returned results different from what the user intended. Claims 3, 13 and 17 are obvious over Safford, Chen and Laribi. Ex. 1004, ¶¶93-95 (citing Ex. 1028, ¶[0004]).

C. Ground 3 - Claims 4, 14 and 18 Obvious Over Safford, Chen and Laribi In View Of Seibel

As explained in Sections X(A)(1) and X(A)(2), Claims 1, 11 and 16 are obvious over Safford, Chen and Laribi. Claims 4, 14, and 18 depend from Claims 1, 11 and 16, respectively, and contain substantively identical limitations. The analysis below of Claim 4 also applies to Claims 14 and 18. Ex. 1004, ¶96.

1. Element 4.1 - “the plurality of data sources include open-source data sources that are publically available and closed-source data sources that are not publically accessible”

Seibel teaches a text mining system for business intelligence, based on internal corporate documents “such as emails” and “customer support notes.” Ex. 1013, 9:28-29 and 5:33-35. It would have been obvious to apply Safford’s techniques for determining sentiment to a combination of social media channels (mapping to “open-source data”) and internal corporate documents “such as emails” and “customer support notes” (mapping to “closed-source data sources”) as taught in Siebel. See, e.g., Ex. 1006, 8:43-46, 9:3-5, 16:12-14, 16:41-45. Ex. 1004, ¶97.

Safford is not limited to social media accounts, as Safford’s techniques were applicable to data sources comprising “any computing system... that generates or aggregates messages.” Ex. 1006, 3:25-27. The internal corporate databases used for text mining of “emails” and “customer support notes” in Siebel (Ex. 1013, 9:28-29,

5:33-35) are computer systems that generate or aggregate messages as disclosed in Safford. Ex. 1006, 3:25-27; Ex. 1004, ¶98.

A POSITA would have been motivated to integrate the internal data sources disclosed in Siebel with Safford's social media data sources for purposes of both the initial query and ongoing monitoring steps recited in the independent claims in order to, e.g., expand the scope of data being analyzed and more accurately quantify sentiment based on a combination of social media posts from a particular user (e.g., an advocate) and internal corporate documents "such as emails" and "customer support notes" representing private communications between the company and such user. Siebel taught the derivation of business intelligence from multiple sources including "web-based discussion forums" and a corporation's "internal documents." Ex. 1013, 5:8, 5:33; 9:18-30. The same keywords (query) executed against the social media posts in Safford would be applied to the internal corporate data sources identified in Siebel. It would have been obvious that when a user on social media is identified as an advocate and selected for monitoring, future social media posts as well as future emails from the user or future support notes associated with the same user would be selected in the Safford/Chen/Laribi/Seibel system for ongoing monitoring. Claims 4, 14 and 18 are obvious over Safford, Chen, Laribi and Seibel. Ex. 1004, ¶99.

D. Ground 4 - Claims 6-7 Are Obvious Over Safford, Chen, Laribi, Schultz And Gravano

1. Claim 6

As explained in Section X(A)(1), Claim 1 is obvious over Safford, Chen and Laribi. Claim 6 depends from Claim 1. The additional limitations of Claim 6 are obvious over Safford and Schultz. Ex. 1004, ¶100.

a. Element 6.1 - “expanding search terms of the query”

Schultz taught expansion of query terms using a semantic network. Ex. 1012, Abstract. Safford and Schultz are both directed to search query technology. It would have been obvious to apply Schultz’s query expansion techniques to Safford’s “topic cluster of keywords” in order to generate a more robust cluster of keywords. Ex. 1004, ¶101.

b. Element 6.2 - “the data source is selected when the correlation is greater than or equal to an accuracy threshold”

In one embodiment, Safford determined if the number of signals generated by the Twitter® account is above a first threshold and chose not to monitor the account if the number of signals is below the first threshold. Ex. 1006, 16:27-34. Safford selects a data source (e.g, a particular social media account) for monitoring when the number of signals matching the keywords (the correlation) exceeds a first threshold (accuracy threshold). Claim 6 would have been obvious over Safford, Chen, Laribi and Schultz. Ex. 1004, ¶102.

Alternatively, element 6.2 would have been obvious over Safford in combination with Gravano (Ex. 1015). Gravano disclosed a metric referred to as “ $P_{right}(q, db)$ ” which measured, for a given database (db) and query (q), the percentage of retrieved documents from the database that were actually relevant to the query. Ex. 1015, 3. If the query (q) returned 100 documents from a given database (db), and 99 of the documents were relevant (e.g., there was one false positive), the value of $P_{right}(q, db)$ would be 0.99. Ex. 1004, ¶103. The P_{right} value is an accuracy metric that measures the precision with which relevant documents are identified. *Id.*

Gravano described users seeking to retrieve information from database collections as being either “recall-oriented” or “precision-oriented.” Unlike recall-oriented users (*accepting a higher proportion of useless documents to retrieve a higher percentage of relevant documents*), precision-oriented users accept that a lower proportion of relevant documents (throughout all of the database collections) will be retrieved to assure that a higher percentage of documents that are retrieved are useful. Ex. 1015, 2-3; Ex. 1004, ¶104.

In the context of collection selection, Gravano defined two functions:

$$P_{Right}(q, DB) = \begin{cases} \frac{|Chosen \cap Right|}{|Chosen|} & \text{if } |Chosen| > 0 \\ 1 & \text{otherwise} \end{cases}$$
$$R_{Right}(q, DB) = \begin{cases} \frac{|Chosen \cap Right|}{|Right|} & \text{if } |Right| > 0 \\ 1 & \text{otherwise} \end{cases}$$

where, for a given query (q) and database (db), $Right$ is the set of items in the database (db) that are relevant to the query (q) and $Chosen$ is the set of items actually retrieved. “ P is the fraction of selected databases that are $Right$ ones and R is the fraction of the $Right$ databases that are selected.” Ex. 1015, 3. Gravano explained, “[p]recision oriented users will be interested in high values of P while recall oriented users will be interested in high values of R .” *Id.* (emphasis added); Ex. 1004, ¶105.

Safford and Gravano are both directed to search techniques. It would have been obvious for a company implementing Safford’s platform to apply Gravano’s collection selection metrics to identify social network accounts for monitoring. *See*, e.g., Ex. 1006, 12:15-20. A precision-oriented company monitoring its brand using Safford’s platform would have been motivated to use a high value of P in connection with selection of data sources to reflect the company’s preference for precision-oriented searching, as taught in Gravano. Each social network account in Safford corresponds to a database (db) in Gravano. A precision-oriented company wishing to monitor its brand would have been motivated to identify social media accounts for monitoring having a high value of P to lessen the proportion of useless items

from the social media accounts being monitored, as taught in Gravano. The minimum acceptable value of P_{right} used by the precision-oriented company to select data sources corresponds to an “accuracy threshold” (because it reflects a level of search precision) as well as a correlation between the database and the query that is “determined based on the results of the query” (the higher the P_{right} value, the higher the correlation between the database and the query.) A precision-oriented user operating Safford’s platform using these teachings from Gravano will select data sources for monitoring “when the correlation [$P_{right}(q, db)$] is greater than or equal to an accuracy threshold [the minimum acceptable value of P selected by a precision-oriented user],” as recited in claim 6. Ex. 1004, ¶106.

Claim 6 is obvious over Safford, Chen, Laribi, Schultz and Gravano. *Id.*

2. Claim 7 - “expanding the query comprises expanding the search terms to include at least misspellings, synonyms, sub-topics, antonyms, or a combination thereof”

As explained in Sections X(D)(1), Claim 6 is obvious over Safford, Chen, Laribi, Schultz and Gravano. Claim 7 depends from Claim 6. The additional limitation of Claim 7 is obvious over Schultz. Ex. 1012, 23:44-48. Claim 7 would have been obvious over Safford, Chen, Laribi, Schultz and Gravano. Ex. 1004, ¶107.

E. Ground 5 - Claim 5 Is Obvious Over Safford, Chen and Laribi, In View Of Schultz and Moulinier

As explained in Section X(A)(1), Claim 1 is obvious over Safford, Chen and Laribi. Claim 5 depends from Claim 1. The additional limitations of Claim 5 are obvious over Safford, Schultz and Moulinier. Ex. 1004, ¶108.

1. Element 5.1 - “the query is a natural language query”

Schultz teaches that the “search query is preferably in a natural language format.” Ex. 1012, 4:8-9. It would have been obvious to substitute a natural language query for Safford’s keyword clusters, as a natural language query is simpler to formulate. Ex. 1004, ¶109.

2. Element 5.2 - “translating the query to a system understood language”

Moulinier teaches translation of a natural language query from one language to another. Ex. 1014, 4:10-14 and 6:3-57; *see also* Ex. 1001 at 9:62-64. Safford, Schultz and Moulinier are all directed to search query technology. It would have been obvious to apply Moulinier’s language translation techniques to Schultz’s natural language query, to permit a user to search social media accounts in different languages. See, Ex. 1001, 9:62-64; Ex. 1004, ¶110.

Claim 5 is obvious over Safford, Chen and Laribi, in view of Schultz and Moulinier. Ex. 1004, ¶111.

F. Ground 6 - Claims 1, 2, 8-12, 15-16 and 19-20 are Obvious Over Safford, Chen and Masters

1. Claim 1

As explained in Section X(A)(1), Elements 1.1-1.6 and 1.11-1.13 are met by Safford alone or with Chen. In Ground 6, the remaining elements of Claim 1 (i.e., Elements 1.7-1.10) are shown as being met by Safford in combination with Masters. Ex. 1004, ¶112.

a. Element 1.7

Both Safford and Masters are directed to computer systems that implement interrelated and dependent applications, a common field of endeavor. As explained in Section X(A)(1)(f), Safford discloses two interrelated processes, namely, the extraction and subsequent analysis of information from social media accounts. Masters also taught a computer system for managing resources associated with dependent software applications. Ex. 1010, 41:3-9 and 40:43-46. A POSITA would have found the teachings of Masters relating to allocating computer resources in the context of dependent applications to be pertinent to dependent applications like Safford's data extraction and subsequent analysis processes. Ex. 1004, ¶113.

Masters disclosed that its QoS managers were responsible for “recommending that applications be either scaled up, scaled down... in order to maintain acceptable performance” and its Resource Manager was responsible for “determining if and

where to place new copies of scalable applications or which scalable applications should be shutdown when the QoS Managers indicate that scale-up or scale-down actions should be taken based on measured application performance.” Ex. 1010, 18:45-47, 53-58; 21:40-49 (emphasis added); Ex. 1004, ¶116.

In view of Masters, and given Safford’s insight that the rate at which new messages associated are generated may vary over time, and the motivation of companies to quickly respond to brand issues arising online, it would have been obvious to assign a QoS requirement to Safford’s data analysis process requiring Safford’s data analysis process to process (analyze) data at a rate that was at least as fast as Safford’s collectors (“extractors”) supplied extracted data. A POSITA would have been motivated to monitor the rate of extracted data being provided to Safford’s data analysis process⁵ for the purpose of scaling-up additional instances of Safford’s data analysis application when the rate of extracted data was higher than the processing rate of the data analysis operation, so as to ensure that the extracted data was analyzed in a timely manner, and scale-down instances of Safford’s data analysis application when the rate of extracted data was low to conserve resources and/or power. Ex. 1004, ¶¶114-117.

⁵ Such monitoring of the rate of extracted data being provided to Safford's data analysis process maps to “determining an extraction rate for extracting the data, the extraction rate indicating an amount of the data that is extracted over a first time period.” Ex. 1004, ¶117, n. 5.

b. Element 1.8

In view of Masters, it would have been obvious to monitor the data processing rate of Safford's data analysis (or processing) application and adaptively provision instances thereof to ensure that the data processing rate of Safford's data analysis application was sufficient to timely process data being provided thereto by Safford's data collection (or extraction) process. It would have been obvious in view of Masters to determine "a first processing rate for processing the extracted data" in Safford where "the first processing rate" indicates "an amount of extracted data that is processed" over a given time. Ex. 1004, ¶118.

As explained in Section X(A)(1)(g) above and in connection with Element 1.9 below (Section X(F)(1)(c)), the "second time period" in the claim corresponds to a time when Safford's data analysis application is performing at a processing rate (corresponding to the "first processing rate" in the claim) that is insufficient to timely analyze the extracted data being provided to Safford's data analysis application by Safford's data collection (extraction) operation (e.g., when the extraction rate is greater than the processing rate of the data analysis operation.) Ex. 1004, ¶119.

Masters disclosed that its QoS managers were responsible for "recommending that applications be either scaled up, scaled down,... in order to maintain acceptable performance" and its Resource Manager was responsible for "determining if and where to place new copies of scalable applications..." Ex. 1010, 18:45-47, 53-58.

Masters describes that its Resource Manager determines "where to place new copies of scalable application," which means that Masters contemplates running different instances of a scalable application on different devices. *Id.*, 18:53-61 Ex. 1004, ¶120. As of the priority date of the '679 Patent, performing operations on parallel processors was a well-known technique for increasing throughput. See, e.g., Ex. 1008, 17:6-15. It would have been obvious to run each of the multiple copies of the scalable application in Masters on a separate physical processor to increase throughput when new copies of the application are deployed. See, Ex. 1010, 1:51 and 2:12-13. Ex. 1004, ¶121.

c. Element 1.9

In view of Masters, a POSITA would have been motivated to dynamically scale-up/scale-down instances of Safford's data analysis application on parallel processors when Safford's data analysis application was performing at a processing rate (the "first processing rate") that was insufficient to keep up with rate of extracted data input into Safford's data analysis operation by Safford's data collection (extraction) operation. As explained in Section X(A)(1)(h) above, a company/brand would have been motivated to quickly analyze new messages being generated on social media so that issues relating to the company/brand could be addressed rapidly, and the company/brand would therefore have been motivated to analyze incoming messages at an increased rate to facilitate a rapid response on social media. To meet

this design goal, a POSITA would have looked to Master's techniques for provisioning additional instances of Safford's data analysis application when the rate of data extracted from social media was high, and to deprovision instances of Safford's data analysis application when the rate of data being extracted from social media was low to conserve resources and/or power. Ex. 1004, ¶¶122-125.

Subsequent to dynamically scaling up the number of instances of the data processing application when the rate of the data extracted from social media was high (mapping to “dynamically adjusting the number of parallel processors for analyzing the extracted data based on the extraction rate”), the Safford/Master system will achieve a faster data analysis processing rate (or “second processing rate”) that is greater than “the first processing rate.” Ex. 1004, ¶126.

d. Element 1.10

Safford teaches analyzing an extracted social media post or account to assign a “sentiment score” to the social media post or account. Ex. 1006, 8:43-46, 9:3-5, 16:12-14 and 16:41-45. In the Safford/Masters system discussed in Sections X(F)(1)(b) and X(F)(1)(c) above, the analysis is performed on parallel processors. Ex. 1004, ¶127.

Claim 1 is therefore obvious over Safford, Chen and Masters. Ex. 1004, ¶128.

2. Claims 2, 11, 12 and 16

As explained in Sections X(A)(2) and X(A)(3), the additional limitations of

Claims 2, 11, 12 and 16 are met by Safford. Ex. 1006, 39:14-25, Figure 32 and 29:30-39. Claims 2, 11, 12 and 16 are obvious over Safford, Chen and Masters. Ex. 1004, ¶129.

3. Claim 8

As noted in Sections X(F)(1)(a)-(c), Masters discloses a method for scaling instances of an application based on a QoS threshold. In Safford, the load on the extraction process) corresponds to the volume of traffic from which data is to be collected. In view of Masters, it would have been obvious to scale the instances of the Safford's collection application "based at least in part on a traffic volume of the data source." A POSITA would have been motivated to dynamically adjust the instances of the collectors (each of which monitors and extracts data from source(s) of interest) being deployed so as to match the extraction capacity of number of instances to the current traffic load, to ensure timely extraction of the data. Claim 8 is obvious over Safford, Chen and Masters. Ex. 1004, ¶130.

4. Claims 9, 10, 15, 19 and 20

As explained in Section X(A)(5), Safford teaches or renders obvious use of social media as "the two-way communication channel" in Claims 9, 15 and 20.

As explained in Section X(A)(6), the additional limitations of Claim 10 are met by, or obvious in view of, Safford.

As explained in Section X(A)(7), the additional limitations of Claim 19 are met by, or obvious in view of, Safford.

Claims 9, 10, 15, 19 and 20 are obvious over Safford, Chen and Masters. Ex. 1004, ¶¶131-134.

G. Ground 7 - Claims 3, 13 and 17 Are Obvious Over Safford, Chen and Masters

As explained in Sections X(F)(1) and X(F)(2), Claims 1, 11 and 16 are obvious over Safford, Chen and Masters. Claims 3, 13, and 17 depend from Claims 1, 11 and 16, respectively. As explained in Sections X(B), the additional limitations of Claims 3, 13 and 17 are met by Chen, and it would have been obvious to apply Chen's query refinement techniques to Safford's cluster of keywords to reduce irrelevant information identified by the keywords. Claims 3, 13 and 17 are obvious over Safford, Chen and Masters. Ex. 1004, ¶135.

H. Ground 8 - Claims 4, 14 and 18 Obvious Over Safford, Chen and Masters In View Of Seibel

As explained in Sections X(F)(1) and X(F)(2), Claims 1, 11 and 16 are obvious over Safford, Chen and Masters. Claims 4, 14, and 18 depend from Claims 1, 11 and 16, respectively. As explained in Section X(C), the additional limitations of Claims 4, 14 and 18 are met by Seibel, and it would have been obvious to apply Safford's techniques to a combination of social media channels ("open-source data") and internal corporate documents ("closed-source data sources") as taught in Siebel.

Claims 4, 14 and 18 are obvious over Safford, Chen, Masters and Seibel. Ex. 1004, ¶136.

I. Ground 9 - Claims 6-7 Are Obvious Over Safford, Chen, Masters, Schultz and Gravano

As explained in Section X(F)(1), Claim 1 is obvious over Safford, Chen and Masters. Claim 6 depends from Claim 1. As explained in Section X(D)(1), the additional limitations of Claim 6 were obvious over Safford, Schultz, and Gravano. Claim 6 would have been obvious over Safford, Chen, Masters, Schultz and Gravano. Ex. 1004, ¶137.

As explained in above, Claim 6 is obvious over Safford, Chen, Masters, Schultz and Gravano. Claim 7 depends from Claim 6. As explained in Section X(D)(2), the additional limitation of Claim 7 was obvious over Schultz. Claim 7 would have been obvious over Safford, Chen, Masters, Schultz and Gravano. Ex. 1004, ¶138.

J. Ground 10 - Claim 5 Is Obvious Over Safford, Chen and Masters, In View Of Schultz and Moulinier

As explained in Section X(F)(1), Claim 1 is obvious over Safford, Chen and Masters. Claim 5 depends from Claim 1. As explained in Section X(E), the additional limitations of Claim 5 were obvious over Safford, Schultz and Moulinier. Claim 5 is obvious over Safford, Chen and Masters, in view of Schultz and Moulinier. Ex. 1004, ¶139.

K. Ground 11 - Claims 1, 2, 8-12, 15-16 and 19-20 Are Obvious Over Heath, Randall and Laribi

1. Claim 1

All elements of Claim 1 are met by Heath, Randall and Laribi. Ex. 1004, ¶140.

a. Element 1.1

To the extent the preamble is limiting, Heath discloses “electronically collecting and analyzing... online social media.” Ex. 1007, 1:30-44; Ex. 1004, ¶141.

b. Element 1.2

Heath teaches identification of keywords expressing consumer or brand sentiment about terms associated with consumer products or services. Ex. 1007, at 5:31-43.⁶ Identifying keywords expressing consumer or brand sentiment about products or services in Heath maps to “generating... a query based at least on a topic of interest.” Regarding the query being generated “by an entity,” Heath contemplates implementation of its platform in “a system internal to and/or controlled by a particular organization.” *Id.*, 49:4-5. A company implementing Heath’s platform internally maps to “an entity.” Ex. 1004, ¶142.

c. Element 1.3

⁶ Heath describes the use of “data sets comprising terms or phases of interest” (keywords) but provides no disclosure of an automated method for deriving such keywords. A POSITA would understand or, alternatively it would have been obvious, for the keywords in Heath to have been derived by a human. Ex. 1004, at ¶146, n. 6.

Heath discloses a “forum analyzer” which “scours the Internet searching for online consumer feedback for products or services via online activity... and social media content (threads) relevant to a... product/service... the forum analyzer 127 accomplishes this using automated tools for identifying industry-specific social media data sources from which to collect information... . This includes a forum analysis to locate or discover which forums and/or sub-forums are relevant to a specific user’s industry... To accomplish this, search results from publicly available online search engines are processed to determine relevant websites based on the relevance score of each site for the keywords of interest.” Ex. 1007, 54:12-40. The social media data sources such as forums, sub-forums and websites “scoured” by Heath’s “forum analyzer” map to “a plurality of data sources.” When Heath’s forum analyzer scours such data sources based on “the keywords of interest,” Heath’s forum analyzer is “executing the query” (i.e., the keywords of interest) on “a plurality of data sources.” Ex. 1004, ¶143.

d. Element 1.4 and Element 1.5

The “forums and/or sub-forums” located as being “relevant to a specific user’s industry” by Heath’s automated tools are data sources that are selected “based on the relevance score of each site for the keywords of interest.” Ex. 1007, 54:12-40. The “relevance score” in Heath is a measure of the “correlation” between a given data source and “the topic of interest.” Ex. 1004, ¶144.

Heath discloses “[m]onitoring and analyzing” each “new information source” and outputting alerts “when consumer or brand sentiment trends change... allow[ing] for constant, real-time monitoring of emerging trends and consumer or brand sentiment.” Ex. 1007, 30:1-19; 52:8-25, 59:67-60:5; 64:8-10. It would have been obvious to configure Heath’s platform to monitor the “forums and/or sub-forums” that were located as “relevant to a specific user’s industry” according to a set schedule. *Id.*, 53:19-21 (referring to “any frequency such as daily, hourly, weekly, and minute-by-minute.”) . Ex. 1004, ¶145.

Randall also disclosed crawlers or robots for detecting changes in online content, and the scheduling of crawling “every few minutes, or N times per hour.” Ex. 1023, 2:66-3:1, 5:50-59, 6:1. Randall and Heath are both directed to monitoring changes to online content, and a POSITA would have been motivated to deploy crawlers or bots with Heath at regular intervals. For the reasons discussed above, a company/brand would have been motivated to establish a rapid monitoring rate (e.g., short intervals between performing monitoring) so that issues relating to the company/brand could be identified and addressed rapidly Ex. 1004, ¶146.

A company implementing Heath’s platform internally maps to “an entity” in the claim. Ex. 1007, 49:4-5; Ex. 1004, ¶147.

Heath also teaches that “alerts can be sent for: extremely positive or negative posts; consumer or brand sentiment index changes;... and posts containing specific

keywords.” Ex. 1007, 64:67-65 (emphasis added). It would have been obvious to use the same keywords for both the initial discovery of the “forums and/or sub-forums” that are “relevant to a specific user’s industry” and ongoing monitoring, since both processes are seeking to identify online activity relating to, e.g., a particular brand. *Compare, id.*, at 54:26-27 with, *id.*, at 56:6-10. Heath teaches, or renders obvious, “monitoring for matches to the query... when... newly added data matches the query.” Ex. 1004, ¶148.

e. Element 1.6

It would have been obvious for Heath’s monitoring to extract data from a monitored data source when new data matches the query to provide such information to a user in connection with an alert. Ex. 1007, 64:65-67. Heath, alone or with Randall, teaches or renders obvious “extracting data from the data source when... the update to the stored data matches the query.” Ex. 1023, 3:7-12; Ex. 1004, ¶149.

f. Element 1.7

As explained above in Section (X)(A)(1)(f), Laribi taught a “performance monitoring service” that monitored performance metrics of “data collection” applications as well as “data analysis” applications for the purpose of provisioning/deprovisioning instances of an application. Ex. 1008, 1:31-46, 1:51-2:2, 2:7-10, 11:32-35, 13:7-24. Among other metrics, Laribi taught monitoring applications based on load. *Id.*, 2:19-23; Ex. 1004, ¶150.

Heath discloses two interrelated processes, namely, the extraction of “raw” information and subsequent analysis of such information. Ex. 1007, 53:10-23, 54:45-56:26, 56:29-31. A POSITA would have understood that the extracted data in Heath corresponded to the load on Heath’s subsequent data analysis process. Ex. 1004, ¶151.

In view of Laribi, and given the motivation of companies to quickly respond to brand issues arising online, a POSITA would have been motivated to monitor the load on Heath’s data analysis process for the purpose of provisioning additional instances of Heath’s data analysis application when the rate of extracted data (or load) was high, and to deprovision instances of the application when the rate of extracted data (or load) was low to conserve resources and/or power. Ex. 1008, 58:18-44 and 61:34-43; Ex. 1004, ¶¶152-154.

It would have been obvious in view of Laribi to determine “an extraction rate for extracting the data, the extraction rate indicating an amount of the data that is extracted over a first time period” in Heath, so as to monitor the load on Heath’s subsequent data analysis process for the purpose of provisioning or deprovisioning instances of Safford’s data analysis application. Ex. 1004, ¶155.

g. Element 1.8

In view of Laribi, it would have been obvious to monitor the data processing rate of Heath’s data analysis application and adaptively provision additional

instances thereof to ensure that the processing rate of Heath's data analysis application was sufficient to timely process data being provided at times when the rate such messages are generated on social media was elevated. It would have been obvious in view of Laribi to determine "a first processing rate for processing the extracted data" in Heath where "the first processing rate" indicates "an amount of extracted data that is processed" over a given time. As explained in connection with Element 1.9 below, the claimed "second time period" corresponds to a time when Heath's data analysis application is performing at a processing rate (the "first processing rate" in the claim) that is insufficient to timely analyze the load of extracted data being provided to Heath's data analysis application by Heath's extraction operation. Ex. 1004, ¶¶156-157.

As explained above in Section (X)(A)(1)(g), Laribi taught that multiple instances of an application could run on parallel processors. In view of Laribi, it would have been obvious to implement Heath's data analysis process by deploying multiple instances of the application on parallel processors. Ex. 1004, ¶158.

h. Element 1.9

In view of Laribi, a POSITA would have been motivated to dynamically provision additional instances of Heath's data analysis application on parallel processors when Heath's data scraping application was performing at a processing rate (the "first processing rate") that was insufficient to timely analyze the load of

extracted data being provided to Heath's data analysis application because the rate at which such messages were generated on social media was elevated. Subsequent to dynamically scaling up the instances of the data processing application based on such load (mapping to "dynamically adjusting the number of parallel processors for analyzing the extracted data based on the extraction rate"), the Heath/Laribi system will achieve a faster data analysis processing rate (or "second processing rate") that is greater than "the first processing rate." Ex. 1004, ¶159.

i. Element 1.10

As noted in Sections X(K)(1)(f)-(h), it would have been obvious to apply Laribi's application performance monitoring and scaling techniques to the data analysis operation performed by Heath. Heath taught that such data analysis included determining a sentiment. Ex. 1007, 3:36-39 and 64:67-65:5. Ex. 1004, ¶160.

j. Element 1.11

Heath taught that information from its data analysis operation (which is "based on the analysis of the extracted data") may enable users to "identify and target social media authors with the most influence to enter into online communications and activity with these lead authors and influence their opinion..." Ex. 1007, 59:40-45; 56:6-10, 64:67-65:5. Heath teaches identifying social media authors with which to engage based on the author's influence and sentiment, mapping to identifying social media authors "based on the analysis of the extracted data." Such a social

media author maps to “a user that provided the data to the data source.” Ex. 1004, ¶161.

A POSITA would have understood that “enter[ing] into online communications” with “social media authors with the most influence” to “influence their opinion” in Heath would have included “establishing a two-way communication channel” because such a communications channel would have been required to exchange messages or posts between the company and the social media author on the social media platform hosting the social media. Social media platforms as in Heath had direct messaging functionality that provided an established communication channel through which one user directly communicated with another user. Ex. 1007, 4:66-5:6; Ex. 1029, 14:39-43, Ex. 1030, ¶[0100], Ex. 1031, ¶¶[0025]-[0026]. It would have been obvious for the company to communicate with the social media author over a direct messaging channel on the platform, and/or via email, text or a message board on the platform, because the social media author is readily accessible and engaged in social media. Ex. 1004, ¶163.

A company implementing Heath’s platform internally to monitor its brand maps to “an entity”, and it is obvious that such an entity would also function to identify (or select) the social media content sources for monitoring. See, Sections X(K)(1)(b), (d). It would also have been obvious that the entity internally implementing Heath’s platform for the purpose of monitoring the entity’s brand

would be the same entity that entered into online communications with “social media authors with the most influence” to “influence their opinion” about the entity’s brand. Ex. 1004, ¶164.

k. Elements 1.12 and 1.13

A POSITA would have understood that “enter[ing] into online communications” with “social media authors with the most influence” to “influence their opinion” in Heath (see Section X(K)(1)(j)) would have included transmitting messages to, and receiving responses from, the social media accounts of such authors. Ex. 1004, ¶165.

Claim 1 is therefore obvious over Heath, Randall and Laribi. Ex. 1004, ¶166.

2. Claims 11 and 16

The additional limitations of Claim 11 (“a memory unit” and “at least one processor...”), and Claim 16 (“a non-transitory computer-readable medium having program code”), are met by Heath. Ex. 1007, 65:41-45 and 66:27-30. Claims 11 and 16 are obvious over Heath, Randall and Laribi. Ex. 1004, ¶167.

3. Claims 2 and 12

Heath teaches a dashboard and graph that visualize extracted data. Ex. 1007, 63:65-64:2, 64:25-32; Figures 22-23. Claims 2 and 12 are obvious over Heath, Randall and Laribi. Ex. 1004, ¶168.

4. Claim 8

Among other metrics used for scaling up/down instances of an application, Laribi teaches monitoring metrics identifying a load across the instances of the application.” Ex. 1008, 2:18-20. In Heath, the load on the extraction process corresponds to the volume of traffic to be scraped. In view of Laribi, it would have been obvious to scale the instances of the Heath’s extraction application or Randall’s crawlers/robots (each instance of mapping to an extractor that monitors and extracts data from source(s) of interest) based on the volume of traffic, to dynamically adjust the number of instances of the application or crawlers/robots being deployed “based at least in part on a traffic volume of the data source” when, for example, the rate of messages generated on social media was elevated. A POSITA would have been motivated to dynamically adjust the instances of the application or crawlers/robots so as to match the capacity of the instances to the current traffic load, to ensure timely extraction of the data. Claim 8 is obvious over Heath, Randall and Laribi. Ex. 1004, ¶169.

5. Claims 9, 15 and 20

As explained in Section X(K)(1)(i), Heath teaches or renders obvious use of social media as “the two-way communication channel.” Claims 9, 15 and 20 are obvious over Heath, Randall and Laribi. Ex. 1004, ¶170.

6. Claim 10

As explained in Section X(K)(1)(b), brand sentiment in Heath maps to “a topic of interest” that is analyzed based on the results of the query (keywords). Heath also analyzes “sentiment trends” mapping to a sub-topic of interest that is also analyzed based on the results of the query. Ex. 1007, 60:2-5; Ex. 1004, ¶171.

As explained in Section X(K)(1)(c), Heath determines a relevance score reflecting a correlation between a social media source and a brand based on keywords. Heath teaches determining a “correlation between the data source and the topic of interest based on the analysis of the results of the query.” Ex. 1004, ¶172.

Claim 10 is obvious over Heath, Randall and Laribi. Ex. 1004, ¶173.

7. Claim 19

As explained in Section X(K)(1)(c), the forums, sub-forums and websites “scoured” by Heath’s “forum analyzer” map to “a plurality of data sources.” It would have been obvious to define a list of sources to be scoured so that the scouring tasks could be efficiently divided in advance amongst the computer resources performing the probing. In such an approach, the “plurality of data sources” would be “predefined.” Claim 19 is obvious over Heath, Randall and Laribi. Ex. 1004, ¶174.

L. Ground 12 - Claims 3, 13 and 17 Are Obvious Over Heath, Randall, Laribi and Chen

As explained in Sections X(B), the additional limitations of Claims 3, 13 and 17 are met by Chen. Heath and Chen are both directed to methods for monitoring online activity pertaining to a particular brand. A POSITA would have motivated to apply Chen's query refinement techniques to Heath's keywords to reduce irrelevant information identified by the keywords, and would have had a reasonable expectation of success with respect to the combination. Claims 3, 13 and 17 are obvious over Heath, Randall, Laribi and Chen. Ex. 1004, ¶175.

M. Ground 13 - Claims 4, 14 and 18 Obvious Over Heath, Randall and Laribi In View Of Seibel

As explained in Sections X(C), the additional limitations of Claims 4, 14 and 18 are met by Seibel. It would have been obvious to apply Heath's techniques for determining sentiment to a combination of social media channels ("open-source data") and internal corporate documents "such as emails" and "customer support notes" ("closed-source data sources) as taught in Siebel, to expand the scope of data being analyzed and more accurately quantify sentiment based on a combination of social media posts from a particular user (e.g., an advocate) and internal corporate documents representing private communications between the company and such user. Claims 4, 14 and 18 are obvious over Heath, Randall, Laribi and Seibel. Ex. 1004, ¶176.

N. Ground 14 - Claims 6-7 Are Obvious Over Heath, Randall, Laribi, Schultz and Gravano

It would have been obvious to apply Schultz's query expansion techniques to Heath's keywords in order to generate a more robust cluster of keywords. For the same reasons discussed in Section X(D)(1) in connection with Safford, a precision-oriented company wishing to monitor its brand using Heath's platform would have been motivated to identify for monitoring social media accounts having a high value of P to lessen the proportion of useless items from the social media accounts being monitored, as taught in Gravano. Claim 6 was obvious over Heath, Randall, Laribi, Schultz and Gravano. Ex. 1004, ¶177.

Claim 7 depends from Claim 6. As explained in Section X(D)(2), the additional limitation of Claim 7 was obvious over Schultz. Claim 7 was obvious over Heath, Randall, Laribi, Schultz and Gravano. Ex. 1004, ¶178.

O. Ground 15 - Claim 5 Is Obvious Over Heath, Randall and Laribi, In View Of Schultz and Moulinier

As explained in Section X(E), the additional limitations of Claim 5 were met by Schultz and Moulinier. Heath, Schultz and Moulinier are all directed to search query technology. It would have been obvious to apply Moulinier's language translation techniques to Schultz's natural language query. A POSITA would have been motivated to use Moulinier's translation techniques with Schultz/Heath to permit the user to search social media in different languages based on a query in a

user's native language. Claim 5 is obvious over Heath, Randall and Laribi, in view of Schultz and Moulinier. Ex. 1004, ¶179.

XI. *SOTERA* STIPULATION

Petitioner stipulates hereby 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.

XII. THE *FINTIV* FACTORS WEIGH AGAINST DISCRETIONARY DENIAL

The *Fintiv* factors weigh against discretionary denial.

Duplication of efforts in this IPR and the Litigation will not occur because Petitioner hereby stipulates that, should the Board institute review, Petitioner will not pursue the same grounds in the Litigation as in the Petition or any grounds that could have reasonably been raised in the petition.

This IPR challenges all claims (1-20) of the '679 Patent, while only a subset of those claims are at issue in the Litigation. For example, claim 10 of the '679 Patent is not asserted in the Litigation, and it is expected that the number of claims in the '679 Patent asserted in the Litigation will be narrowed within ten (10) days before trial. Ex. 1033. Less than all of the Challenged Claims in this IPR will be adjudicated in the Litigation. *Id.*

Judge Gilstrap, presiding over the Litigation, has scheduled the *commencement of jury trials in twelve (12)* of his cases -- all of which remain pending -- for the *same day*, i.e., September 22, 2025. Ex. 1034. The Litigation is among those twelve cases. There is no evidence that trial in the Litigation is any more or less likely to actually commence on the scheduled date than any of the eleven other simultaneously scheduled cases.

XIII. CONCLUSION

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

Respectfully submitted,

Dated: March 6, 2025

By: /Michael F. Snyder/
Michael F. Snyder
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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 13,990 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: March 6, 2025

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 1001-1034** was served via UPS Overnight Delivery on March 6, 2025 to the Patent Owner's counsel of record as follows:

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with a courtesy copy to Patent Owner's litigation counsel:

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