IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

In re: SEARCHMETRICS, INC.,[1] Debtor.	Chapter 11 Case No. 17-11032 (CSS)
Searchmetrics, Inc. and Searchmetrics GmbH, Plaintiffs, v. BrightEdge Technologies, Inc., Defendant.	Adv. No. 17-50478 (CSS)

DECLARATION OF WILLIAM E. CHIPMAN, JR. IN SUPPORT OF SEARCHMETRICS, INC. AND SEARCHMETRICS GMBH'S MEMORANDUM OF LAW IN SUPPORT OF MOTION FOR JUDGMENT ON THE PLEADINGS THAT U.S. PATENT NOS. 8,135,706; 8,478,700; 8,478,746; 8,577,863; AND 8,671,089 DO NOT CLAIM PATENTABLE SUBJECT MATTER

I, William E. Chipman, hereby declare, pursuant to 28 U.S.C. § 1746, under penalty of perjury as follows:

1. I am an attorney with Chipman Brown Cicero & Cole, LLP, counsel for Searchmetrics, Inc., the debtor and debtor-in-possession (the "**Debtor**") in the above-captioned chapter 11 case (the "**Chapter 11 Case**"). I make this declaration in support of Searchmetrics' Motion for Judgment on the Pleadings (the "**Motion**")[2]. I have personal knowledge of the facts stated herein and, if called as a witness, could and would competently testify thereto.

[1] The Debtor in this chapter 11 case, along with the last four digits of the Debtor's federal tax identification number, is: Searchmetrics, Inc. (1635). The mailing address for the Debtor, solely for purposes of notices and communications, is c/o EisnerAmper LLP, 750 Third Avenue, New York, New York 10017, *Attn*: Wayne P. Weitz.

[2] Capitalized terms not otherwise defined herein shall have the meanings ascribed to them in *Searchmetrics, Inc. and Searchmetrics GmbH's Memorandum of Law in Support of Motion for Judgment on the Pleadings that U.S. Patent Nos. 8,135,706; 8,478,700; 8,478,746; 8,577,863; and 8,671,089 do not Claim Patentable Subject Matter*.

2. On March 4, 2014, BrightEdge Technologies, Inc. ("**BrightEdge**") filed a Complaint for Patent Infringement against Searchmetrics in the United States District Court for the Northern District of California. On March 14, 2014, BrightEdge filed an Amended Complaint for Patent Infringement against Searchmetrics in the above referenced case. On May 22, 2014, BrightEdge filed a Second Amended Complaint for Patent Infringement against Searchmetrics in the above referenced case. Attached as **Exhibit A** is a true and correct copy of the Second Amended Complaint, Civil Action No. 4:14cv1009, with the exhibits (the patents) removed as they are attached individually here.

3. On June 5, 2014, Searchmetrics timely filed an Answer to BrightEdge's Second Amended Complaint in the above referenced case. Attached as **Exhibit B** is a true and correct copy of the Answer.

4. Attached as **Exhibit C** is a true and correct copy of U.S. Patent No. 8,135,706.

5. Attached as **Exhibit D** is a true and correct copy of U.S. Patent No. 8,478,746.

6. Attached as **Exhibit E** is a true and correct copy of U.S. Patent No. 8,478,700.

7. Attached as **Exhibit F** is a true and correct copy of U.S. Patent No. 8,577,863.

8. Attached as **Exhibit G** is a true and correct copy of U.S. Patent No. 8,671,089.

9. Attached as **Exhibit H** is a true and correct copy of a blog post written by Robert R. Sachs entitled "*Two Years After Alice: A Survey of the Impact of a 'Minor Case' (Part 1)*". This exhibit was downloaded from the website http://www.bilskiblog.com/blog/2016/06/two-years-after-alice-a-survey-of-the-impact-of-a-minor-case.html on May 16, 2017.

10. Attached as **Exhibit I** is a true and correct copy of relevant portions of Lex Machina's 2016 Patent Litigation Year in Review Report.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 24, 2017 /s/ William E. Chipman, Jr.
William E. Chipman, Jr.

EXHIBIT A

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Attorneys for Plaintiff
BRIGHTEDGE TECHNOLOGIES, INC.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

BRIGHTEDGE TECHNOLOGIES, INC.,

Plaintiff,

v.

SEARCHMETRICS GMBH and SEARCHMETRICS, INC.,

Defendants.

Case No. 3:14-cv-01009 WHO

SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

Plaintiff BrightEdge Technologies, Inc. ("BrightEdge") alleges the following:

THE PARTIES

1. BrightEdge is a Delaware corporation with its principal place of business in San Mateo, California.

2. On information and belief, Defendant Searchmetrics GmbH is a German limited liability company with its principal place of business in Berlin, Germany.

3. On information and belief, Defendant Searchmetrics, Inc. is a wholly-owned subsidiary of Searchmetrics GmbH and is a Delaware corporation with its principal place of business in New York, New York.

BACKGROUND INFORMATION

4. BrightEdge provides to customers search engine optimization ("SEO") and analytical tools. Its SEO software platform became generally available in June 2010. BrightEdge is the largest SEO software platform provider to thousands of major commercial brands and global consumer and business-to-business companies around the world, with hundreds of direct customers and many of the top professional digital marketing agencies.

5. BrightEdge has sought and obtained in the United States a multitude of patents relating to SEO technology, including but not limited to U.S. Patent Nos. 8,135,706 (the "'706 Patent"), 8,478,700 (the "'700 Patent") , 8,478,746 (the "'746 Patent"), 8,577,863 (the "'863 Patent"), and 8,671,089 (the "'089 Patent") (collectively the "Asserted Patents"). BrightEdge has marked its SEO software platform by listing the Asserted Patents on a publicly-accessible page of its website to identify that Asserted Patents cover the platform. BrightEdge is the owner of all right, title, and interest in the Asserted Patents and has been the owner of the Asserted Patents since at least the time each was respectively issued by the United States Patent and Trademark Office ("PTO").

6. Defendants Searchmetrics GmbH and Searchmetrics, Inc. (collectively "Searchmetrics") compete with BrightEdge in at least the field of SEO technology. Searchmetrics' competing SEO software platform includes at least products marketed as "Searchmetrics Essentials" and "Searchmetrics Suite," in addition to all the components and

features thereof.

7. On information and belief, Searchmetrics has sold and/or is selling to customers in the United States its SEO software platform, including customers in this judicial district.

8. On information and belief, Searchmetrics has committed and/or is committing at least the following acts:

a. Making, using, offering for sale, and/or selling its SEO software platform in the United States, and/or importing its SEO software platform into the United States; and/or

b. Intending for its customers to use its SEO software platform in the United States.

9. On information and belief, Searchmetrics has knowledge of the Asserted Patents at least as of the date Searchmetrics is served with a copy of the Complaint, the First Amended Complaint, or the Second Amended Complaint.

10. On information and belief, Searchmetrics' customers use its SEO software platform in the United States.

11. On information and belief, Searchmetrics operates the domain searchmetrics.com, which it uses to advertise its SEO software platform to customers and/or potential customers in the United States; instruct customers and/or potential customers in the United States as to how to use its SEO software platform; offer for sale and/or sell its SEO software platform to customers and/or potential customers in the United States; and/or import its SEO software platform into the United States.

JURISDICTION

12. This is a civil action for patent infringement arising under at least 35 U.S.C. § 271. Patent infringement presents a Federal question pursuant to 28 U.S.C. § 1331, and district courts have original jurisdiction over patent infringement actions pursuant to 28 U.S.C. § 1338(a). Accordingly, this Court has subject matter jurisdiction over this action.

13. On information and belief, Defendants Searchmetrics GmbH and Searchmetrics, Inc. have committed and are committing acts giving rise to this action within this judicial district

and/or have established minimum contacts within California and within this judicial district such that the exercise of jurisdiction over them would not offend traditional notions of fair play and substantial justice. Alternatively, Defendant Searchmetrics GmbH has sufficient contacts with the United States as a whole to satisfy due process standards and the application of Federal law, but is not subject to personal jurisdiction in the courts of California or any other state. Accordingly, this Court has personal jurisdiction over Defendants Searchmetrics GmbH and Searchmetrics, Inc.

VENUE

14. Venue is proper in this judicial district pursuant to at least 28 U.S.C. § 1400(b) because personal jurisdiction is proper in this district.

INTRADISTRICT ASSIGNMENT

15. Pursuant to Civil L.R. 3-2(c), this is an Intellectual Property Action, which is an exception to the Court's Assignment Plan. Such Actions "shall be assigned on a district-wide basis."

FIRST CLAIM FOR RELIEF

(Infringement of the '706 Patent)

16. BrightEdge incorporates and realleges Paragraphs 1-15 of this Complaint.

17. On March 13, 2012, the PTO duly and lawfully issued the '706 Patent, titled "Operationalizing Search Engine Optimization," a copy of which is attached as Exhibit A.

18. The '706 Patent discloses "determin[ing] meaningful groupings of information to provide methods, processes and platforms to manage content and relevant marketing data (SEO metrics) at scale for large entities possessing a large amount of content and marketing data." Exhibit A at 3:33-37. Claim 1 recites "A method for managing references to an entity on a network," *id.* at 14:18-19, and Claim 11 recites "A system for optimizing online references to an entity," *id.* at 15:7-8.

19. On information and belief, Searchmetrics has directly infringed and is directly infringing one or more claims of the '706 Patent by manufacturing, using, offering for sale, and/or selling its SEO software platform in the United States, and/or importing its SEO software

platform into the United States.

20. On information and belief, Searchmetrics (1) has known and knows that its customers' use of its SEO software platform in the United States infringes one or more claims of the '706 Patent and (2) has intended and intends for its customers to infringe one or more claims of the '706 Patent by instructing and encouraging its customers to use its SEO software platform in a manner that infringes the '706 Patent. Accordingly, on information and belief, Searchmetrics has induced and is inducing infringement of one or more claims of the '706 Patent.

21. On information and belief, Searchmetrics sells and offers to sell its SEO software platform in the United States to its customers and potential customers. On information and belief, the Searchmetrics Suite product includes an SEO Market Share feature, which is described on Searchmetrics's website at http://www.searchmetrics.com/en/suite/seo-market-share/.[1] On information and belief, Searchmetrics sells and offers for sale the SEO Market Share feature for use in practicing one or more of the claims of the '706 Patent, the SEO Market Share feature is material to practicing one or more of the claims of the '706 Patent, the SEO Market Share feature has no substantial non-infringing uses, and Searchmetrics knows that the SEO Market Share feature is especially made and/or especially adapted for use in infringing one or more claims of the '706 Patent. Accordingly, on information and belief, Searchmetrics has contributed and is contributing to the infringement of one or more claims of the '706 Patent.

SECOND CLAIM FOR RELIEF

(Infringement of the '700 Patent)

22. BrightEdge incorporates and realleges Paragraphs 1-21 of this Complaint.

23. On July 2, 2013, the PTO duly and lawfully issued the '700 Patent, titled "Opportunity Identification and Forecasting for Search Engine Optimization," a copy of which is attached as Exhibit B. The '700 Patent discloses "optimizing placement of references to an entity." Exhibit B at Abstract. Claim 1 recites "A method for optimizing online references to an entity that are non-paid advertisements," *id.* at 9:2-3, and Claim 11 recites "A non-transitory computer readable storage medium configured to cause a system to perform operations of

[1] Last accessed May 16, 2014.

optimizing online references to an entity that are non-paid advertisements," *id.* at 10:12-15.

24. On information and belief, Searchmetrics has directly infringed and is directly infringing one or more claims of the '700 Patent by manufacturing, using, offering for sale, and/or selling its SEO software platform in the United States, and/or importing its SEO software platform into the United States.

25. On information and belief, Searchmetrics (1) has known and knows that its customers' use of its SEO software platform in the United States infringes one or more claims of the '700 Patent and (2) has intended and intends for its customers to infringe one or more claims of the '700 Patent by instructing and encouraging its customers to use its SEO software platform in a manner that infringes the '700 Patent. Accordingly, on information and belief, Searchmetrics has induced and is inducing infringement of one or more claims of the '700 Patent.

26. On information and belief, Searchmetrics sells and offers to sell its SEO software platform in the United States to its customers and potential customers. On information and belief, the Searchmetrics Suite product includes Traffic Forecast and Conversion Value Forecast features, which are described on Searchmetrics's website at http://www.searchmetrics.com/en/suite/forecasts/.[2] On information and belief, Searchmetrics sells and offers for sale the Traffic Forecast and Conversion Value Forecast features for use in practicing one or more of the claims of the '700 Patent, the Traffic Forecast and Conversion Value Forecast features are material to practicing one or more of the claims of the '700 Patent, the Traffic Forecast and Conversion Value Forecast features have no substantial non-infringing uses, and Searchmetrics knows that the Traffic Forecast and Conversion Value Forecast features are especially made and/or especially adapted for use in infringing one or more claims of the '700 Patent. Accordingly, on information and belief, Searchmetrics has contributed and is contributing to the infringement of one or more claims of the '700 Patent.

THIRD CLAIM FOR RELIEF

(Infringement of the '746 Patent)

27. BrightEdge incorporates and realleges Paragraphs 1-26 of this Complaint.

[2] Last accessed May 16, 2014.

28. On July 2, 2013, the PTO duly and lawfully issued the '746 Patent, titled "Operationalizing Search Engine Optimization," a copy of which is attached as Exhibit C. The '746 Patent discloses "determin[ing] meaningful groupings of information to provide methods, processes and platforms to manage content and relevant marketing data (SEO metrics) at scale for large entities possessing a large amount of content and marketing data." Exhibit C at Abstract. Claim 1 recites "A computer implemented method of managing references to an entity on a network, the computer including a non-transitory computer storage medium," *id.* at 14:22-24, Claims 10 recites "A computer readable medium encoded with a computer program fixed in a non-transitory computer storage medium having computer-executable instructions for causing a computing system to perform operations of optimizing online references to an entity," and Claim 20 recites "A computer implemented method of managing references to an entity on a network, the computer including a non-transitory computer storage medium."

29. On information and belief, Searchmetrics has directly infringed and is directly infringing one or more claims of the '746 by manufacturing, using, offering for sale, and/or selling its SEO software platform in the United States, and/or importing its SEO software platform into the United States.

30. On information and belief, Searchmetrics (1) has known and knows that its customers' use of its SEO software platform in the United States infringes one or more claims of the '746 Patent and (2) has intended and intends for its customers to infringe one or more claims of the '746 Patent by instructing and encouraging its customers to use its SEO software platform in a manner that infringes the '746 Patent. Accordingly, on information and belief, Searchmetrics has induced and is inducing infringement of one or more claims of the '746 Patent.

31. On information and belief, Searchmetrics sells and offers to sell its SEO software platform in the United States to its customers and potential customers. On information and belief, the Searchmetrics Suite product includes an SEO Market Share feature, which is described on Searchmetrics's website at http://www.searchmetrics.com/en/suite/seo-market-share/.[3] On information and belief, Searchmetrics sells and offers for sale the SEO Market Share feature for

[3] Last accessed May 16, 2014.

use in practicing one or more of the claims of the '746 Patent, the SEO Market Share feature is material to practicing one or more of the claims of the '746 Patent, the SEO Market Share feature has no substantial non-infringing uses, and Searchmetrics knows that the SEO Market Share feature is especially made and/or especially adapted for use in infringing one or more claims of the '746 Patent. Accordingly, on information and belief, Searchmetrics has contributed and is contributing to the infringement of one or more claims of the '746 Patent.

FOURTH CLAIM FOR RELIEF

(Infringement of the '863 Patent)

32. BrightEdge incorporates and realleges Paragraphs 1-31 of this Complaint.

33. On November 5, 2013, the PTO duly and lawfully issued the '863 Patent, titled "Correlating Web Page Visits and Conversions with External References," a copy of which is attached as Exhibit D.

34. The '863 Patent discloses "correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page." Exhibit D at Abstract. Claim 1 recites "A method for correlating an external Web Page with a conversion performed on the Web Page to provide information regarding an effectiveness of an organic marketing campaign." *Id.* at 16:48-51.

35. On information and belief, Searchmetrics has directly infringed and is directly infringing one or more claims of the '863 Patent by manufacturing, using, offering for sale, and/or selling its SEO software platform in the United States, and/or importing its SEO software platform into the United States.

36. On information and belief, Searchmetrics (1) has known and knows that its customers' use of its SEO software platform in the United States infringes one or more claims of the '863 Patent and (2) has intended and intends for its customers to infringe one or more claims of the '863 Patent by instructing and encouraging its customers to use its SEO software platform in a manner that infringes the '863 Patent. Accordingly, on information and belief, Searchmetrics has induced and is inducing infringement of one or more claims of the '863 Patent.

37. On information and belief, Searchmetrics sells and offers to sell its SEO software

platform in the United States to its customers and potential customers. On information and belief, the Searchmetrics Suite product includes Traffic Forecast and Conversion Value Forecast features, which are described on Searchmetrics's website at http://www.searchmetrics.com/en/suite/forecasts/.[4] On information and belief, Searchmetrics sells and offers for sale the Traffic Forecast and Conversion Value Forecast features for use in practicing one or more of the claims of the '863 Patent, the Traffic Forecast and Conversion Value Forecast features are material to practicing one or more of the claims of the '863 Patent, the Traffic Forecast and Conversion Value Forecast features have no substantial non-infringing uses, and Searchmetrics knows that the Traffic Forecast and Conversion Value Forecast features are especially made and/or especially adapted for use in infringing one or more claims of the '863 Patent. Accordingly, on information and belief, Searchmetrics has contributed and is contributing to the infringement of one or more claims of the '863 Patent.

FIFTH CLAIM FOR RELIEF

(Infringement of the '089 Patent)

38. BrightEdge incorporates and realleges Paragraphs 1-37 of this Complaint.

39. On March 11, 2014, the PTO duly and lawfully issued the '089 Patent, titled "Correlating Web Page Visits and Conversions with External References," a copy of which is attached as Exhibit E.

40. The '089 Patent discloses "correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page." Exhibit E at Abstract. Claims 1 and 7 recite "A method for correlating an external reference to one or more entry web pages with one or more conversions performed as a result of visits to the entry web pages to provide information regarding an effectiveness of an organic marketing campaign" *id.* at 16:41-45 & 17:32-36, and Claim 13 recites "A method for estimating the value of an organic marketing campaign," *id.* at 18:23-24.

41. On information and belief, Searchmetrics has directly infringed and is directly infringing one or more claims of the '089 Patent by manufacturing, using, offering for sale,

[4] Last accessed May 16, 2014.

and/or selling its SEO software platform in the United States, and/or importing its SEO software platform into the United States.

42. On information and belief, Searchmetrics (1) has known and knows that its customers' use of its SEO software platform in the United States infringes one or more claims of the '089 Patent and (2) has intended and intends for its customers to infringe one or more claims of the '089 Patent by instructing and encouraging its customers to use its SEO software platform in a manner that infringes the '089 Patent. Accordingly, on information and belief, Searchmetrics has induced and is inducing infringement of one or more claims of the '089 Patent.

43. On information and belief, Searchmetrics sells and offers to sell its SEO software platform in the United States to its customers and potential customers. On information and belief, the Searchmetrics Suite product includes Traffic Forecast and Conversion Value Forecast features, which are described on Searchmetrics's website at http://www.searchmetrics.com/en/suite/forecasts/.[5] On information and belief, Searchmetrics sells and offers for sale the Traffic Forecast and Conversion Value Forecast features for use in practicing one or more of the claims of the '089 Patent, the Traffic Forecast and Conversion Value Forecast features are material to practicing one or more of the claims of the '089 Patent, the Traffic Forecast and Conversion Value Forecast features have no substantial non-infringing uses, and Searchmetrics knows that the Traffic Forecast and Conversion Value Forecast features are especially made and/or especially adapted for use in infringing one or more claims of the '089 Patent. Accordingly, on information and belief, Searchmetrics has contributed and is contributing to the infringement of one or more claims of the '089 Patent.

PRAYER FOR RELIEF

WHEREFORE, BrightEdge prays for relief, as follows:

1. A judicial determination that Searchmetrics has directly infringed and directly infringes at least one claim of each of BrightEdge's Asserted Patents;

2. A judicial determination that Searchmetrics has induced and induces infringement of at least one claim of each of BrightEdge's Asserted Patents;

[5] Last accessed May 16, 2014.

3. A judicial determination that Searchmetrics has contributed and contributes to infringement of at least one claim of each of BrightEdge's Asserted Patents;

4. A judicial determination finding that (1) BrightEdge has suffered an irreparable injury; (2) remedies available at law are inadequate to compensate BrightEdge for that injury; (3) the balance of hardships between BrightEdge and Searchmetrics favors BrightEdge; and (4) the public interest would not be disserved by a permanent injunction; and permanently enjoining Searchmetrics and its officers, directors, agents, employees, affiliates, attorneys, parents, subsidiaries, divisions, successors, and assigns, and all others acting in privity or in concert with them, from further acts of infringement of BrightEdge's Asserted Patents;

5. A judicial determination awarding BrightEdge all damages adequate to compensate it for Searchmetrics' infringement of BrightEdge's Asserted Patents, and in no event less than a reasonable royalty for Searchmetrics' acts of infringement;

6. A judicial determination that this is an exceptional case and awarding BrightEdge its attorneys' fees pursuant to 35 U.S.C. § 285;

7. A judicial determination awarding BrightEdge all taxable costs it incurs in this litigation;

8. A judicial determination awarding BrightEdge pre- and post-judgment interest; and

9. A judicial determination awarding BrightEdge any other such relief at law and/or equity that the Court deems just and proper.

DEMAND FOR JURY TRIAL

Plaintiff BrightEdge Technologies, Inc. hereby demands a trial by jury on all issues so triable.

Respectfully submitted,

DATED: May 22, 2014

BAKER BOTTS L.L.P.

By: /s/ G. Hopkins Guy

G. Hopkins Guy
Attorney for Plaintiff
BRIGHTEDGE TECHNOLOGIES, INC.

EXHIBIT B

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SEARCHMETRICS GMBH and
SEARCHMETRICS, INC.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

BRIGHTEDGE TECHNOLOGIES, INC.,

Plaintiff,

v.

SEARCHMETRICS GMBH and SEARCHMETRICS, INC.,

Defendants.

CASE NO. 3:14-cv-01009-WHO

DEFENDANTS SEARCHMETRICS GMBH AND SEARCHMETRICS, INC.'S ANSWER TO PLAINTIFF BRIGHTEDGE TECHNOLOGIES, INC.'S SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

Defendants Searchmetrics GmbH and Searchmetrics, Inc. (collectively, "Searchmetrics"), files this Answer to the Second Amended Complaint for Patent Infringement ("Second Amended Complaint") of BrightEdge Technologies, Inc. ("BrightEdge"). Searchmetrics hereby responds to each numbered paragraph in BrightEdge's Complaint as follows. The titles from BrightEdge's Complaint are used solely for organizational purposes and do not constitute any admissions by Searchmetrics.

THE PARTIES

1. Searchmetrics lacks sufficient knowledge or information to admit or deny the allegations of paragraph 1 of the Second Amended Complaint and on that basis denies them.

2. Searchmetrics admits the allegations of paragraph 2.

3. Searchmetrics admits that Searchmetrics Inc. is a wholly owned subsidiary of Searchmetrics GmbH and is a Delaware corporation. Searchmetrics denies that Searchmetrics Inc.'s principal place of business is in New York, New York.

BACKGROUND INFORMATION

4. Searchmetrics lacks knowledge or information sufficient to form a belief as to the truth of the allegations in paragraph 4 of the Second Amended Complaint and on that basis denies them.

5. Searchmetrics lacks knowledge or information sufficient to form a belief as to the truth of the allegations in paragraph 5 of the Second Amended Complaint and on that basis denies them.

6. Searchmetrics admits that Searchmetrics, Inc. has competed with BrightEdge, among others. Except as specifically admitted, Searchmetrics denies the remaining allegations in paragraph 6 of the Second Amended Complaint.

7. Searchmetrics admits that Searchmetrics, Inc. has licensed customers in the United States, including to customers in the Northern District of California, its Enterprise SEO Software Platform. Except as specifically admitted, Searchmetrics denies the remaining allegations of paragraph 7.

8. Searchmetrics admits that Searchmetrics, Inc. licensed its Enterprise SEO

Software Platform in the United States. Except as specifically admitted, Searchmetrics denies the remaining allegations of paragraph 8.

9. Searchmetrics admits that it has received a copy of the First and Second Amended Complaints. Except as specifically admitted, Searchmetrics denies the remaining allegations of paragraph 9.

10. Searchmetrics lacks sufficient knowledge or information to admit or deny the allegations of paragraph 10 of the Second Amended Complaint and on that basis denies them.

11. Searchmetrics admits that Searchmetrics has a website searchmetrics.com. Searchmetrics otherwise denies the allegations of paragraph 11.

JURISDICTION

12. Searchmetrics admits that BrightEdge is asserting a claim under the patent laws of the United States, including 35 U.S.C. § 271. Searchmetrics admits that this Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) to the extent BrightEdge is able to demonstrate a proper claim for patent infringement. Except as otherwise specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 12 and on that basis denies them.

13. For the purposes of this action, Searchmetrics is not challenging that this court has personal jurisdiction over it. Except as specifically admitted, Searchmetrics denies the remaining allegations of paragraph 13.

VENUE

14. For purposes of this action, Searchmetrics admits that venue is proper. Searchmetrics otherwise denies the allegations of paragraph 14.

INTRADISTRICT ASSIGNMENT

15. Paragraph 15 is a statement regarding the Civil Local Rules and no response to this paragraph is required.

FIRST CLAIM FOR RELIEF

(Infringement of the '706 Patent)

16. Searchmetrics realleges and incorporates herein by reference its responses in

paragraphs 1 through 15, inclusive, as though fully set forth herein.

17. Searchmetrics admits that Exhibit A to BrightEdge's Second Amended Complaint appears to be a copy of U.S. Patent No. 8,135,706 ("the '706 patent") entitled "Operationalizing Search Engine Optimization." Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 17 of the Second Amended Complaint and on that basis denies them.

18. Searchmetrics admits that the '706 patent includes the language quoted in paragraph 18 of the Second Amended Complaint. Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 18 of the Second Amended Complaint and on that basis denies them.

19. Searchmetrics denies the allegations of paragraph 19.

20. Searchmetrics denies the allegations of paragraph 20.

21. Searchmetrics denies the allegations of paragraph 21.

SECOND CLAIM FOR RELIEF

(Infringement of the '700 Patent)

22. Searchmetrics realleges and incorporates herein by reference its responses in paragraphs 1 through 21, inclusive, as though fully set forth herein.

23. Searchmetrics admits Exhibit B to BrightEdge's Second Amended Complaint appears to be a copy of U.S. Patent No. 8,478,700 ("the '700 patent) entitled "Opportunity Identification and Forecasting for Search Engine Optimization." Searchmetrics admits that the '700 patent includes the language quoted in paragraph 23 of the Second Amended Complaint. Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 23 of the Second Amended Complaint and on that basis denies them.

24. Searchmetrics denies the allegations of paragraph 24.

25. Searchmetrics denies the allegations of paragraph 25.

26. Searchmetrics denies the allegations of paragraph 26.

/ / /

THIRD CLAIM FOR RELIEF

(Infringement of the '746 Patent)

27. Searchmetrics realleges and incorporates herein by reference its responses in paragraphs 1 through 26, inclusive, as though fully set forth herein.

28. Searchmetrics admits that Exhibit C to BrightEdge's Second Amended Complaint appears to be a copy of U.S. Patent No. 8,478,746 ("the '746 patent") entitled "Operationalizing Search Engine Optimization." Searchmetrics admits that the '746 patent includes the language quoted in paragraph 28 of the Second Amended Complaint. Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 28 of the Second Amended Complaint and on that basis denies them.

29. Searchmetrics denies the allegations of paragraph 29.

30. Searchmetrics denies the allegations of paragraph 30.

31. Searchmetrics denies the allegations of paragraph 31.

FOURTH CLAIM FOR RELIEF

(Infringement of the '863 Patent)

32. Searchmetrics realleges and incorporates herein by reference its responses in paragraphs 1 through 31, inclusive, as though fully set forth herein.

33. Searchmetrics admits that Exhibit D to BrightEdge's Second Amended Complaint appears to be a copy of U.S. Patent No. 8,577,863 ("the '863 patent") entitled "Correlating Web Page Visits and Conversions with External References." Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 33 of the Second Amended Complaint and on that basis denies them.

34. Searchmetrics admits that the '863 patent includes the language quoted in paragraph 34 of the Second Amended Complaint. Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 34 of the Second Amended Complaint and on that basis denies them.

35. Searchmetrics denies the allegations of paragraph 35.

36. Searchmetrics denies the allegations of paragraph 36.

37. Searchmetrics denies the allegations of paragraph 37.

FIFTH CLAIM FOR RELIEF

(Infringement of the '089 Patent)

38. Searchmetrics realleges and incorporates herein by reference its responses in paragraphs 1 through 37, inclusive, as though fully set forth herein.

39. Searchmetrics admits that Exhibit E to the Second Amended Complaint appears to be a copy of U.S. Patent No. 8,671,089 ("the '089 patent") entitled "Correlating Web Page Visits and Conversions with External References." Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 39 of the Second Amended Complaint and on that basis denies them.

40. Searchmetrics admits that the '089 patent includes the language quoted in paragraph 40 of the Second Amended Complaint. Except as specifically admitted, Searchmetrics lacks sufficient knowledge or information to admit or deny the remaining allegations of paragraph 40 of the Second Amended Complaint and on that basis denies them.

41. Searchmetrics denies the allegations of paragraph 41.

42. Searchmetrics denies the allegations of paragraph 42.

43. Searchmetrics denies the allegations of paragraph 43.

PRAYER FOR RELIEF

Searchmetrics denies that BrightEdge is entitled to any relief in this action, either as prayed for in the Second Amended Complaint or otherwise, and specifically denies all of the allegations and prayers for relief contained in paragraphs 1 through 9 of BrightEdge's Prayer for Relief.

DEMAND FOR JURY TRIAL

This paragraph states only a legal assertion, and thus, no response is required.

GENERAL DENIAL

To the extent that any allegations in the Second Amended Complaint are not specifically admitted, Searchmetrics denies them.

/ / /

SEARCHMETRICS' AFFIRMATIVE DEFENSES

Searchmetrics' Affirmative Defenses are listed below. Searchmetrics reserves the right to amend its Answer to add Affirmative Defenses, including inequitable conduct, consistent with facts discovered in the case.

FIRST DEFENSE

(Failure to State a Claim)

The Second Amended Complaint and each and every one of its allegations fail to state a claim upon which relief may be granted.

SECOND DEFENSE

(Noninfringement)

Searchmetrics does not and has not infringed any valid claim of the '706, '700, '746, '863 and/or '089 patents literally, directly, contributorily, by way of inducement and/or under the doctrine of equivalents.

THIRD DEFENSE

(Invalidity)

The '706, '700, '746, '863 and/or '089 patents are invalid for failure to satisfy one or more provisions of Title 35 of the United State Code, including, but not limited to, 35 U.S.C. §§ 101, 102, 103 and/or 112.

FOURTH DEFENSE

(Prosecution History Estoppel)

The claims of the '706, '700, '746, '863 and/or '089 patents are and were limited by amendment, by the prior art and/or by the statements made during its prosecution before the USPTO, such that BrightEdge is now estopped and otherwise precluded from maintaining that such claims of the '706, '700, '746, '863 and/or '089 patents are of sufficient scope to cover the accused products and methods, either literally or under the application of the doctrine of equivalents.

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/ / /

FIFTH DEFENSE

(Damages Limitations)

BrightEdge's claim for damages for patent infringement of the '706, '700, '746, '863 and/or '089 patents is limited by 35 U.S.C. § 286.

SIXTH DEFENSE

(Patent Marking)

BrightEdge's claim for damages for patent infringement of the '706, '700, '746, '863 and/or '089 patents is limited by 35 U.S.C. § 287 to those damages occurring only after the notice of infringement.

RESERVATION OF DEFENSES

Searchmetrics reserves the right to assert additional defenses which become apparent during discovery, including but not limited to the defenses of unclean hands, patent misuse, license, waiver, equitable estoppel, and inequitable conduct.

PRAYER FOR RELIEF

WHEREFORE, Searchmetrics prays for relief as follows:

A) BrightEdge take nothing by its Second Amended Complaint;

B) That the Court enter judgment in favor of Searchmetrics in this action, and against BrightEdge on BrightEdge's Second Amended Complaint, thereby dismissing Plaintiff's Complaint in its entirety, with prejudice, and deny Plaintiff all requested relief;

C) The Court find that the '706, '700, '746, '863 and '089 patents are not infringed by Searchmetrics;

D) The Court find the '706, '700, '746, '863 and '089 patents invalid;

E) The Court declare this case exceptional entitling Searchmetrics to its reasonable attorneys' fees under 35 U.S.C. § 285;

F) The Court award Searchmetrics its costs and reasonable attorneys' fees; and

G) That the Court grant such other relief as the Court deems just and proper under these circumstances.

JURY DEMAND

Searchmetrics demands a trial by jury on all claims, defenses and counterclaims so triable.

Dated: June 5, 2014

DLA PIPER LLP (US)

By /s/ *Carrie L. Williamson*
MARK FOWLER
TIMOTHY LOHSE
CARRIE L. WILLIAMSON

Attorneys for Defendants
SEARCHMETRICS GMBH and
SEARCHMETRICS, INC.

EXHIBIT C

US008135706B2

(12) **United States Patent**
Yu et al.

(10) **Patent No.: US 8,135,706 B2**
(45) **Date of Patent: Mar. 13, 2012**

(54) **OPERATIONALIZING SEARCH ENGINE OPTIMIZATION**

(75) Inventors: **Jimmy Yu**, Foster City, CA (US); **Sammy Yu**, San Mateo, CA (US); **Lemuel S. Park**, Cerritos, CA (US); **Rolland Yip**, Foster City, CA (US)

(73) Assignee: **Brightedge Technologies, Inc.**, San Mateo, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 91 days.

(21) Appl. No.: **12/855,668**

(22) Filed: **Aug. 12, 2010**

(65) **Prior Publication Data**

US 2012/0041938 A1 Feb. 16, 2012

(51) **Int. Cl.**
G06F 17/30 (2006.01)
G06Q 30/00 (2012.01)

(52) **U.S. Cl.** **707/722**; 705/14.49

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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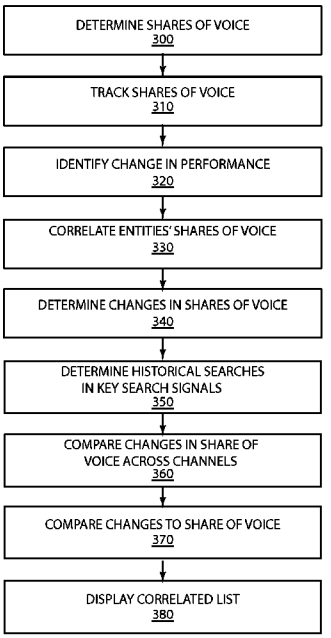
* cited by examiner

Primary Examiner — Tarek Chbouki
(74) *Attorney, Agent, or Firm* — Maschoff Gilmore & Israelsen

(57) **ABSTRACT**

A method for managing reference to an entity on a network includes determining shares of voice for an entity and other entities across a plurality of channels with respect to a plurality of search terms. The method also includes correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities. Thereafter, shares of voice for the entity across the plurality of channels may be correlated to determine relative changes in share of voice for the entity within each of the channels. The relative change in share of voice for the entity with respect to the other entities and the relative changes in share of voice for the entity within each of the channels may then be displayed.

22 Claims, 5 Drawing Sheets



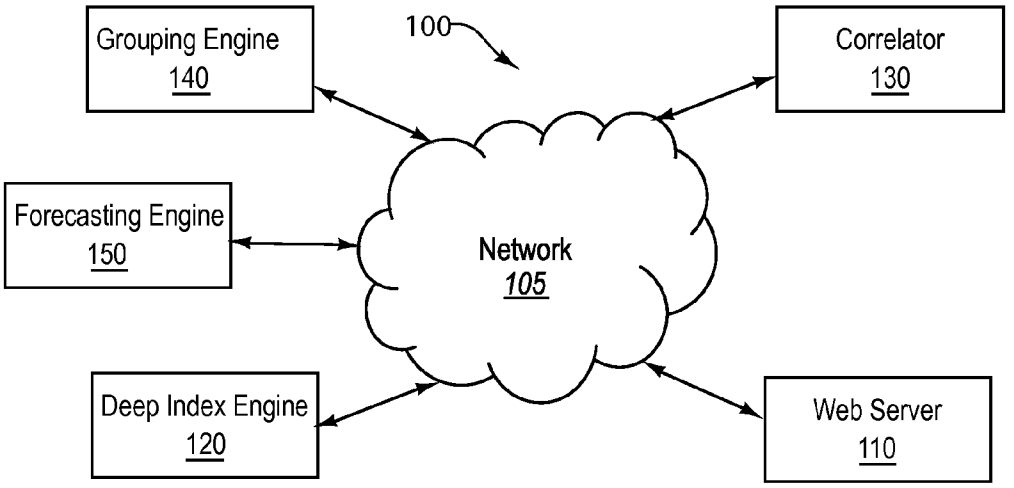

Grouping Engine
140
100
Correlator
130
Forecasting Engine
150
Network
105
Deep Index Engine
120
Web Server
110

FIG. 1

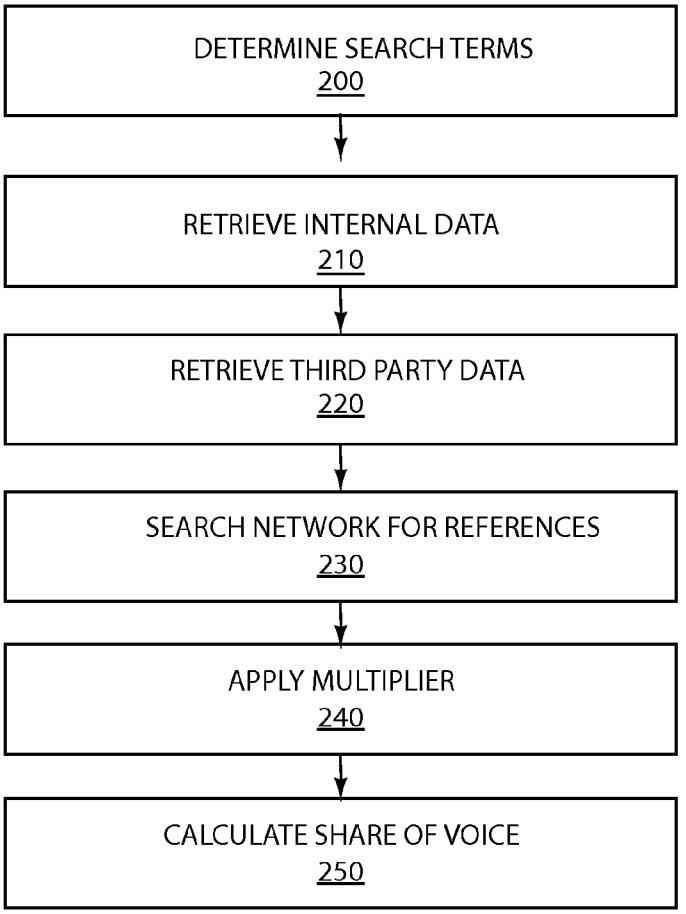

DETERMINE SEARCH TERMS
200
RETRIEVE INTERNAL DATA
210
RETRIEVE THIRD PARTY DATA
220
SEARCH NETWORK FOR REFERENCES
230
APPLY MULTIPLIER
240
CALCULATE SHARE OF VOICE
250

FIG. 2

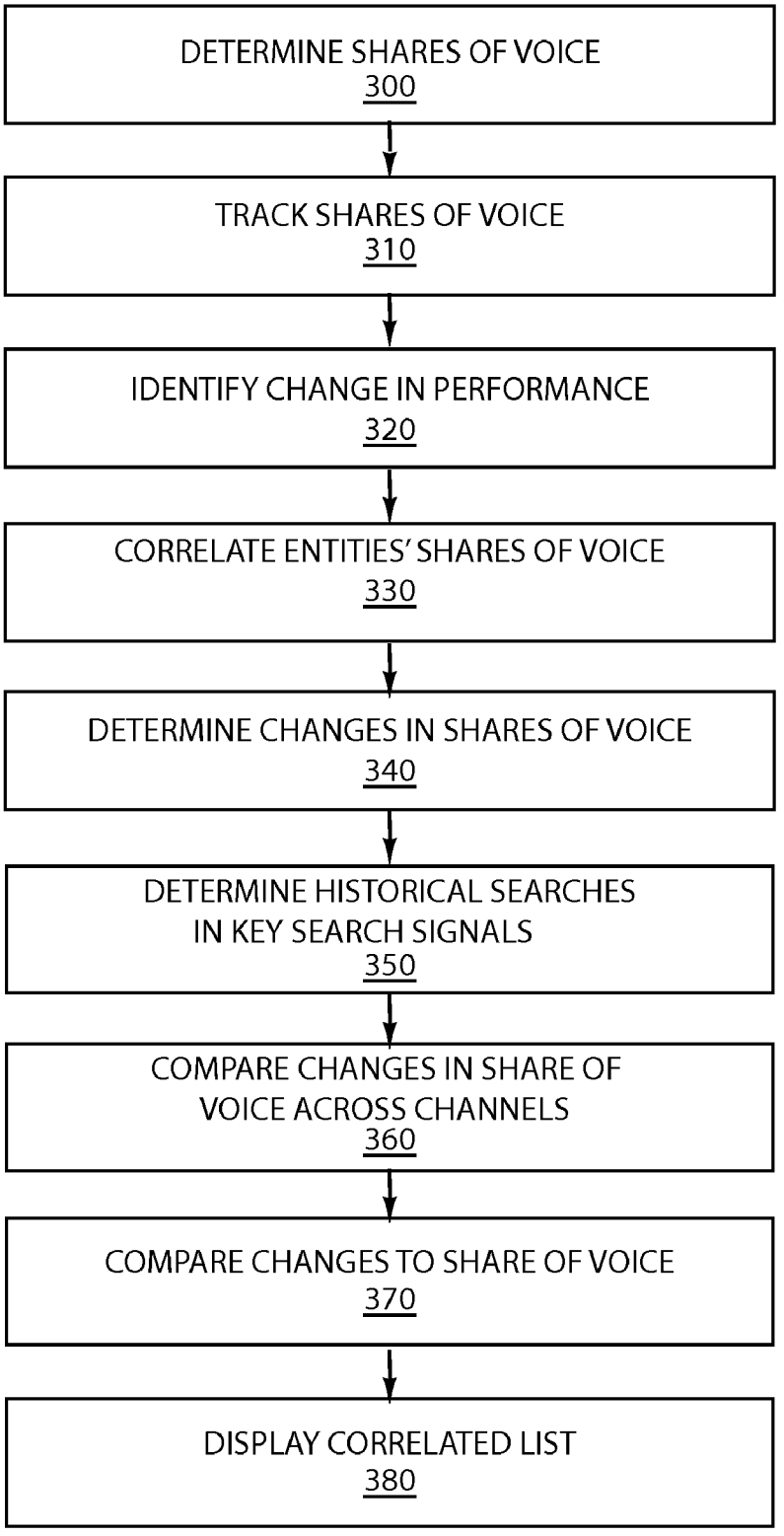

DETERMINE SHARES OF VOICE
300
TRACK SHARES OF VOICE
310
IDENTIFY CHANGE IN PERFORMANCE
320
CORRELATE ENTITIES' SHARES OF VOICE
330
DETERMINE CHANGES IN SHARES OF VOICE
340
DETERMINE HISTORICAL SEARCHES IN KEY SEARCH SIGNALS
350
COMPARE CHANGES IN SHARE OF VOICE ACROSS CHANNELS
360
COMPARE CHANGES TO SHARE OF VOICE
370
DISPLAY CORRELATED LIST
380

FIG. 3

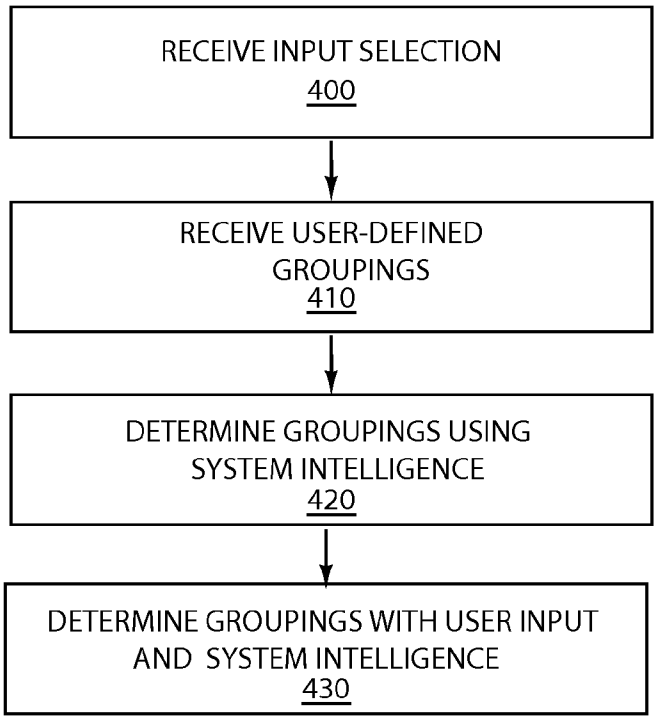

RECEIVE INPUT SELECTION
400
RECEIVE USER-DEFINED GROUPINGS
410
DETERMINE GROUPINGS USING SYSTEM INTELLIGENCE
420
DETERMINE GROUPINGS WITH USER INPUT AND SYSTEM INTELLIGENCE
430

FIG. 4

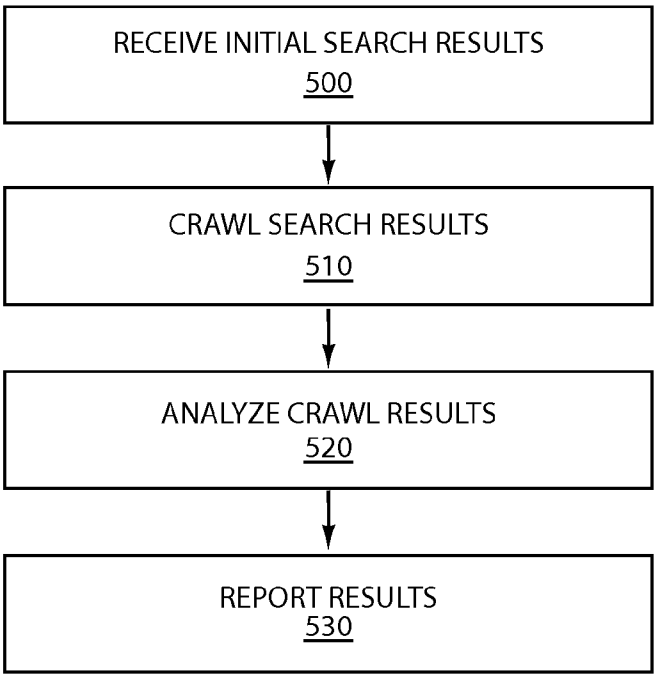

RECEIVE INITIAL SEARCH RESULTS
500
CRAWL SEARCH RESULTS
510
ANALYZE CRAWL RESULTS
520
REPORT RESULTS
530

FIG. 5

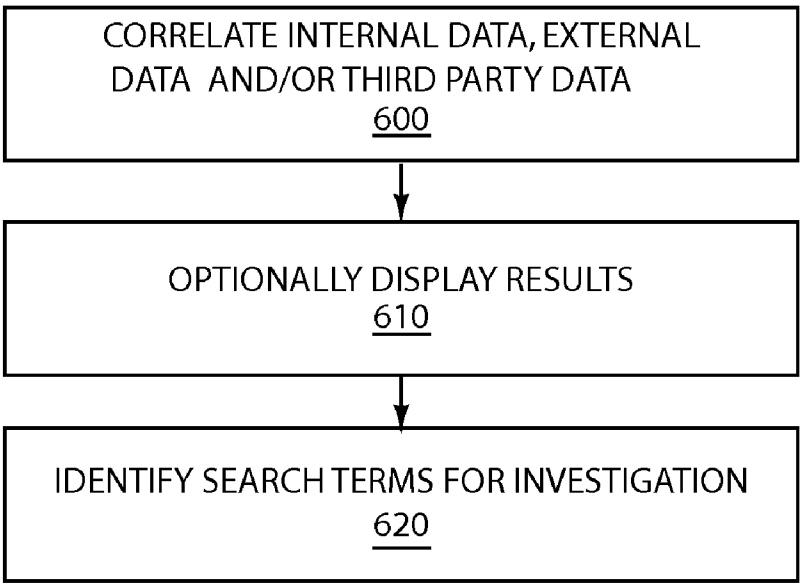

CORRELATE INTERNAL DATA, EXTERNAL DATA AND/OR THIRD PARTY DATA
600
OPTIONALLY DISPLAY RESULTS
610
IDENTIFY SEARCH TERMS FOR INVESTIGATION
620

FIG. 6

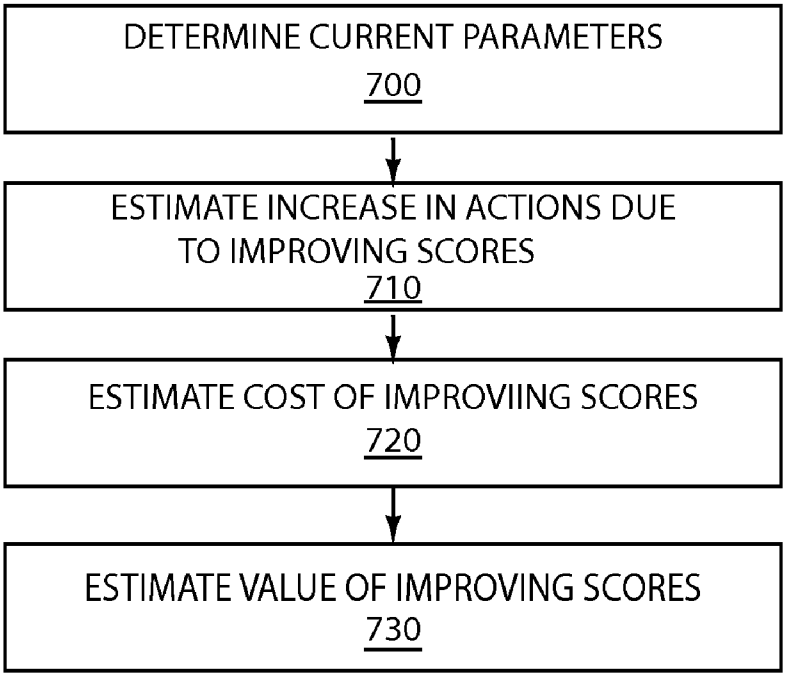

DETERMINE CURRENT PARAMETERS
700
ESTIMATE INCREASE IN ACTIONS DUE TO IMPROVING SCORES
710
ESTIMATE COST OF IMPROVIING SCORES
720
ESTIMATE VALUE OF IMPROVING SCORES
730

FIG. 7

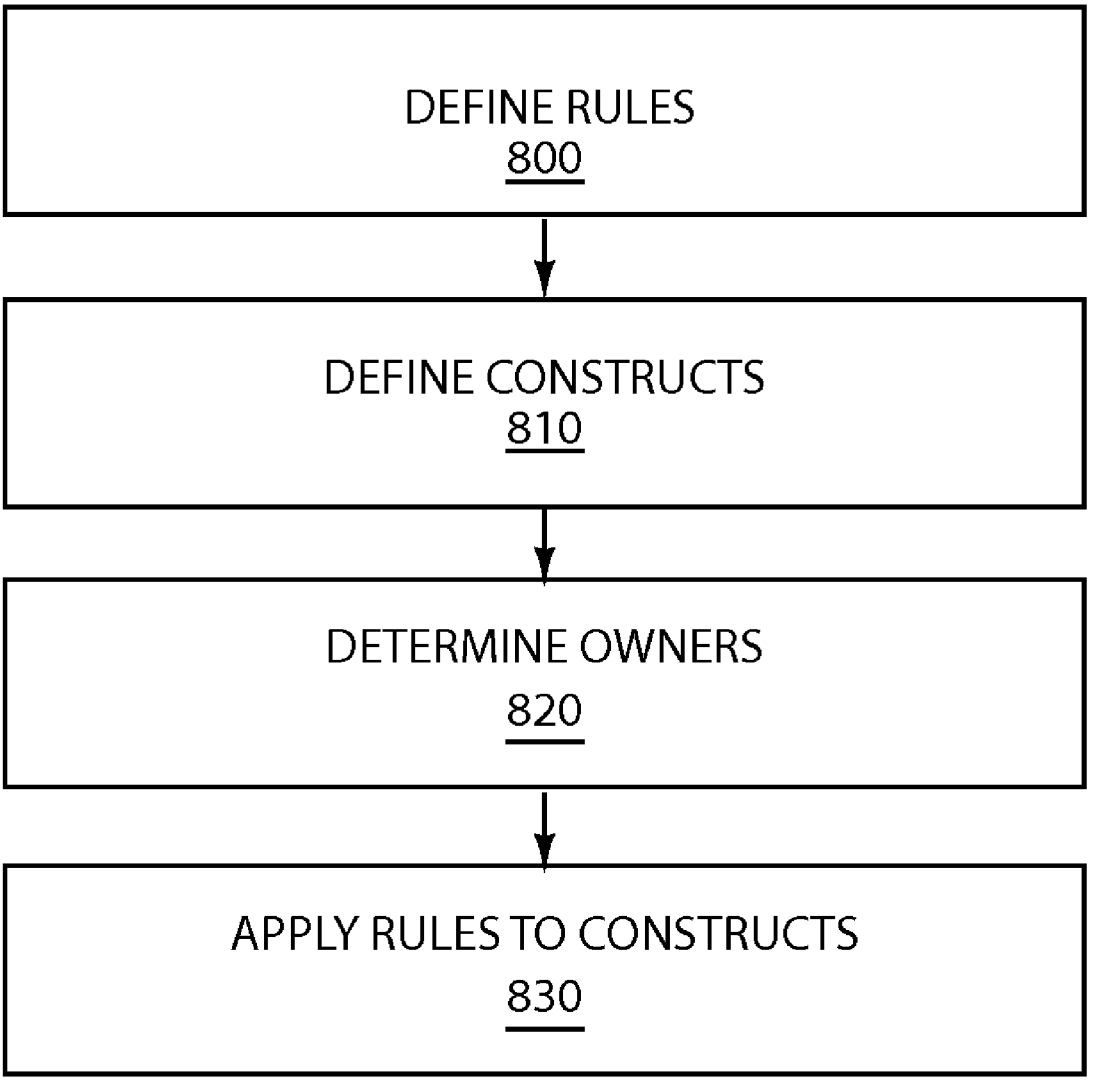

DEFINE RULES
800
DEFINE CONSTRUCTS
810
DETERMINE OWNERS
820
APPLY RULES TO CONSTRUCTS
830

FIG. 8

OPERATIONALIZING SEARCH ENGINE OPTIMIZATION

BACKGROUND OF THE INVENTION

The Field of the Invention

The Internet has changed the way people gather information, establish relationships with one another and even how people communicate with one another. Additionally, the Internet has changed the way companies seek potential customers and even what the meaning of a business is. It has changed the way companies advertise, sell, coordinate with one another and compete with one another. With this change has come a huge explosion in the number of Web Pages for people to visit. Search engines, such as Google, Bing, Yahoo and others have come into being to help people find their way to Web Pages that they desire. As a result, the number and types of channels that a marketer can leverage has also exploded—beyond organic and paid search, they can also leverage blogs, social media, video sharing, mobile content and ads, display ads, and many other channels.

Additionally, tracking the behavior of the actions of each visitor would allow the Web Page to be marketed more efficiently. In particular, many Web Pages track their organic search performance in search engines based on number of visits for certain keywords. However, they cannot determine how many visitors came as a result of a particular search engine result and rank position to the Web Page, instead they must estimate this based on the data (referral header) passed to the web page which only helps them determine the number of visitors that came from a specific keyword. Without understanding key attributes of their performance on the search engine, they cannot accurately determine the effectiveness of their marketing efforts. Moreover, they cannot determine how their organic search marketing efforts would impact what those visitors do on the Web Page when they have found the Web Page. For example, if a Web Page is selling merchandise, there is currently no way to determine who completed a particular purchase on the Web Page and compare that with how that visitor came to the Web Page.

Therefore, owners and designers of Web Pages must estimate how visitors have come to the Web Page and what they do once they are on the Web Page. This does not allow them to determine which actions would present a better chance for success of the Web Page. For example, a Web Page owner might be confronted with limited marketing budgets that allow them to either improve their ranking in search engine results or that will place advertisements for their Web Page on other Web Pages but not both. Currently, the Web Page owner must choose which strategy to follow with limited information on which would be more effective.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practiced.

BRIEF SUMMARY OF THE INVENTION

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential characteristics of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

A method for managing reference to an entity on a network includes determining shares of voice for an entity and other entities across a plurality of channels with respect to a plurality of search terms. The method also includes correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities. Thereafter, shares of voice for the entity across the plurality of channels may be correlated to determine relative changes in share of voice for the entity within each of the channels. The relative change in share of voice for the entity with respect to the other entities and the relative changes in share of voice for the entity within each of the channels may then be displayed.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** illustrates a block diagram of a system **100** configured to manage activities associated with an entity according to one example;

FIG. **2** illustrates a flowchart for determining shares of voice according to one example;

FIG. **3** illustrates an exemplary method for identifying changes in an entity's performance according to one example;

FIG. **4** illustrates a method for determining groupings according to one example;

FIG. **5** illustrates a method for identifying additional search terms according to one example;

FIG. **6** illustrates a method for identifying opportunities to optimize references according to one example;

FIG. **7** illustrates a method for forecasting results of an initiative according to one example; and

FIG. **8** illustrates a method for determining compliance for optimization of references to an entity.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Systems and methods are provided herein for determining shares of voice, both for the entity and other entities, with respect to selected search terms across channels and over time. Systems and methods are also provided herein for determining causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels. In addition, the system is configured to determine and ensure compliance to optimization standards.

FIG. **1** illustrates a block diagram of a system **100** configured to manage activities associated with an entity. In at least one example, the system **100** is configured to determine and

track shares of voice for a selected entity and other entities, such as competitors. Entities can include individuals, corporations, brands, products, models or any other entities referenced anywhere on a network such as the Internet. The references may include links and/or references to one or more web pages or other media, such as display advertisements, associated with the entity. Accordingly, the references can include organic references, online advertisements including display advertisements, news items or any other reference to the entity.

FIG. **1** shows that the system **100** can include a network **105**. In at least one implementation, the network **105** can be used to connect the various parts of the system **100** to one another, such as between a web server **110**, a deep index engine **120**, a correlator **130**, grouping engine **140**, and a forecasting engine **150**. It will be appreciated that while these components are being shown as separate that the components may be combined as desired. Further, while one of each component is illustrated, it will be appreciated that the system **100** may include any number of each of the components shown. In at least one example, the system **100** is configured to determine a share of voice an entity has for search terms and groups of search terms within and across various channels using the components described herein. The system **100** may be further configured to track the entity's share of voice for the search terms over time. The system **100** may also be configured to determine a share of voice different entities have for the same search terms. By tracking the entity's share of voice and other entities shares of voice over time, all of which may be tracked across channels, the system **100** can isolate causes for changes in performance.

As will be discussed in more detail hereinafter, the grouping engine **140** is configured to determine meaningful groupings of information to provide methods, processes and platforms to manage content and relevant marketing data (SEO metrics) at scale for large entities possessing a large amount of content and marketing data. The groupings can be user defined, customized with technology intervention, or automatically generated based on intelligent analysis that combines internal/third party/external data. As a result, the system **100** is configured to perform methods for aggregating content and SEO metrics in meaningful groupings that can then be tracked and measured. Analysis can be performed at these groupings that will give meaningful and actionable information to the marketer due to the nature of the segmentation of the groups. Such a configuration can allow the system **100** to manage changes to share of voice over time and identify potential opportunities.

As will be discussed in more detail hereinafter, the forecasting engine **150** is configured to determine a search term or search terms to optimize. The search term or terms may be selected from a group or basket of known search terms that may affect actions related to the entity. The forecasting engine **150** may also be configured to help marketers forecast the business value of optimization initiatives (e.g., if I work on optimizing for a given 5 keywords, what is the likely result in improvement in my search engine rank position and how much more incremental revenue will be generated from the improvement) and also take into account the difficulty and expense associated with the initiative. The forecasting engine may be further configured to determine causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels.

In at least one example, the network **105** includes the Internet, including a global internetwork formed by logical and physical connections between multiple wide area networks and/or local area networks and can optionally include the World Wide Web ("Web"), including a system of interlinked hypertext documents accessed via the Internet. Alternately or additionally, the network **105** includes one or more cellular RF networks and/or one or more wired and/or wireless networks such as, but not limited to, 802.xx networks, Bluetooth access points, wireless access points, IP-based networks, or the like. The network **105** can also include servers that enable one type of network to interface with another type of network.

In at least one implementation, the web server **110** (or "webserver") can include any system capable of storing and transmitting a Web Page to a user. For example, the web server **110** can include a computer program that is responsible for accepting requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which can include HTML documents and linked objects for display to the user. Additionally or alternatively, the web server **110** can include the capability of logging some detailed information about client requests and server responses, to log files.

The entity can include any number of Web Pages. The aggregation of references to the various Web Pages can be referred to as traffic. It should be noted that "Web Page" as used herein refers to any online posting, including domains, subdomains, Web posts, Uniform Resource Identifiers ("URIs"), Uniform Resource Locators ("URLs"), images, videos, or other piece of content and non-permanent postings such as e-mail and chat unless otherwise specified.

In at least one implementation, external references to a Web Page can include any reference to the Web Page which directs a visitor to the Web Page. For example, an external reference can include text documents, such as blogs, news items, customer reviews, e-mails or any other text document which discusses the Web Page. Additionally or alternatively, an external reference can include a Web Page which includes a link to the Web Page. For example, an external reference can include other Web Pages, search engine results pages, advertisements or the like.

In the illustrated example, the deep index engine **120** is configured to use search terms identified above to perform a search of the network to identify references to the entity. The deep index engine **120** is further configured to score the results of the search of the network with respect to the entity. This score may include a position at which references to the entity are displayed within the search results. The score may also optionally include compliance/non-compliance values. The relative position of the references to the entity within the search result can affect how the references affect actions related to the entity. Accordingly, by determining the relative position of the references within search results, the deep index engine **120** is able to determine a current performance metric for each of the search terms as they relate to the entity.

Additionally or alternatively, the deep index engine **120** may be configured to score the search results for each of the search terms with respect to other entities, including entities found in the competitive listing for the search results. Accordingly, the deep index engine **120** may be configured to gather external data related to performance of other entities to establish current baselines for those entities as well.

Additionally or alternatively, the deep index engine **120** may be further configured to crawl the search results related to each of the search terms to retrieve external data. In particular, the deep index engine **120** may be configured to crawl

the search results for each of the search terms and analyze data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc) for each URL in the search result. The deep index engine **120** may then analyze the data to identify additional search terms that may be relevant to the entity, but which may not have been searched or on which the entity does not rank. In at least one example, this analysis may include conducting a keyword frequency search. Accordingly, the deep index engine **120** may be configured to surface additional search terms. In at least one example, these additional search terms and opportunities identified and targeted in any channel (SEO, paid search, social networks, etc.). Cross-channel opportunities are also a part of the opportunity identification (e.g. if a customer is not ranking on a keyword on organic search that a competitor ranks on, the customer can immediately target this keyword in paid search). Other external data may include compliance/non-compliance values. It will be appreciated that compliance/non-compliance values may also be retrieved as internal data as well.

An exemplary deep index engine is described in more detail in co-pending U.S. patent application Ser. No. 12/436,704 entitled "COLLECTING AND SCORING ONLINE REFERENCES" filed May 6, 2009, the disclosure of which is hereby incorporated by reference in its entirety.

Additional current performance metrics may include internal data determined by the correlator **130**. In at least one implementation, the correlator **130** can determine how visitors are directed to the entity and how those visitors behave once there. For example, the correlator **130** can correlate conversion of visits to the search terms that drove the visits.

An exemplary correlator is described in more detail in co-pending U.S. patent application Ser. No. 12/574,069 filed Oct. 6, 2009 and entitled "CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES" the disclosure of which is hereby incorporated by reference in its entirety.

As will be discussed in more detail hereinafter, the forecasting engine **150** may receive data from third parties including information about network activity related to the search terms described above. The forecasting engine **150** may also be configured to receive the internal data, including the output of the correlator **130** as well as external data, including the output of the deep index engine **120**. The forecasting engine **150** may use the internal data, the third party data, and the external data to identify opportunities for optimizing placement of references to the entity as well as to forecasting the likely costs and benefits of improving references to the entity. This may allow the system to determine causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice, the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels.

In brief summary, the system may be configured to determine shares of voice, both for the entity and other entities, with respect to selected search terms across channels and over time. The system is also configured to determine causes in changes of performance based on analysis of the shares of voice. Further, through analysis of the shares of voice, the system can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels. In addition, the system is configured to determine and ensure compliance to optimization standards. Each of these aspects will be described in more detail in turn below.

FIG. **2** illustrates a flowchart for determining shares of voice. The method can be implemented using software, hardware or any combination thereof. If the method is implemented using hardware, the steps of the method can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA) or any other logic device capable of carrying out software instructions or other logic functions.

Additionally or alternatively, the method can be implemented using a server or other single computing environment. If a server or other single computing environment is utilized, the conversions need not be divided into groups, since all conversions will be analyzed by the same server or single computing environment.

As illustrated in FIG. **2**, the method begins at step **200** by determining search terms. In at least one example, search terms may include keywords retrieved from a keyword database. The keyword database contains one or more keywords to be used in the page search. Further, search terms may received by input from a user. In some embodiments, additional search terms may be surfaced by crawling search results of previously searched terms, including those retrieved from a keyword database and/or received by input from a user.

At step **210**, internal data is retrieved related to the search terms. For example, previous actions related to the network to determine a total number of conversions associated with the search terms as well as the total value of those conversions. This internal data may be retrieved or calculated in any desired manner. The internal data can also include information identifying which channels were associated with the values and conversions.

The method also includes at step **220** retrieving third party data related to the search terms. This third party data may include any desired information, including information about network activity such as traffic or visits related to the search terms. Third party data may also include information about the channels in which the traffic or visits occurred. For example, third party data may include, without limitation, search engine data such as cost per click (CPC) values for the search terms, search frequency for the keywords, and any other desired data that may be provided by third parties. Requests for and/or receipt of third party data may take place at any point, including simultaneously with retrieving internal data related to the search terms at step **200**.

Still referring to FIG. **2**, the method also includes at step **230** performing a search in which the search terms are used to search the network for references to the entity. Any method may be used to search the network for references to the entity. Further, any number of channels within the network may be searched as desired. The search may be performed over time and/or so as to simulate searching at a variety of geographical locations. In such a process, data relative to the volatility of a site's performance in the organic channel may be obtained by taking multiple samples and measuring the volatility of their performance (e.g. rank differences).

In at least one example, performing the search may include scoring the results of the search of the network with respect to one or more of the entities referenced in the search results. Additionally or alternatively, the score may also include the channel associated with the search. Additionally or alternatively, this score may include a position at which references to each of the entities are displayed within the search results.

Performing the search may also include performing a crawl of the search results related to each of the search terms. In particular, the method may include crawling the search results for each of the search terms and analyzing data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc.) for each URL in the search result. Such a crawl may also identify the sentiment of references to each site reference (e.g. the SERP listing for each site as well as the content on the web page referenced in the SERP listing will determine the sentiment of the reference). In another example, the may

Once the internal, external, and/or third party data has been retrieved and the search terms have been searched and scored, a multiplier may be applied at step **240** to determine aggregate share values. Factors included in or considered relevant to the multiplier may include any combination or weighting of the internal, external, and/or third party data retrieved above. For example, the multiplier may include the product of an estimated click rate and volume of search for term. In other examples, sentiment corrections, geography based corrections, volatility based corrections or other corrections may be included in the multiplier as desired, such as industry specific considerations.

The aggregate share values for all the entities referenced in the search may then be combined and the share of voice for each calculated at step **250** by dividing each entity's aggregate share value to the total of all the aggregate share values.

FIG. **3** illustrates an exemplary method for identifying changes in an entity's performance. As illustrated in FIG. **3**, the method may begin by determining shares of voice at step **300**. Shares of voice may be calculated in any way, including by the exemplary method for determining shares of voice described above with reference to FIG. **2**. While shares of voice may be used in correlating and determining performance metrics below, it will be appreciate that any other metric or variable may also be analyzed, including compliance/non-compliance determined according a method described in more detail with reference to FIG. **8**.

Thereafter, the shares of voice may be tracked at step **310**. Tracking shares of voice for search terms may include determining shares of voice at selected time intervals over a selected time period. Tracking shares of voice over a time period may include determining shares of voice at the selected time period or after the time period has passed.

In order to determine a cause for a change in performance, the change for performance is first identified, as at step **320**. Such a change may include a change in revenue. Any other changes in performance may also be identified as desired with respect to the present method. Identifying a change in performance in accordance with step **320** may also include determining a time period of interest associated with the drop in performance. Such a time period may be of any desired length.

As shown in FIG. **3**, the method may also include at step **330** correlating the entity's shares of voice for search terms across several channels with other entities' shares of voice for the same search terms across the same channels. These correlations may then be used to isolate potential causes for the change in performance.

For example, as previously introduced, shares of voice for various entities may be tracked over time and across channels for any number of search terms. Tracking shares of voice for various entities may provide a competitive baseline. In particular, at step **340** the method may include determining changes in shares of voice for the search terms for each of the entities for the time period associated with the change in performance. If the entity's share of voice decreased at the same time the competitors' shares of voice have increased, a portion of the change in performance may be attributable to a loss in the entity's share of voice for those search terms. Changes in the relative shares of voice for the entities may be assigned weighted values to be analyzed later based on relative sizes of the changes.

The change in performance may be attributable to other factors, which may also be isolated using correlations of entities' shares of voice for search terms. For example, at step **350** historical searches in key search signals may be determined. Such changes may include such changes as changes in backlinks, page changes, anchor text changes content updates, etc. Changes in the historical searches may be assigned a weighted value to be analyzed later based on relative sizes of the changes.

Further, correlating shares of voice for the entity may facilitate comparison of an entity's share of voice for the search terms across channels at step **360**. In particular, if changes in the entity's share of voice across channels are more or less uniform, less of the change in performance may be attributable to changes in performance across the channels. If, however, changes for the entity's share of voice vary significantly between channels, performance within those channels may then be analyzed separately to help isolate causes for the change. In one example, channels may include search engines. In an example, if a change in a share of voice is identified, the share of voice may then be analyzed to determine whether similar changes have occurred across the search engines. If the drop is isolated to a specific search engine, it may be likely an algorithm has changed for that specific search engine and actions can be taken to improve share of voice for that search engine. Changes across channels may be assigned a weighted value to be analyzed later based on relative sizes of the changes.

Changes to share of voice, which are reflected by the weighted values determined in steps **340**-**350**, may then be compared at step **370**, to help isolate which of aspect of a change in voice most strongly correlates with the change in performance. At step **380**, this correlated list may then be displayed to the user for analysis. Accordingly, by examining signals like competitive baseline and performance across multiple channels of the same type can provide a user with a prioritized list of potential causes of drops and increase in performance.

In addition to correlating changes in performance to changes in voice, the system described above with reference to FIG. **1** may be configured to group search terms into meaningful groupings to allow the entity to understand changes in performance since changes can be isolated to groupings rather than to aggregate references to the entire entity. Such an approach can provide a useful degree of granularity since each grouping represents a meaningful category of data. Further, such an approach can help surface how groupings are trending as well as help identify categories for investigation. The search terms discussed above with reference to FIG. **3** may include groupings of search terms. One exemplary method for grouping search terms will now be discussed in more detail with reference to FIG. **4**.

FIG. **4** illustrates a method for determining groupings according to one example. The method begins at step **400** by receiving an input selection as to whether the groupings will be defined by a user as at step **410**, determined by system intelligence as at step **420**, or determined by a combination of the two as at step **430**. The selection as to how the groupings are to be determined may be received in any desired manner, such as through the use of input/output devices. This input

may be received at an initial setup stage, received before each search is performed, or received at any desired time.

With respect to step **410**, if the received selection indicates that the groupings are to be user defined, the user may define the groupings in any desired manner. For example, the user may directly define the groupings. In particular, with respect to user-defined groupings, users may be aware of keywords, keyword variants, or keyword categories for actions that are related to the entity, such as traffic, events/interaction with the website including conversion events, purchase/sale, download, signup, or any other actions, compliance/non-compliance. For example, a user may define groups such as keyword groupings based on a keyword category or keyword variant that combine laudatory words, a category of interest, and a geographical category. One such exemplary grouping could include the phrase "best restaurants"+[city] (e.g., best restaurants in San Francisco, best restaurants in New York, etc).

In addition to entering keywords directly, users may also be able to group pages by page type. For example, a user may be able to group product page types, editorial pages, blog posts, or other categories together. In at least one example, a user may create user-defined templates by grouping page types together as desired. Further, user-defining groupings at step **410** may also include receiving input to combine pages by variables such as page name, title, uniform resource locator (URL), sponsored link costs, revenue per visit, time on site, bounce rate, page views, visitors, key business drivers, or other properties that can be provided by the user, internal systems, or third party data. Accordingly, the method may include receiving input to establish various groupings of search parameters as defined by the user.

As introduced, the method may also include determining groupings automatically. Accordingly, with respect to step **420**, if the received selection indicates that groupings are to be determined by system intelligence, the system may at least initially receive input to guide the search. In other examples, the determination may be performed automatically without user intervention.

In the case that user guidance is initially provided, the system may receive input to select general parameters for the system to search. For example, the system may receive input selecting the top keywords that drive traffic or volume to the entity. In such an example, the system may automatically group these keywords. Further, the system may also receive input to select page types, page names, uniform resource locators, or other categories or classifications of web pages that affect traffic in a selected manner. Additionally, the system may also receive input to select top pages that dropped in user visits, conversions, or other performance metrics as desired. The system may then automatically generate groupings based on any or all of these inputs. Accordingly the method may include receiving input to establish various groupings of search parameters automatically.

With respect to step **430**, if the received selection indicates that groupings are to be determined by a combination of system intelligence and user-defined terms, the system intelligence and user input can be combined in any desired manner. For example, the system may receive the input described above in determining user-defined groupings. Based on the result of the groupings, the system may automatically perform a search to identify keywords, phrases, page types, or any other data that is frequently associated with the user-defined groupings. Other types of search terms includes compliance/non-compliance. The system may then automatically combine the surfaced keywords, phrases, pages types, etc. and the user-defined search terms into groupings that may then be searched again as desired. Further, a frequency analysis may be conducted on the search results with respect to competitors to determine additional keyword variants and/or other correlations. The searching may be performed automatically or may be performed in response to additional input as desired. Accordingly, the method may combine user input and system intelligence to determine groupings to be searched. Further, as described above, search results may be used in further determining and/or refining groupings as desired.

Additionally or alternatively, automatic groupings may be based on seasonality or current events. In particular, some keywords are searched more frequently based on the time of year, such as the searching of terms related to Christmas trees during the months of November and December.

Once a search job has been performed, the results may be analyzed and the groupings managed. For example, the groupings may be analyzed according to the methods discussed above with reference to FIGS. **2** and **3**, thereby allowing a user to further narrow and isolate changes in performance in meaningful ways. The method of grouping search terms together may also be used to help surface additional keywords that may be of interest, both with respect to analyze for current performance as well as with respect to identify potential opportunities. One exemplary method for identifying additional search terms of interest will now be discussed in more detail with reference to FIG. **5**.

As illustrated in FIG. **5**, a method for identifying additional search terms may be begin by receiving initial search results as a base set of search terms at step **500**. In at least one example, the base set of search terms may be received as part of the groupings provided according to the method discussed above with reference to FIG. **4**. In other examples, the search results may be based on search terms provided in some other manner, such as by input received from a user.

At step **510** the method continues by crawling the search results, including the URL's returned in the search results as well as any APIs associated with the search and crawling the search results for each of the search terms. As shown at step **520**, the method may include analyzing data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc) for each URL in the search result. In at least one example, analyzing data associated with the crawl may include performance of a frequency search on the information. A frequency search or other analysis on the crawl data may help identify additional search terms not included in the base set, but that are relevant to the search results. Additionally or alternatively, incoming links from third party websites may be grouped into meaningful page types (based on the content of the page) for the purpose of conducting analysis to understand the value of a link from a given page type or the value to the business of actions related to the entity that are driven from a given page type. These results may provide meaningful insight and actionable opportunities based on aggregated data analysis applied to individual groupings, combinations of groupings, or by comparing groupings.

As shown at step **530**, the results of the analysis, which may include the additional search terms discovered through the analysis, are reported. In at least one example, reporting the results may include providing the results for use in any of the methods described above. Additionally or alternatively, the results may be reported by displaying the results to a user. In addition to providing meaningful analysis relative an entity's performance, identifying additional search terms may help identify potential opportunities.

As illustrated in FIG. **6**, a method for identifying opportunities to optimize references may begin by correlating inter-

nal data and external data at step **600**. Optionally, third party data may also be included in the correlation. In at least one example, correlating internal and external data includes correlating scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms. The search terms may be determined or identified in any suitable manner, including methods described above.

As shown at step **610** the method may include displaying search results to a user. Once the internal and external data have been correlated, search terms may be identified for investigation as at step **620**. Identifying search terms for investigation may include identifying search terms for which the references score poorly with respect to the entity. Such an example may include which scores place the references on a second page or worse, on search results.

Conversion rates and/or total values may then be analyzed to determine whether the search terms are worth investigating. For example, if the search terms have a high conversion rate, it may be worth investigating improving the score for those search terms with respect to the entity. Further, if the total value associated with search term is relatively large despite a poor score, this may indicate that improving the score of the search term may be worth investigating. Accordingly, a method for identifying search terms for investigation may include determining a score threshold, such as a page rank score, determining a threshold conversion ratio and determining a threshold total value. If the parameters associated with a score are met and either or both of the conversion threshold or value threshold are met, the search term may automatically be identified for investigation.

Additionally or alternatively, the external data described above may be analyzed to score search results for references to another entity, such as a competitor. The scores associated with the search terms may then be analyzed to determine where another competitor may be weak. For example, if a competitor ranks low on a search term that has significant traffic or visits associated therewith as reflected in the third party data, that search term may be identified for further investigation.

Additionally or alternatively, the external data analyzed to score search results for references to another entity may indicate where the entity is weak. For example, additional search terms may be identified by crawling search results for a given set of search terms, as described above. The additional search terms may then be searched and a score generated for the search results with respect to both the entity and to competitors. If the scores indicate that the competitors score well with respect to those search terms and the entity does not, that determination may indicate the search terms are worth investigating, such as by targeting the search terms in paid searches. In at least one example, a threshold rank may be determined for the entity, such as a rank that indicates that references to the entity are appearing on a third page or worse. Any threshold rank may be used as desired. In such an example, if a competitor scores better than the threshold rank with respect to the search terms and the entity scores worse than the threshold rank, the search terms may be automatically targeted for a paid search.

Additionally or alternatively, third party data may indicate that activity related to certain search parameters has spiked. This spike itself may identify the search terms as being worth investigating.

FIG. **7** illustrates a method for forecasting results of an initiative according to one example. The search terms may be generated by a user, may be surfaced according to the method for identifying opportunities described above, or by some other method. As a preliminary step, the search terms or other variables associated with the initiative may be analyzed as described above. Thereafter, as illustrated in FIG. **7**, the method may begin by determining the current parameters associated with the search terms for actions related to the entity, as at **700**. These parameters may include the internal and external data, such as correlated scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms. These parameters may also include third party

Once the current parameters for the search terms are determined, at step **710** the method estimates the increase in actions associated with improving scores for the search terms with respect to the entity. These estimates may be made a probabilistic model using data obtained from any of the sources described above. For example, it may be understood that keywords at given positions receive a relatively predictable percentage of the network traffic or visits for that page.

At step **720**, the method continues with determining a cost for improving scores. For example, improving scores may include building back links to the entity. Determining a cost of improving scores may include tracking previous increases of back links and correlating previous improvements in rank. A historical regression analysis or other methodology may then be applied to the previous efforts to estimate a cost for improving scores based on the cost and time associated with activities that improve the score.

At step **730**, the method continues with determining a value for improving scores using any desired calculation, such as user-defined formulas, probabilistic modeling or any other method. Accordingly, the present method allows marketers or other users to forecast likely outcomes for initiatives.

As a result, marketers may perform a similar analysis for each initiative to estimate likely cost for each initiative as well as a likely return for those initiatives. This may be tracked over time to help determine the effectiveness of the method and to help apply correction factors as desired. Further, the allocation of benefits determined above may be distributed across multiple initiatives, such as equally or proportionally as desired.

FIG. **8** illustrates a method for determining compliance for optimization of references to an entity. As illustrated in FIG. **8**, the method begins at step **800** defining rules. These rules may include initial default rules, however these may be defined or modified in each instance according to preferences of the entity. In at least one example, the rules can be defined by a user, by the system, or by some combination of the two. Examples of rules include the presence of title tags, size of character tags, and any other rule that may be desired. Such rules may be applied entity wide to help ensure compliance across pages.

FIG. **8** also illustrates the method may also include defining a set of constructs at step **810**. These constructs may include any information about the structure of Web Pages related to the entity. For example, the construct may include page templates, site maps, crawl paths, etc. or other constructs that reflect how the entity has organized a site.

At step **820**, the method includes determining an owner for each of the components identified in the construct. Each

owner may be responsible for the corresponding component and may be alerted when there are problems with the site.

At step **830**, the rules are applied to the construct. In at least one example, this may include utilizing a rule engine in a distributed environment in the cloud. In one example, the rule engine may be utilized to apply the rules determined above to the constructs to determine compliance. Further, these steps may be performed via virtual private network and obeying a crawl limit. The method described above may be performed in as a best practice in a staging environment to help ensure compliance before the entity makes any changes, such as site changes. In such an example, by tracking a trend of breaks against the components of the site, the entity can intelligently determine if a specific component is broken. Further, such a process may help an entity identify whether an entire component, such as a template, is not functioning properly rather than determining whether a specific page is not functioning properly. Further, the method described above may be utilized to analyze other entities to determine strengths or weaknesses. The application of the rules can include determining a percentage of the audits that passed. This percentage may then be included as part of the scores described and discussed above that are generated as part of search or analysis of references to the entity.

Accordingly, a compliance engine provide system/apparatus/method for crawling web pages on a site and applying an overall scoring function to generate a score for ops management, in one case this score could a compliance score for the purpose of managing SEO page standards compliance. Compliance may be measured across segmented groupings (e.g., of pages that denote a particular type/category of page, for example, as an ecommerce site, I may measure compliance for each set of pages grouped by product category)

In another example, compliance/non-compliance may be one of the variables correlated in addition or alternatively with shares of voice as described above. compliance non/compliance may be one of the search terms identified or grouped above. Accordingly, systems and methods may be provided for correlating the change in going from compliance to non-compliance or vice versa by grouping and then correlating that grouping back to SEO metrics (e.g., rank) or business metrics (e.g., visits/conversions/sale dollar value) in order to gauge how a change in compliance status impacts the business

Accordingly, a compliance score can be as simple as the number of audit rules that failed, the percentage of failed or passed rules, or could be a sophisticated function combining internal/external/third party data in order to assign business impact/value to the page or groupings of pages that are non-compliant.

Computer-executable instructions comprise, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing device to perform a certain function or group of functions. Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

As used herein, the term "module" or "component" can refer to software objects or routines that execute on the computing system. The different components, modules, engines, and services described herein may be implemented as objects or processes that execute on the computing system (e.g., as separate threads). While the system and methods described herein are preferably implemented in software, implementations in hardware or a combination of software and hardware are also possible and contemplated. In this description, a "computing entity" may be any computing system as previously defined herein, or any module or combination of modules running on a computing system.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A method for managing references to an entity on a network, comprising:

determining shares of voice for an entity and other entities across a plurality of channels with respect to a plurality of search terms, wherein determining shares of voice includes determining rank positions for the search terms with respect to the entity and the other entities and multiplying the rank positions by products of estimated click rates and volumes of traffic on the network for the entity and the other entities;

correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities;

correlating shares of voice for the entity across the plurality of channels to determine relative changes in share of voice for the entity within each of the channels; and

displaying the relative change in share of voice for the entity with respect to the other entities and the relative changes in share of voice for the entity within each of the channels.

2. The method of claim **1**, wherein determining shares of voice includes retrieving search results associated with different geographic locations.

3. The method of claim **1**, wherein calculating shares of voice includes determining volatility of search results for the search terms.

4. The method of claim **1**, further comprising correlating shares of voice with historical changes in search signals.

5. The method of claim **1**, wherein the channels include at least one of display advertisements, organic searches, page searches, linked advertisement networks, banner advertisements, contextual advertisements, e-mail, blogs, social networks, social news, affiliate marketing, mobile advertisements, media advertisements, video advertisements, discussion forums, news sites, rich media, social bookmarks, paid searches and in-game advertisements.

6. The method of claim **1**, wherein the search terms are determined by a process including:

determining a grouping for actions related to the entity, the grouping including a plurality of terms;

searching the network for the terms associated with the grouping; and

analyzing results of the searches to determine the rank positions for the entity within the results.

7. The method of claim **6**, wherein analyzing the results of the searches includes crawling the results of the search.

8. The method of claim **7**, further comprising performing a keyword frequency analysis on the pages crawled during the crawling step.

9. The method of claim **8**, further comprising grouping keywords identified during the crawling step with the terms of the grouping.

10. The method of claim **7**, wherein crawling the results of the search includes identifying page types of references within the search results.

11. A system for optimizing online references to an entity, the system comprising:

a processor configured to execute computer instructions to cause the system to perform operations, the operations comprising:

searching at least one channel on a network for references to the entity and other entities using a plurality of search terms to generate search results;

scoring the references associated with each of the plurality of search terms to generate scores for the references within the search results with respect to the entity and the other entities;

correlating conversions by one or more visits to the entity with the search terms that directed the visits to the entity to determine a conversion rate;

determining shares of voice for the entity and the other entities across a plurality of channels with respect to the plurality of search terms, wherein determining shares of voice includes determining rank positions for the search terms with respect to the entity and the other entities and multiplying the rank positions by products of estimated click rates and volumes of traffic on the network for the entity and the other entities;

correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities based on the scores for the references; and

correlating shares of voice for the entity across the plurality of channels to determine relative changes in share of voice for the entity within each of the channels based on the scores for the references.

12. The system of claim **11**, wherein searching at least one channel includes searching at least one of: display advertisements, organic searches, page searches, linked advertisement networks, banner advertisements, contextual advertisements, e-mail, blogs, social networks, social news, affiliate marketing, mobile advertisements, media advertisements, video advertisements, discussion forums, news sites, rich media, social bookmarks, paid searches and in-game advertisements.

13. The system of claim **11**, wherein using a plurality of search terms to generate search results includes using a plurality of keywords.

14. The system of claim **13**, wherein using a plurality of keywords further includes crawling previously returned search results and conducting a keyword frequency analysis to identify at least some of the plurality of keywords.

15. The system of claim **11**, wherein scoring the references associated with each of the plurality of search terms includes determining a keyword rank.

16. The system of claim **11**, further comprising scoring the references associated with each of the plurality of search terms to generate scores for the references within the search results with respect to competitive listings;

comparing the scores of the references within the search results with respect to the identify with the scores for the references within the search results with respect to competitive listings; and

displaying the search terms, the competitive listings, and the scores for the references within the search results with respect to the competitive listings.

17. The system of claim **11**, further comprising determining costs for improving the scores of the references within the search results with respect to the entity.

18. The system of claim **17**, further comprising determining values for improving the scores of the references within the search results associated with the search terms and selecting references to be improved based on determining the costs and values for improving the scoring of the references associated with the search terms.

19. The system of claim **17**, further comprising optimizing scores based on the steps of determining the costs and values for improving the scores of the references associated with the search terms.

20. The system of claim **11**, further comprising performing a compliance analysis for the entity.

21. The system of claim **20**, wherein the compliance analysis includes defining rules for the entity, defining constructs for the entity, determining owners for the constructs, and applying the rules to the constructs to determine compliance of the constructs with the rules, wherein applying the rules is performed in a distributed network in the cloud.

22. The system of claim **21**, wherein applying the rules includes applying the rules by way of a virtual private network.

* * * * *

EXHIBIT D

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Yu et al.

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(54) **OPERATIONALIZING SEARCH ENGINE OPTIMIZATION**

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(58) **Field of Classification Search**
None
See application file for complete search history.

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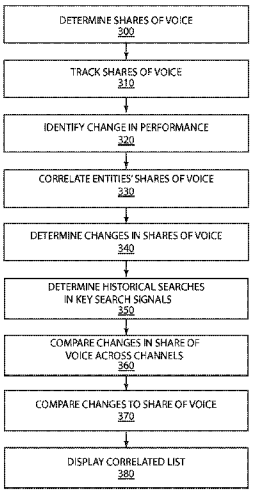
(57) **ABSTRACT**

A method for managing reference to an entity on a network includes determining shares of voice for an entity and other entities across a plurality of channels with respect to a plurality of search terms. The method also includes correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities. Thereafter, shares of voice for the entity across the plurality of channels may be correlated to determine relative changes in share of voice for the entity within each of the channels. The relative change in share of voice for the entity with respect to the other entities and the relative changes in share of voice for the entity within each of the channels may then be displayed.

20 Claims, 5 Drawing Sheets



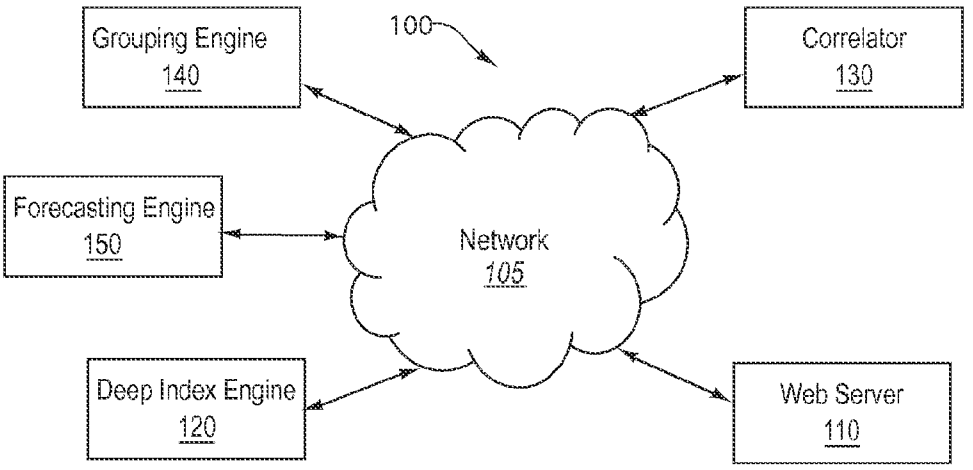

Grouping Engine
140
100
Correlator
130
Forecasting Engine
150
Network
105
Deep Index Engine
120
Web Server
110

FIG. 1

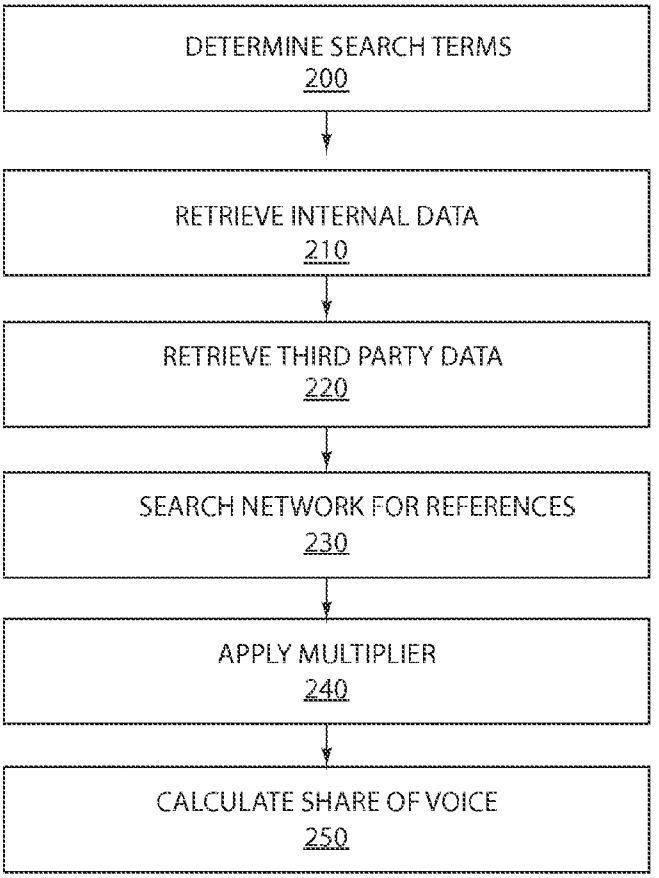

DETERMINE SEARCH TERMS
200
RETRIEVE INTERNAL DATA
210
RETRIEVE THIRD PARTY DATA
220
SEARCH NETWORK FOR REFERENCES
230
APPLY MULTIPLIER
240
CALCULATE SHARE OF VOICE
250

FIG. 2

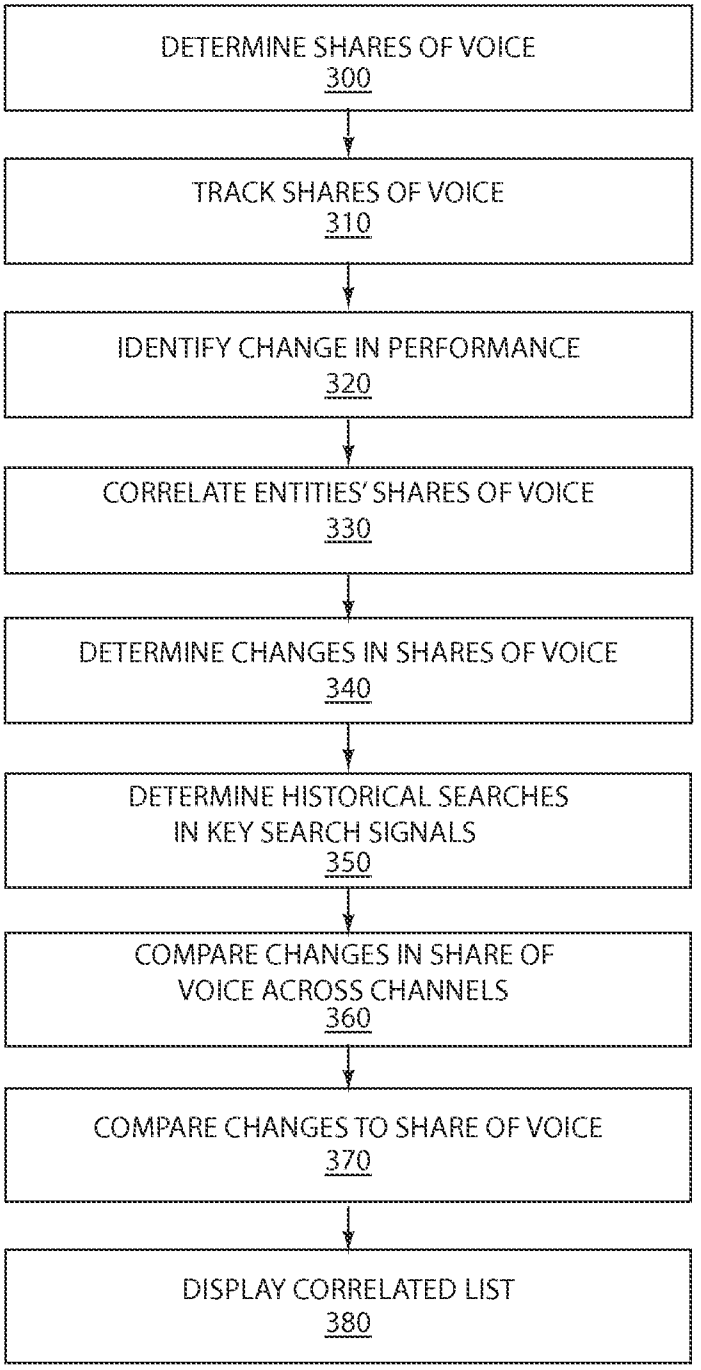

DETERMINE SHARES OF VOICE
300
TRACK SHARES OF VOICE
310
IDENTIFY CHANGE IN PERFORMANCE
320
CORRELATE ENTITIES' SHARES OF VOICE
330
DETERMINE CHANGES IN SHARES OF VOICE
340
DETERMINE HISTORICAL SEARCHES IN KEY SEARCH SIGNALS
350
COMPARE CHANGES IN SHARE OF VOICE ACROSS CHANNELS
360
COMPARE CHANGES TO SHARE OF VOICE
370
DISPLAY CORRELATED LIST
380

FIG. 3

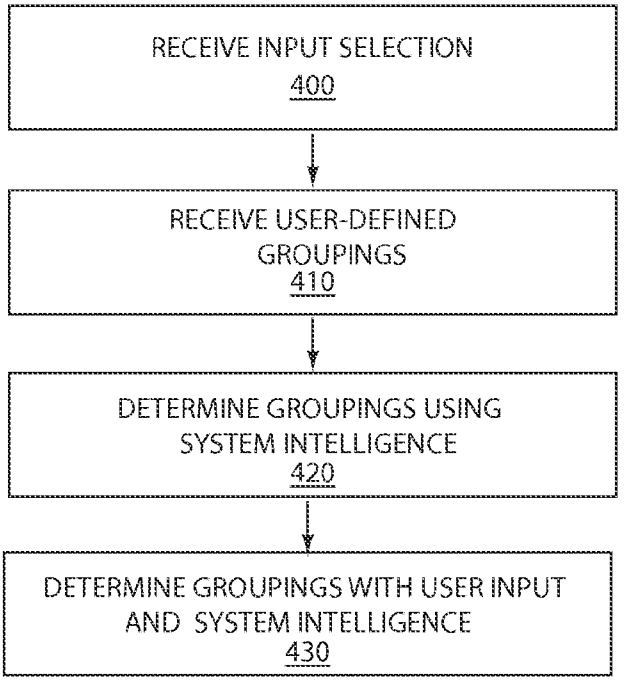

RECEIVE INPUT SELECTION
400
RECEIVE USER-DEFINED GROUPINGS
410
DETERMINE GROUPINGS USING SYSTEM INTELLIGENCE
420
DETERMINE GROUPINGS WITH USER INPUT AND SYSTEM INTELLIGENCE
430

FIG. 4

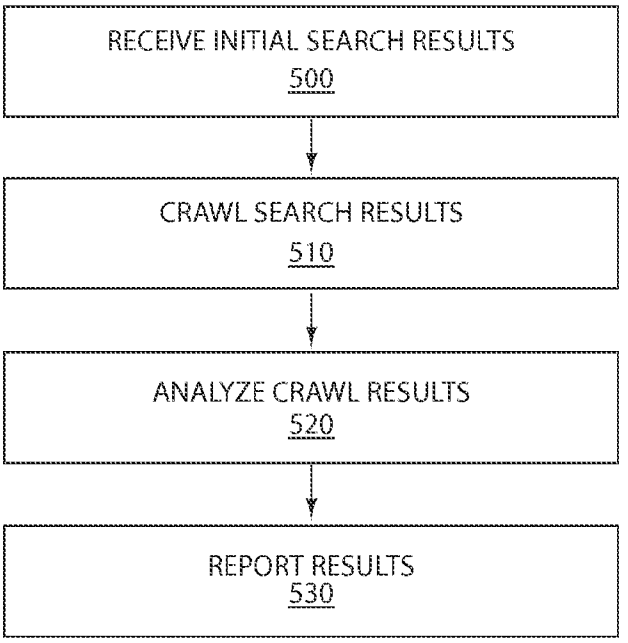

RECEIVE INITIAL SEARCH RESULTS
500
CRAWL SEARCH RESULTS
510
ANALYZE CRAWL RESULTS
520
REPORT RESULTS
530

FIG. 5

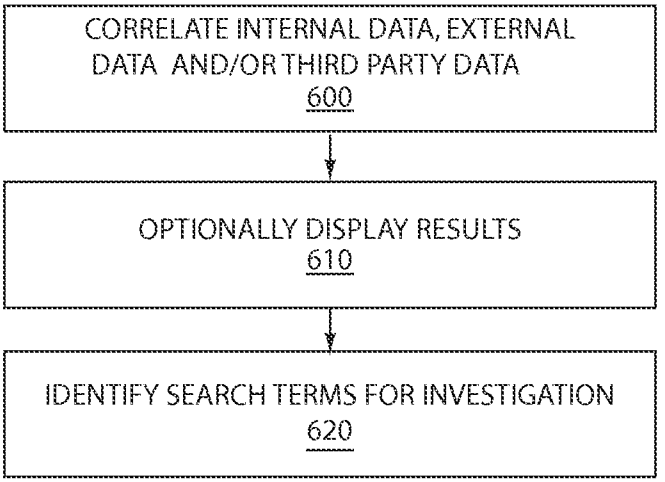

CORRELATE INTERNAL DATA, EXTERNAL DATA AND/OR THIRD PARTY DATA
600
OPTIONALLY DISPLAY RESULTS
610
IDENTIFY SEARCH TERMS FOR INVESTIGATION
620

FIG. 6

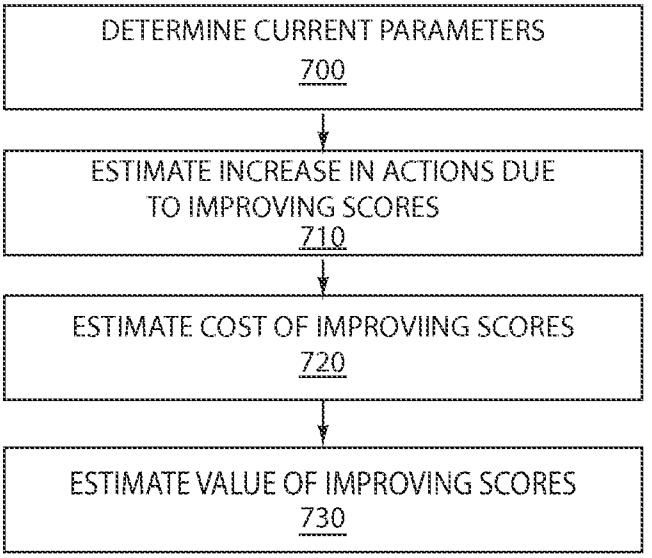

DETERMINE CURRENT PARAMETERS
700
ESTIMATE INCREASE IN ACTIONS DUE TO IMPROVING SCORES
710
ESTIMATE COST OF IMPROVIING SCORES
720
ESTIMATE VALUE OF IMPROVING SCORES
730

FIG. 7

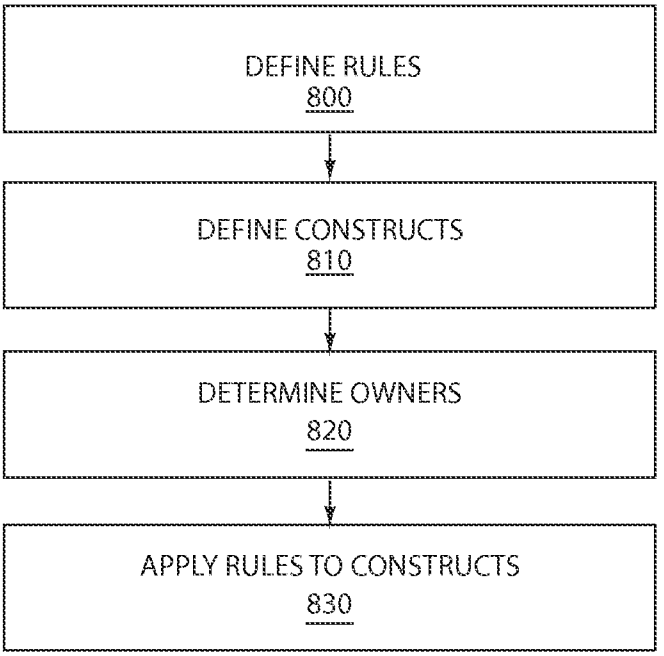

DEFINE RULES
800
DEFINE CONSTRUCTS
810
DETERMINE OWNERS
820
APPLY RULES TO CONSTRUCTS
830

FIG. 8

OPERATIONALIZING SEARCH ENGINE OPTIMIZATION

CROSS-REFERENCE TO RELATED APPLICATIONS

This patent application is a continuation of U.S. patent application Ser. No. 12/855,668, filed on Aug. 12, 2010, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

The Internet has changed the way people gather information, establish relationships with one another and even how people communicate with one another. Additionally, the Internet has changed the way companies seek potential customers and even what the meaning of a business is. It has changed the way companies advertise, sell, coordinate with one another and compete with one another. With this change has come a huge explosion in the number of Web Pages for people to visit. Search engines, such as Google, Bing, Yahoo and others have come into being to help people find their way to Web Pages that they desire. As a result, the number and types of channels that a marketer can leverage has also exploded—beyond organic and paid search, they can also leverage blogs, social media, video sharing, mobile content and ads, display ads, and many other channels.

Additionally, tracking the behavior of the actions of each visitor would allow the Web Page to be marketed more efficiently. In particular, many Web Pages track their organic search performance in search engines based on number of visits for certain keywords. However, they cannot determine how many visitors came as a result of a particular search engine result and rank position to the Web Page, instead they must estimate this based on the data (referral header) passed to the web page which only helps them determine the number of visitors that came from a specific keyword. Without understanding key attributes of their performance on the search engine, they cannot accurately determine the effectiveness of their marketing efforts. Moreover, they cannot determine how their organic search marketing efforts would impact what those visitors do on the Web Page when they have found the Web Page. For example, if a Web Page is selling merchandise, there is currently no way to determine who completed a particular purchase on the Web Page and compare that with how that visitor came to the Web Page.

Therefore, owners and designers of Web Pages must estimate how visitors have come to the Web Page and what they do once they are on the Web Page. This does not allow them to determine which actions would present a better chance for success of the Web Page. For example, a Web Page owner might be confronted with limited marketing budgets that allow them to either improve their ranking in search engine results or that will place advertisements for their Web Page on other Web Pages but not both. Currently, the Web Page owner must choose which strategy to follow with limited information on which would be more effective.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practiced.

BRIEF SUMMARY OF THE INVENTION

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential characteristics of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

A method for managing reference to an entity on a network includes determining shares of voice for an entity and other entities across a plurality of channels with respect to a plurality of search terms. The method also includes correlating shares of voice for the entity and the other entities with respect the search terms to determine a relative change in share of voice for the entity with respect to the other entities. Thereafter, shares of voice for the entity across the plurality of channels may be correlated to determine relative changes in share of voice for the entity within each of the channels. The relative change in share of voice for the entity with respect to the other entities and the relative changes in share of voice for the entity within each of the channels may then be displayed.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** illustrates a block diagram of a system **100** configured to manage activities associated with an entity according to one example;

FIG. **2** illustrates a flowchart for determining shares of voice according to one example;

FIG. **3** illustrates an exemplary method for identifying changes in an entity's performance according to one example;

FIG. **4** illustrates a method for determining groupings according to one example;

FIG. **5** illustrates a method for identifying additional search terms according to one example;

FIG. **6** illustrates a method for identifying opportunities to optimize references according to one example;

FIG. **7** illustrates a method for forecasting results of an initiative according to one example; and

FIG. **8** illustrates a method for determining compliance for optimization of references to an entity.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Systems and methods are provided herein for determining shares of voice, both for the entity and other entities, with respect to selected search terms across channels and over time. Systems and methods are also provided herein for determining causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and

across channels. In addition, the system is configured to determine and ensure compliance to optimization standards.

FIG. **1** illustrates a block diagram of a system **100** configured to manage activities associated with an entity. In at least one example, the system **100** is configured to determine and track shares of voice for a selected entity and other entities, such as competitors. Entities can include individuals, corporations, brands, products, models or any other entities referenced anywhere on a network such as the Internet. The references may include links and/or references to one or more web pages or other media, such as display advertisements, associated with the entity. Accordingly, the references can include organic references, online advertisements including display advertisements, news items or any other reference to the entity.

FIG. **1** shows that the system **100** can include a network **105**. In at least one implementation, the network **105** can be used to connect the various parts of the system **100** to one another, such as between a web server **110**, a deep index engine **120**, a correlator **130**, grouping engine **140**, and a forecasting engine **150**. It will be appreciated that while these components are being shown as separate that the components may be combined as desired. Further, while one of each component is illustrated, it will be appreciated that the system **100** may include any number of each of the components shown. In at least one example, the system **100** is configured to determine a share of voice an entity has for search terms and groups of search terms within and across various channels using the components described herein. The system **100** may be further configured to track the entity's share of voice for the search terms over time. The system **100** may also be configured to determine a share of voice different entities have for the same search terms. By tracking the entity's share of voice and other entities shares of voice over time, all of which may be tracked across channels, the system **100** can isolate causes for changes in performance.

As will be discussed in more detail hereinafter, the grouping engine **140** is configured to determine meaningful groupings of information to provide methods, processes and platforms to manage content and relevant marketing data (SEO metrics) at scale for large entities possessing a large amount of content and marketing data. The groupings can be user defined, customized with technology intervention, or automatically generated based on intelligent analysis that combines internal/third party/external data. As a result, the system **100** is configured to perform methods for aggregating content and SEO metrics in meaningful groupings that can then be tracked and measured. Analysis can be performed at these groupings that will give meaningful and actionable information to the marketer due to the nature of the segmentation of the groups. Such a configuration can allow the system **100** to manage changes to share of voice over time and identify potential opportunities.

As will be discussed in more detail hereinafter, the forecasting engine **150** is configured to determine a search term or search terms to optimize. The search term or terms may be selected from a group or basket of known search terms that may affect actions related to the entity. The forecasting engine **150** may also be configured to help marketers forecast the business value of optimization initiatives (e.g., if I work on optimizing for a given 5 keywords, what is the likely result in improvement in my search engine rank position and how much more incremental revenue will be generated from the improvement) and also take into account the difficulty and expense associated with the initiative. The forecasting engine may be further configured to determine causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels.

In at least one example, the network **105** includes the Internet, including a global internetwork formed by logical and physical connections between multiple wide area networks and/or local area networks and can optionally include the World Wide Web ("Web"), including a system of interlinked hypertext documents accessed via the Internet. Alternately or additionally, the network **105** includes one or more cellular RF networks and/or one or more wired and/or wireless networks such as, but not limited to, 802.xx networks, Bluetooth access points, wireless access points, IP-based networks, or the like. The network **105** can also include servers that enable one type of network to interface with another type of network.

In at least one implementation, the web server **110** (or "webserver") can include any system capable of storing and transmitting a Web Page to a user. For example, the web server **110** can include a computer program that is responsible for accepting requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which can include HTML documents and linked objects for display to the user. Additionally or alternatively, the web server **110** can include the capability of logging some detailed information about client requests and server responses, to log files.

The entity can include any number of Web Pages. The aggregation of references to the various Web Pages can be referred to as traffic. It should be noted that "Web Page" as used herein refers to any online posting, including domains, subdomains, Web posts, Uniform Resource Identifiers ("URIs"), Uniform Resource Locators ("URLs"), images, videos, or other piece of content and non-permanent postings such as e-mail and chat unless otherwise specified.

In at least one implementation, external references to a Web Page can include any reference to the Web Page which directs a visitor to the Web Page. For example, an external reference can include text documents, such as blogs, news items, customer reviews, e-mails or any other text document which discusses the Web Page. Additionally or alternatively, an external reference can include a Web Page which includes a link to the Web Page. For example, an external reference can include other Web Pages, search engine results pages, advertisements or the like.

In the illustrated example, the deep index engine **120** is configured to use search terms identified above to perform a search of the network to identify references to the entity. The deep index engine **120** is further configured to score the results of the search of the network with respect to the entity. This score may include a position at which references to the entity are displayed within the search results. The score may also optionally include compliance/non-compliance values. The relative position of the references to the entity within the search result can affect how the references affect actions related to the entity. Accordingly, by determining the relative position of the references within search results, the deep index engine **120** is able to determine a current performance metric for each of the search terms as they relate to the entity.

Additionally or alternatively, the deep index engine **120** may be configured to score the search results for each of the search terms with respect to other entities, including entities found in the competitive listing for the search results. Accordingly, the deep index engine **120** may be configured to gather

external data related to performance of other entities to establish current baselines for those entities as well.

Additionally or alternatively, the deep index engine **120** may be further configured to crawl the search results related to each of the search terms to retrieve external data. In particular, the deep index engine **120** may be configured to crawl the search results for each of the search terms and analyze data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc) for each URL in the search result. The deep index engine **120** may then analyze the data to identify additional search terms that may be relevant to the entity, but which may not have been searched or on which the entity does not rank. In at least one example, this analysis may include conducting a keyword frequency search. Accordingly, the deep index engine **120** may be configured to surface additional search terms. In at least one example, these additional search terms and opportunities identified and targeted in any channel (SEO, paid search, social networks, etc.). Cross-channel opportunities are also a part of the opportunity identification (e.g. if a customer is not ranking on a keyword on organic search that a competitor ranks on, the customer can immediately target this keyword in paid search). Other external data may include compliance/non-compliance values. It will be appreciated that compliance/non-compliance values may also be retrieved as internal data as well.

An exemplary deep index engine is described in more detail in co-pending U.S. patent application Ser. No. 12/436,704 entitled "COLLECTING AND SCORING ONLINE REFERENCES" filed May 6, 2009, the disclosure of which is hereby incorporated by reference in its entirety.

Additional current performance metrics may include internal data determined by the correlator **130**. In at least one implementation, the correlator **130** can determine how visitors are directed to the entity and how those visitors behave once there. For example, the correlator **130** can correlate conversion of visits to the search terms that drove the visits.

An exemplary correlator is described in more detail in co-pending U.S. patent application Ser. No. 12/574,069 filed Oct. 6, 2009 and entitled "CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES" the disclosure of which is hereby incorporated by reference in its entirety.

As will be discussed in more detail hereinafter, the forecasting engine **150** may receive data from third parties including information about network activity related to the search terms described above. The forecasting engine **150** may also be configured to receive the internal data, including the output of the correlator **130** as well as external data, including the output of the deep index engine **120**. The forecasting engine **150** may use the internal data, the third party data, and the external data to identify opportunities for optimizing placement of references to the entity as well as to forecasting the likely costs and benefits of improving references to the entity. This may allow the system to determine causes in changes of performance based on analyses of the shares of voice. Further, through analysis of the shares of voice, the systems and methods can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels.

In brief summary, the system may be configured to determine shares of voice, both for the entity and other entities, with respect to selected search terms across channels and over time. The system is also configured to determine causes in changes of performance based on analysis of the shares of voice. Further, through analysis of the shares of voice, the system can manage high impact search terms and opportunities. The system is also able to determine return on investment for targeting and managing high impact search terms as well as initiatives over time and across channels. In addition, the system is configured to determine and ensure compliance to optimization standards. Each of these aspects will be described in more detail in turn below.

FIG. **2** illustrates a flowchart for determining shares of voice. The method can be implemented using software, hardware or any combination thereof. If the method is implemented using hardware, the steps of the method can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA) or any other logic device capable of carrying out software instructions or other logic functions.

Additionally or alternatively, the method can be implemented using a server or other single computing environment. If a server or other single computing environment is utilized, the conversions need not be divided into groups, since all conversions will be analyzed by the same server or single computing environment.

As illustrated in FIG. **2**, the method begins at step **200** by determining search terms. In at least one example, search terms may include keywords retrieved from a keyword database. The keyword database contains one or more keywords to be used in the page search. Further, search terms may received by input from a user. In some embodiments, additional search terms may be surfaced by crawling search results of previously searched terms, including those retrieved from a keyword database and/or received by input from a user.

At step **210**, internal data is retrieved related to the search terms. For example, previous actions related to the network to determine a total number of conversions associated with the search terms as well as the total value of those conversions. This internal data may be retrieved or calculated in any desired manner. The internal data can also include information identifying which channels were associated with the values and conversions.

The method also includes at step **220** retrieving third party data related to the search terms. This third party data may include any desired information, including information about network activity such as traffic or visits related to the search terms. Third party data may also include information about the channels in which the traffic or visits occurred. For example, third party data may include, without limitation, search engine data such as cost per click (CPC) values for the search terms, search frequency for the keywords, and any other desired data that may be provided by third parties. Requests for and/or receipt of third party data may take place at any point, including simultaneously with retrieving internal data related to the search terms at step **200**.

Still referring to FIG. **2**, the method also includes at step **230** performing a search in which the search terms are used to search the network for references to the entity. Any method may be used to search the network for references to the entity. Further, any number of channels within the network may be searched as desired. The search may be performed over time and/or so as to simulate searching at a variety of geographical locations. In such a process, data relative to the volatility of a site's performance in the organic channel may be obtained by taking multiple samples and measuring the volatility of their performance (e.g. rank differences).

In at least one example, performing the search may include scoring the results of the search of the network with respect to

one or more of the entities referenced in the search results. Additionally or alternatively, the score may also include the channel associated with the search. Additionally or alternatively, this score may include a position at which references to each of the entities are displayed within the search results. Performing the search may also include performing a crawl of the search results related to each of the search terms. In particular, the method may include crawling the search results for each of the search terms and analyzing data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc.) for each URL in the search result. Such a crawl may also identify the sentiment of references to each site reference (e.g. the SERP listing for each site as well as the content on the web page referenced in the SERP listing will determine the sentiment of the reference).

Once the internal, external, and/or third party data has been retrieved and the search terms have been searched and scored, a multiplier may be applied at step **240** to determine aggregate share values. Factors included in or considered relevant to the multiplier may include any combination or weighting of the internal, external, and/or third party data retrieved above. For example, the multiplier may include the product of an estimated click rate and volume of search for term. In other examples, sentiment corrections, geography based corrections, volatility based corrections or other corrections may be included in the multiplier as desired, such as industry specific considerations.

The aggregate share values for all the entities referenced in the search may then be combined and the share of voice for each calculated at step **250** by dividing each entity's aggregate share value to the total of all the aggregate share values.

FIG. **3** illustrates an exemplary method for identifying changes in an entity's performance. As illustrated in FIG. **3**, the method may begin by determining shares of voice at step **300**. Shares of voice may be calculated in any way, including by the exemplary method for determining shares of voice described above with reference to FIG. **2**. While shares of voice may be used in correlating and determining performance metrics below, it will be appreciate that any other metric or variable may also be analyzed, including compliance/non-compliance determined according a method described in more detail with reference to FIG. **8**.

Thereafter, the shares of voice may be tracked at step **310**. Tracking shares of voice for search terms may include determining shares of voice at selected time intervals over a selected time period. Tracking shares of voice over a time period may include determining shares of voice at the selected time period or after the time period has passed.

In order to determine a cause for a change in performance, the change for performance is first identified, as at step **320**. Such a change may include a change in revenue. Any other changes in performance may also be identified as desired with respect to the present method. Identifying a change in performance in accordance with step **320** may also include determining a time period of interest associated with the drop in performance. Such a time period may be of any desired length.

As shown in FIG. **3**, the method may also include at step **330** correlating the entity's shares of voice for search terms across several channels with other entities' shares of voice for the same search terms across the same channels. These correlations may then be used to isolate potential causes for the change in performance.

For example, as previously introduced, shares of voice for various entities may be tracked over time and across channels for any number of search terms. Tracking shares of voice for various entities may provide a competitive baseline. In particular, at step **340** the method may include determining changes in shares of voice for the search terms for each of the entities for the time period associated with the change in performance. If the entity's share of voice decreased at the same time the competitors' shares of voice have increased, a portion of the change in performance may be attributable to a loss in the entity's share of voice for those search terms. Changes in the relative shares of voice for the entities may be assigned weighted values to be analyzed later based on relative sizes of the changes.

The change in performance may be attributable to other factors, which may also be isolated using correlations of entities' shares of voice for search terms. For example, at step **350** historical searches in key search signals may be determined. Such changes may include such changes as changes in backlinks, page changes, anchor text changes content updates, etc. Changes in the historical searches may be assigned a weighted value to be analyzed later based on relative sizes of the changes.

Further, correlating shares of voice for the entity may facilitate comparison of an entity's share of voice for the search terms across channels at step **360**. In particular, if changes in the entity's share of voice across channels are more or less uniform, less of the change in performance may be attributable to changes in performance across the channels. If, however, changes for the entity's share of voice vary significantly between channels, performance within those channels may then be analyzed separately to help isolate causes for the change. In one example, channels may include search engines. In an example, if a change in a share of voice is identified, the share of voice may then be analyzed to determine whether similar changes have occurred across the search engines. If the drop is isolated to a specific search engine, it may be likely an algorithm has changed for that specific search engine and actions can be taken to improve share of voice for that search engine. Changes across channels may be assigned a weighted value to be analyzed later based on relative sizes of the changes.

Changes to share of voice, which are reflected by the weighted values determined in steps **340-350**, may then be compared at step **370**, to help isolate which of aspect of a change in voice most strongly correlates with the change in performance. At step **380**, this correlated list may then be displayed to the user for analysis. Accordingly, by examining signals like competitive baseline and performance across multiple channels of the same type can provide a user with a prioritized list of potential causes of drops and increase in performance.

In addition to correlating changes in performance to changes in voice, the system described above with reference to FIG. **1** may be configured to group search terms into meaningful groupings to allow the entity to understand changes in performance since changes can be isolated to groupings rather than to aggregate references to the entire entity. Such an approach can provide a useful degree of granularity since each grouping represents a meaningful category of data. Further, such an approach can help surface how groupings are trending as well as help identify categories for investigation. The search terms discussed above with reference to FIG. **3** may include groupings of search terms. One exemplary method for grouping search terms will now be discussed in more detail with reference to FIG. **4**.

FIG. **4** illustrates a method for determining groupings according to one example. The method begins at step **400** by receiving an input selection as to whether the groupings will be defined by a user as at step **410**, determined by system

intelligence as at step **420**, or determined by a combination of the two as at step **430**. The selection as to how the groupings are to be determined may be received in any desired manner, such as through the use of input/output devices. This input may be received at an initial setup stage, received before each search is performed, or received at any desired time.

With respect to step **410**, if the received selection indicates that the groupings are to be user defined, the user may define the groupings in any desired manner. For example, the user may directly define the groupings. In particular, with respect to user-defined groupings, users may be aware of keywords, keyword variants, or keyword categories for actions that are related to the entity, such as traffic, events/interaction with the website including conversion events, purchase/sale, download, signup, or any other actions, compliance/non-compliance. For example, a user may define groups such as keyword groupings based on a keyword category or keyword variant that combine laudatory words, a category of interest, and a geographical category. One such exemplary grouping could include the phrase "best restaurants"+[city] (e.g., best restaurants in San Francisco, best restaurants in New York, etc).

In addition to entering keywords directly, users may also be able to group pages by page type. For example, a user may be able to group product page types, editorial pages, blog posts, or other categories together. In at least one example, a user may create user-defined templates by grouping page types together as desired. Further, user-defining groupings at step **410** may also include receiving input to combine pages by variables such as page name, title, uniform resource locator (URL), sponsored link costs, revenue per visit, time on site, bounce rate, page views, visitors, key business drivers, or other properties that can be provided by the user, internal systems, or third party data. Accordingly, the method may include receiving input to establish various groupings of search parameters as defined by the user.

As introduced, the method may also include determining groupings automatically. Accordingly, with respect to step **420**, if the received selection indicates that groupings are to be determined by system intelligence, the system may at least initially receive input to guide the search. In other examples, the determination may be performed automatically without user intervention.

In the case that user guidance is initially provided, the system may receive input to select general parameters for the system to search. For example, the system may receive input selecting the top keywords that drive traffic or volume to the entity. In such an example, the system may automatically group these keywords. Further, the system may also receive input to select page types, page names, uniform resource locators, or other categories or classifications of web pages that affect traffic in a selected manner. Additionally, the system may also receive input to select top pages that dropped in user visits, conversions, or other performance metrics as desired. The system may then automatically generate groupings based on any or all of these inputs. Accordingly the method may include receiving input to establish various groupings of search parameters automatically.

With respect to step **430**, if the received selection indicates that groupings are to be determined by a combination of system intelligence and user-defined terms, the system intelligence and user input can be combined in any desired manner. For example, the system may receive the input described above in determining user-defined groupings. Based on the result of the groupings, the system may automatically perform a search to identify keywords, phrases, page types, or any other data that is frequently associated with the user-defined groupings. Other types of search terms includes compliance/non-compliance. The system may then automatically combine the surfaced keywords, phrases, pages types, etc. and the user-defined search terms into groupings that may then be searched again as desired. Further, a frequency analysis may be conducted on the search results with respect to competitors to determine additional keyword variants and/or other correlations. The searching may be performed automatically or may be performed in response to additional input as desired. Accordingly, the method may combine user input and system intelligence to determine groupings to be searched. Further, as described above, search results may be used in further determining and/or refining groupings as desired.

Additionally or alternatively, automatic groupings may be based on seasonality or current events. In particular, some keywords are searched more frequently based on the time of year, such as the searching of terms related to Christmas trees during the months of November and December.

Once a search job has been performed, the results may be analyzed and the groupings managed. For example, the groupings may be analyzed according to the methods discussed above with reference to FIGS. **2** and **3**, thereby allowing a user to further narrow and isolate changes in performance in meaningful ways. The method of grouping search terms together may also be used to help surface additional keywords that may be of interest, both with respect to analyze for current performance as well as with respect to identify potential opportunities. One exemplary method for identifying additional search terms of interest will now be discussed in more detail with reference to FIG. **5**.

As illustrated in FIG. **5**, a method for identifying additional search terms may be begin by receiving initial search results as a base set of search terms at step **500**. In at least one example, the base set of search terms may be received as part of the groupings provided according to the method discussed above with reference to FIG. **4**. In other examples, the search results may be based on search terms provided in some other manner, such as by input received from a user.

At step **510** the method continues by crawling the search results, including the URL's returned in the search results as well as any APIs associated with the search and crawling the search results for each of the search terms. As shown at step **520**, the method may include analyzing data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc) for each URL in the search result. In at least one example, analyzing data associated with the crawl may include performance of a frequency search on the information. A frequency search or other analysis on the crawl data may help identify additional search terms not included in the base set, but that are relevant to the search results. Additionally or alternatively, incoming links from third party websites may be grouped into meaningful page types (based on the content of the page) for the purpose of conducting analysis to understand the value of a link from a given page type or the value to the business of actions related to the entity that are driven from a given page type. These results may provide meaningful insight and actionable opportunities based on aggregated data analysis applied to individual groupings, combinations of groupings, or by comparing groupings.

As shown at step **530**, the results of the analysis, which may include the additional search terms discovered through the analysis, are reported. In at least one example, reporting the results may include providing the results for use in any of the methods described above. Additionally or alternatively, the results may be reported by displaying the results to a user. In addition to providing meaningful analysis relative an entity's

performance, identifying additional search terms may help identify potential opportunities.

As illustrated in FIG. **6**, a method for identifying opportunities to optimize references may begin by correlating internal data and external data at step **600**. Optionally, third party data may also be included in the correlation. In at least one example, correlating internal and external data includes correlating scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms. The search terms may be determined or identified in any suitable manner, including methods described above.

As shown at step **610** the method may include displaying search results to a user. Once the internal and external data have been correlated, search terms may be identified for investigation as at step **620**. Identifying search terms for investigation may include identifying search terms for which the references score poorly with respect to the entity. Such an example may include which scores place the references on a second page or worse, on search results.

Conversion rates and/or total values may then be analyzed to determine whether the search terms are worth investigating. For example, if the search terms have a high conversion rate, it may be worth investigating improving the score for those search terms with respect to the entity. Further, if the total value associated with search term is relatively large despite a poor score, this may indicate that improving the score of the search term may be worth investigating. Accordingly, a method for identifying search terms for investigation may include determining a score threshold, such as a page rank score, determining a threshold conversion ratio and determining a threshold total value. If the parameters associated with a score are met and either or both of the conversion threshold or value threshold are met, the search term may automatically be identified for investigation.

Additionally or alternatively, the external data described above may be analyzed to score search results for references to another entity, such as a competitor. The scores associated with the search terms may then be analyzed to determine where another competitor may be weak. For example, if a competitor ranks low on a search term that has significant traffic or visits associated therewith as reflected in the third party data, that search term may be identified for further investigation.

Additionally or alternatively, the external data analyzed to score search results for references to another entity may indicate where the entity is weak. For example, additional search terms may be identified by crawling search results for a given set of search terms, as described above. The additional search terms may then be searched and a score generated for the search results with respect to both the entity and to competitors. If the scores indicate that the competitors score well with respect to those search terms and the entity does not, that determination may indicate the search terms are worth investigating, such as by targeting the search terms in paid searches. In at least one example, a threshold rank may be determined for the entity, such as a rank that indicates that references to the entity are appearing on a third page or worse. Any threshold rank may be used as desired. In such an example, if a competitor scores better than the threshold rank with respect to the search terms and the entity scores worse than the threshold rank, the search terms may be automatically targeted for a paid search.

Additionally or alternatively, third party data may indicate that activity related to certain search parameters has spiked. This spike itself may identify the search terms as being worth investigating.

FIG. **7** illustrates a method for forecasting results of an initiative according to one example. The search terms may be generated by a user, may be surfaced according to the method for identifying opportunities described above, or by some other method. As a preliminary step, the search terms or other variables associated with the initiative may be analyzed as described above. Thereafter, as illustrated in FIG. **7**, the method may begin by determining the current parameters associated with the search terms for actions related to the entity, as at **700**. These parameters may include the internal and external data, such as correlated scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms. These parameters may also include third party data.

Once the current parameters for the search terms are determined, at step **710** the method estimates the increase in actions associated with improving scores for the search terms with respect to the entity. These estimates may be made a probabilistic model using data obtained from any of the sources described above. For example, it may be understood that keywords at given positions receive a relatively predictable percentage of the network traffic or visits for that page.

At step **720**, the method continues with determining a cost for improving scores. For example, improving scores may include building back links to the entity. Determining a cost of improving scores may include tracking previous increases of back links and correlating previous improvements in rank. A historical regression analysis or other methodology may then be applied to the previous efforts to estimate a cost for improving scores based on the cost and time associated with activities that improve the score.

At step **730**, the method continues with determining a value for improving scores using any desired calculation, such as user-defined formulas, probabilistic modeling or any other method. Accordingly, the present method allows marketers or other users to forecast likely outcomes for initiatives.

As a result, marketers may perform a similar analysis for each initiative to estimate likely cost for each initiative as well as a likely return for those initiatives. This may be tracked over time to help determine the effectiveness of the method and to help apply correction factors as desired. Further, the allocation of benefits determined above may be distributed across multiple initiatives, such as equally or proportionally as desired.

FIG. **8** illustrates a method for determining compliance for optimization of references to an entity. As illustrated in FIG. **8**, the method begins at step **800** defining rules. These rules may include initial default rules, however these may be defined or modified in each instance according to preferences of the entity. In at least one example, the rules can be defined by a user, by the system, or by some combination of the two. Examples of rules include the presence of title tags, size of character tags, and any other rule that may be desired. Such rules may be applied entity wide to help ensure compliance across pages.

FIG. **8** also illustrates the method may also include defining a set of constructs at step **810**. These constructs may include any information about the structure of Web Pages related to the entity. For example, the construct may include page tem-

plates, site maps, crawl paths, etc. or other constructs that reflect how the entity has organized a site.

At step **820**, the method includes determining an owner for each of the components identified in the construct. Each owner may be responsible for the corresponding component and may be alerted when there are problems with the site.

At step **830**, the rules are applied to the construct. In at least one example, this may include utilizing a rule engine in a distributed environment in the cloud. In one example, the rule engine may be utilized to apply the rules determined above to the constructs to determine compliance. Further, these steps may be performed via virtual private network and obeying a crawl limit. The method described above may be performed in as a best practice in a staging environment to help ensure compliance before the entity makes any changes, such as site changes. In such an example, by tracking a trend of breaks against the components of the site, the entity can intelligently determine if a specific component is broken. Further, such a process may help an entity identify whether an entire component, such as a template, is not functioning properly rather than determining whether a specific page is not functioning properly. Further, the method described above may be utilized to analyze other entities to determine strengths or weaknesses. The application of the rules can include determining a percentage of the audits that passed. This percentage may then be included as part of the scores described and discussed above that are generated as part of search or analysis of references to the entity.

Accordingly, a compliance engine provide system/apparatus/method for crawling web pages on a site and applying an overall scoring function to generate a score for ops management, in one case this score could a compliance score for the purpose of managing SEO page standards compliance. Compliance may be measured across segmented groupings (e.g., of pages that denote a particular type/category of page, for example, as an ecommerce site, I may measure compliance for each set of pages grouped by product category)

In another example, compliance/non-compliance may be one of the variables correlated in addition or alternatively with shares of voice as described above. Compliance non/compliance may be one of the search terms identified or grouped above. Accordingly, systems and methods may be provided for correlating the change in going from compliance to non-compliance or vice versa by grouping and then correlating that grouping back to SEO metrics (e.g., rank) or business metrics (e.g., visits/conversions/sale dollar value) in order to gauge how a change in compliance status impacts the business

Accordingly, a compliance score can be as simple as the number of audit rules that failed, the percentage of failed or passed rules, or could be a sophisticated function combining internal/external/third party data in order to assign business impact/value to the page or groupings of pages that are non-compliant.

Computer-executable instructions comprise, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing device to perform a certain function or group of functions. Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

As used herein, the term "module" or "component" can refer to software objects or routines that execute on the computing system. The different components, modules, engines, and services described herein may be implemented as objects or processes that execute on the computing system (e.g., as separate threads). While the system and methods described herein are preferably implemented in software, implementations in hardware or a combination of software and hardware are also possible and contemplated. In this description, a "computing entity" may be any computing system as previously defined herein, or any module or combination of modules running on a computing system.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A computer implemented method of managing references to an entity on a network, the computer including a non-transitory computer storage medium, the method comprising:

determining a score for each of a plurality of search terms with respect to an entity and one or more other entities, the score for each of the plurality of search terms for the entity being based on at least a position of a reference to the entity within search results generated using the respective search term and

the score for each of the plurality of search terms for the other entities being based on at least a position of a reference to the other entities within the search results generated using the respective search term;

determining shares of voice for the entity and the other entities across at least two of a plurality of organic search channels with respect to the plurality of search terms based on the scores for the plurality of search terms, the plurality of organic search channels selected from a group including blogs, social media, video sharing, mobile content, and search engines;

correlating shares of voice for the entity and the other entities with respect to the search terms to determine a relative change in share of voice for the entity with respect to the other entities; and

correlating shares of voice for the entity across the plurality of channels with respect to the search terms to determine relative changes in share of voice for the entity within each of the channels.

2. The method of claim **1**, wherein the search results are associated with different geographic locations.

3. The method of claim **1**, wherein the shares of voice are further based on a volatility of search results for the search terms.

4. The method of claim **1**, further comprising correlating the shares of voice with historical changes in search signals for the references to the entity.

5. The method of claim **4**, further comprising determining a change in performance for the entity with respect to the search terms and a time period associated with the change in performance.

6. The method of claim **5**, further comprising determining changes in shares of voice for the search terms for the time period associated with the change in performance.

7. The method of claim **6**, further comprising correlating the historical changes with the changes in shares of voice for

the search terms for the time period to determine an aspect of the changes in shares of voice correlated with the change in performance.

8. The method of claim **1**, wherein determining shares of voice includes multiplying the determined shares of voice by a multiplier, wherein the multiplier is one of a sentiment correction, a geography based correction, or a volatility based correction.

9. The method of claim **1**, further comprising, when the relative changes in share of voice for the entity within an individual channel is larger than a predetermined value, performing analysis on the individual channel to isolate causes for the relative change in the individual channel.

10. A computer readable medium encoded with a computer program fixed in a non-transitory computer storage medium having computer-executable instructions for causing a computing system to perform operations of optimizing online references to an entity, the operations comprising:

searching at least two channels on a network for references to the entity and other entities using a plurality of search terms to generate search results, the at least two channels being selected from a group including blogs, social media, video sharing, mobile content, and search engines;

scoring the references associated with each of the plurality of search terms to generate scores for the references within the search results with respect to the entity and the other entities,

the score for each of the references within the search results with respect to the entity being based on at least a position of each of the references to the entity within the search results and

the score for each of the references within the search results with respect to the other entities based on at least a position of each of the references to the other entities within the search results;

determining shares of voice for the entity and the other entities across each of the at least two channels with respect to the plurality of search terms;

correlating shares of voice for the entity and the other entities with respect to the search terms to determine a relative change in share of voice for the entity with respect to the other entities based on the scores for the references; and

correlating shares of voice for the entity across the plurality of channels with respect to the search terms to determine relative changes in share of voice for the entity within each of the channels based on the scores for the references.

11. The computer readable medium of claim **10**, wherein using a plurality of search terms to generate search results includes using a plurality of keywords.

12. The computer readable medium of claim **11**, wherein using a plurality of keywords further includes crawling previously returned search results and conducting a keyword frequency analysis to identify at least some of the plurality of keywords.

13. The computer readable medium of claim **10**, wherein scoring the references associated with each of the plurality of search terms includes determining a keyword rank.

14. The computer readable medium of claim **10**, further comprising determining costs for improving the scores of the references within the search results associated with the search terms with respect to the entity.

15. The computer readable medium of claim **14**, further comprising;

determining values for improving the scores of the references within the search results associated with the search terms with respect to the entity; and

selecting references to be improved based on determining the costs and the values for improving the scoring of the references associated with the search terms with respect to the entity.

16. The computer readable medium of claim **15**, further comprising optimizing the scores of the references within the search results associated with the search terms with respect to the entity based on the determining the costs and the values for improving the scores of the references within the search results associated with the search terms with respect to the entity.

17. The computer readable medium of claim **10**, further comprising performing a compliance analysis for the entity.

18. The computer readable medium of claim **17**, wherein the compliance analysis includes defining rules for the entity, defining constructs for the entity, determining owners for the constructs, and applying the rules to the constructs to determine compliance of the constructs with the rules, wherein applying the rules is performed in a distributed network in the cloud.

19. The computer readable medium of claim **18**, wherein applying the rules includes applying the rules by way of a virtual private network.

20. A computer implemented method of managing references to an entity on a network, the computer including a non-transitory computer storage medium, the method comprising:

determining a score for each of a plurality of search terms with respect to an entity and one or more other entities,

the score for each of the plurality of search terms for the entity being based on at least a position of a reference to the entity within search results generated using the respective search term, and

the score for each of the plurality of search terms for the other entities being based on at least a position of a reference to the other entities within the search results generated using the respective search term;

determining shares of voice for the entity and the other entities across a plurality of search engines based on the scores for the plurality of search terms and a multiplier applied to the scores;

correlating shares of voice for the entity across the plurality of search engines with respect to the search terms to determine relative changes in the shares of voice for the entity within each of the search engines;

determining when a share of voice difference between the relative change in the share of voice for the entity with respect to the search terms within a first search engine of the plurality of search engines and the relative change in the share of voice for the entity with respect to the search terms within other search engines of the plurality of search engines is greater than a threshold; and

when the share of voice difference is greater than a threshold, performing analysis with respect to the first search engine to isolate causes for the relative change in the share of voice for the entity with respect to the search terms within the first search engine,

the performing the analysis including correlating the share of voice for the entity with respect to the search terms within the first search engine with historical changes in search signals that affect the positions of

references to the entity within search results generated using the search terms within the first search engine.

* * * * *

EXHIBIT E

US008478700B2

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Yu et al.

(10) **Patent No.: US 8,478,700 B2**
(45) **Date of Patent: Jul. 2, 2013**

(54) **OPPORTUNITY IDENTIFICATION AND FORECASTING FOR SEARCH ENGINE OPTIMIZATION**

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(73) Assignee: **Brightedge Technologies, Inc.**, San Mateo, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 335 days.

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(51) **Int. Cl.**
G06F 15/18 (2006.01)

(52) **U.S. Cl.**
USPC **706/12**; 705/14.43

(58) **Field of Classification Search**
USPC 706/12; 705/14.43, 14.46
See application file for complete search history.

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2010/0153391	A1 *	6/2010	Reese	707/736
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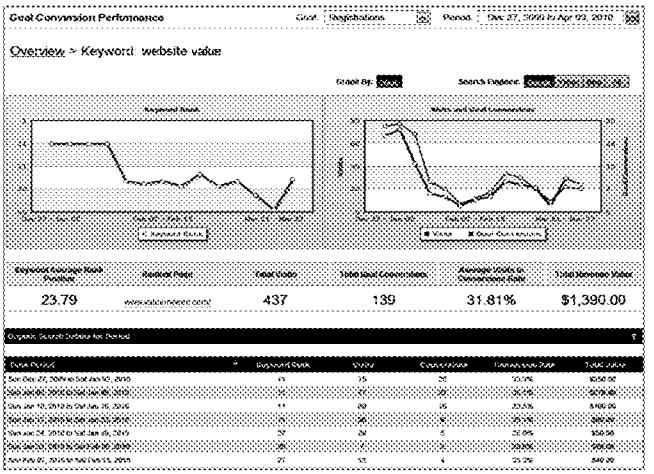
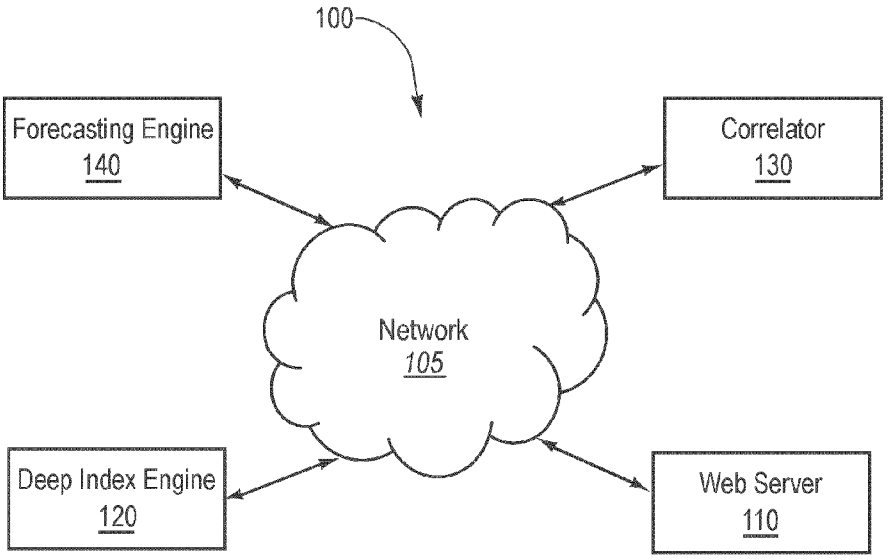
Assistant Examiner — Vincent Gonzales
(74) *Attorney, Agent, or Firm* — Maschoff Brennan

(57) **ABSTRACT**

A method of optimizing placement of references to an entity includes identifying at least search term to be optimized, determining a score for results of a search of a network with respect to the entity, determining costs associated with improving the score, and determining values associated with improving the score.

15 Claims, 5 Drawing Sheets

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Correlator
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Network
105
Deep Index Engine
120
Web Server
110

FIG. 1

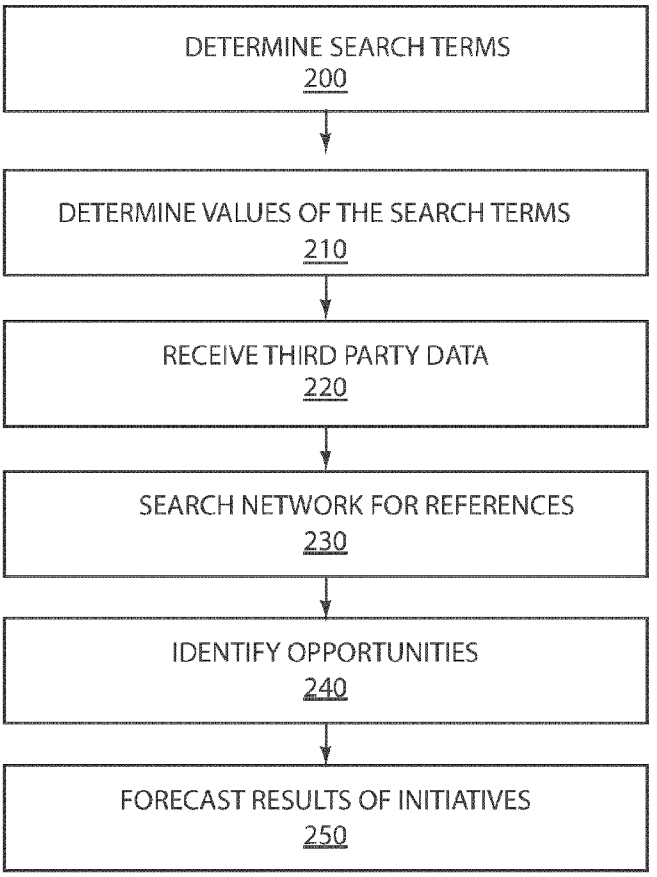

DETERMINE SEARCH TERMS
200
DETERMINE VALUES OF THE SEARCH TERMS
210
RECEIVE THIRD PARTY DATA
220
SEARCH NETWORK FOR REFERENCES
230
IDENTIFY OPPORTUNITIES
240
FORECAST RESULTS OF INITIATIVES
250

FIG. 2

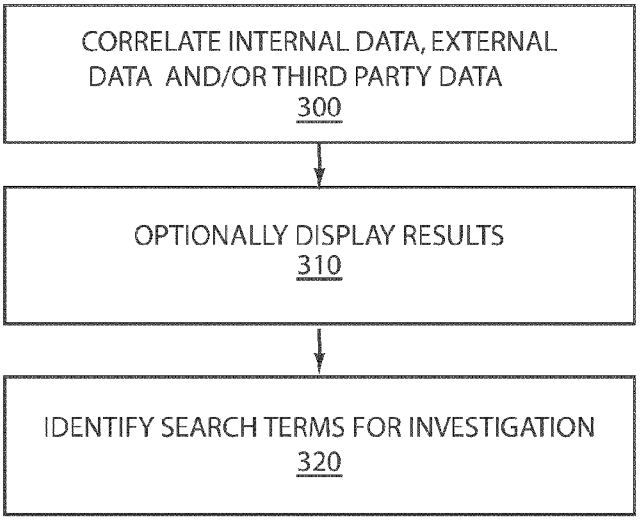
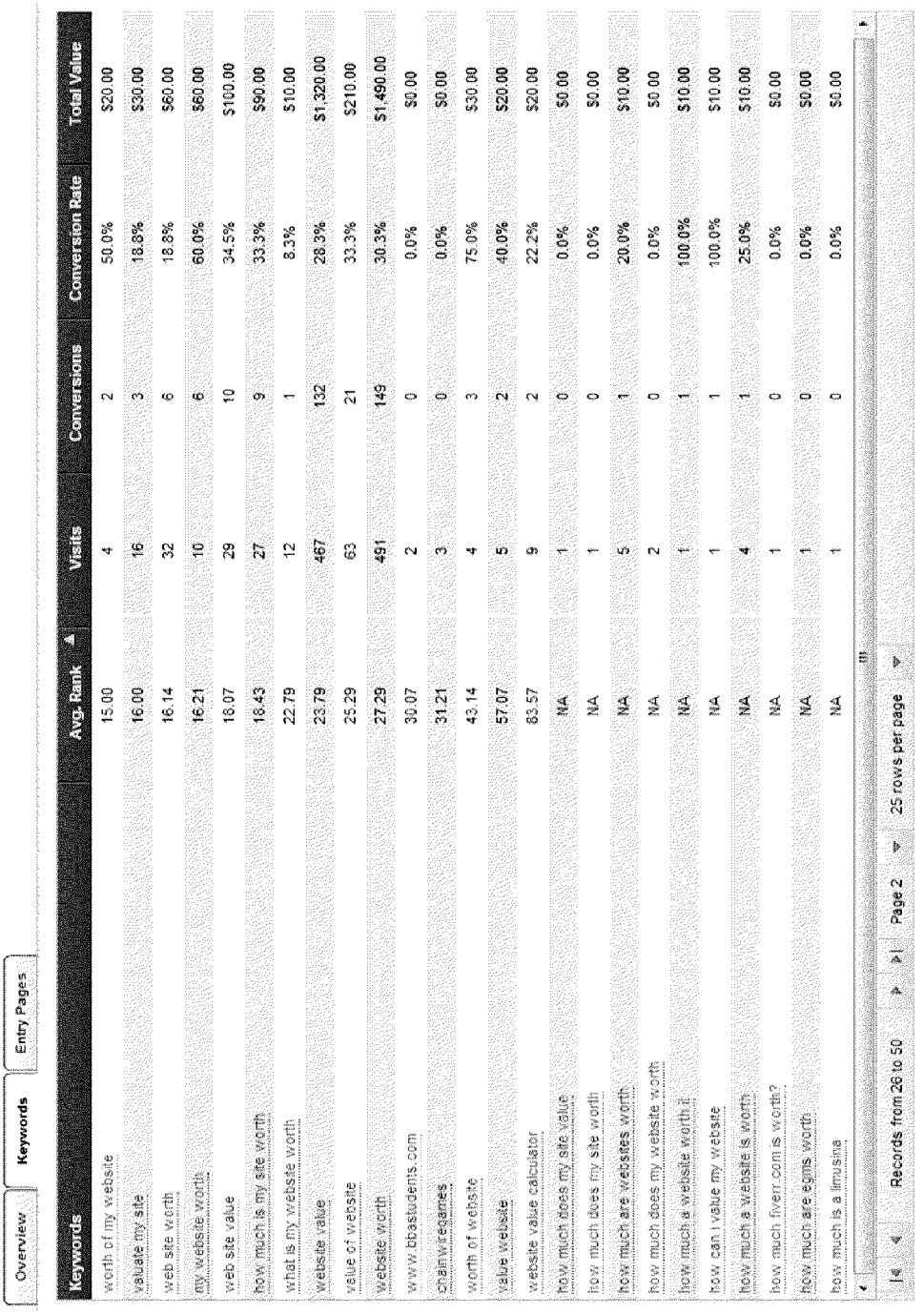

CORRELATE INTERNAL DATA, EXTERNAL DATA AND/OR THIRD PARTY DATA
300
OPTIONALLY DISPLAY RESULTS
310
IDENTIFY SEARCH TERMS FOR INVESTIGATION
320

FIG. 3


Overview
Keywords
Entry Pages
Keywords
Avg. Rank
Visits
Conversions
Conversion Rate
Total Value
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valuate my site 16.00 16 3 18.8% $30.00
web site worth 16.14 32 6 18.8% $60.00
my website worth 16.21 10 6 60.0% $60.00
web site value 18.07 29 10 34.5% $100.00
how much is my site worth 18.43 27 9 33.3% $90.00
what is my website worth 22.79 12 1 8.3% $10.00
website value 23.79 467 132 28.3% $1,320.00
value of website 25.29 63 21 33.3% $210.00
website worth 27.29 491 149 30.3% $1,490.00
www.bbastudents.com 30.07 2 0 0.0% $0.00
chainvinegames 31.21 3 0 0.0% $0.00
worth of website 43.14 4 3 75.0% $30.00
value website 57.07 5 2 40.0% $20.00
website value calculator 83.57 9 2 22.2% $20.00
how much does my site value NA 1 0 0.0% $0.00
how much does my site worth NA 1 0 0.0% $0.00
how much are websites worth NA 5 1 20.0% $10.00
how much does my website worth NA 2 0 0.0% $0.00
how much a website worth it NA 1 1 100.0% $10.00
how can i value my website NA 1 1 100.0% $10.00
how much a website is worth NA 4 1 25.0% $10.00
how much fiverr.com is worth? NA 1 0 0.0% $0.00
how much are egms worth NA 1 0 0.0% $0.00
how much is a limusina NA 1 0 0.0% $0.00
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Page 2
25 rows per page

FIG. 4

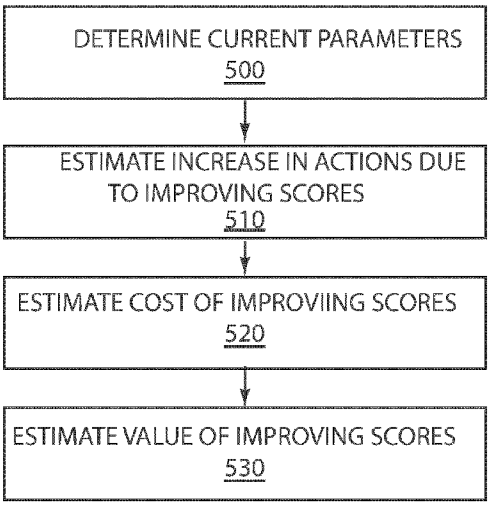
DETERMINE CURRENT PARAMETERS
500
ESTIMATE INCREASE IN ACTIONS DUE TO IMPROVING SCORES
510
ESTIMATE COST OF IMPROVIING SCORES
520
ESTIMATE VALUE OF IMPROVING SCORES
530

FIG. 5

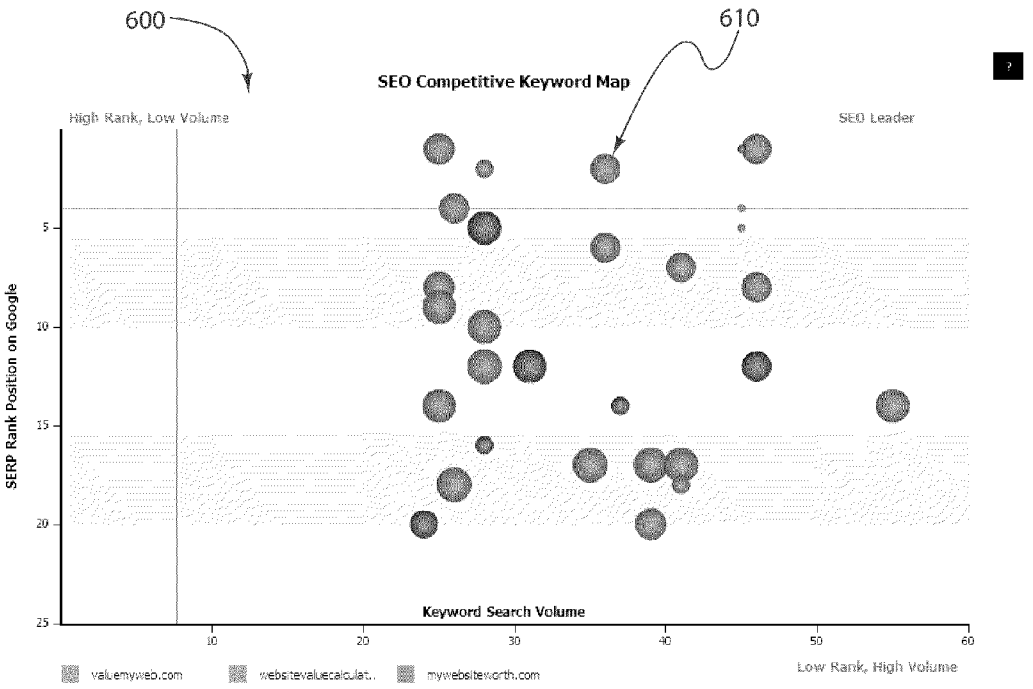
600
610
SEO Competitive Keyword Map
High Rank, Low Volume
SEO Leader
SERP Rank Position on Google
5
10
15
20
25
Keyword Search Volume
10
20
30
40
50
60
Low Rank, High Volume
valuemyweb.com
websitevaluecalculat..
mywebsiteworth.com

FIG. 6

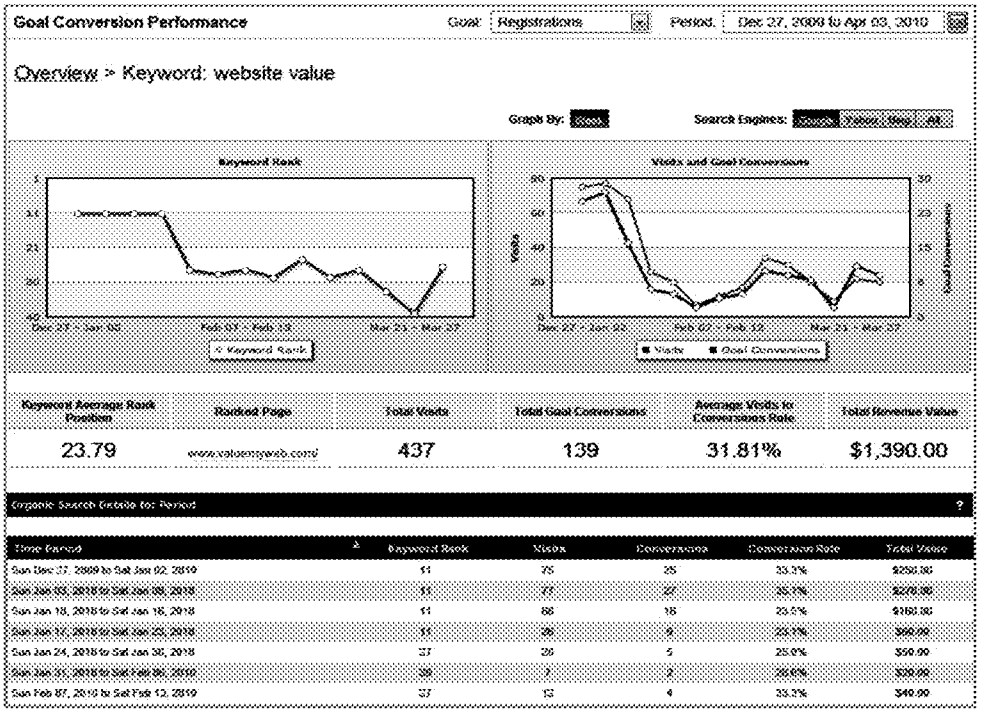
Goal Conversion Performance
Goal: Registrations
Period: Dec 27, 2009 to Apr 03, 2010
Overview » Keyword: website value
Graph By:
Search Engines:
Keyword Rank
Visits and Goal Conversions
Keyword Rank
Visits
Goal Conversions
Keyword Average Rank Position
Ranked Page
Total Visits
Total Goal Conversions
Average Visits to Conversions Rate
Total Revenue Value
23.79
437
139
31.81%
$1,390.00
Organic Search Details for Period
Time Period
Keyword Rank
Visits
Conversions
Conversions Rate
Total Value

FIG. 7

OPPORTUNITY IDENTIFICATION AND FORECASTING FOR SEARCH ENGINE OPTIMIZATION

BACKGROUND OF THE INVENTION

The Field of the Invention

The Internet has changed the way people gather information, establish relationships with one another and even how people communicate with one another. Additionally, the Internet has changed the way companies seek potential customers and even what the meaning of a business is. It has changed the way companies advertise, sell, coordinate with one another and compete with one another. With this change has come a huge explosion in the number of Web Pages for people to visit. Search engines, such as Google, Bing, Yahoo and others have come into being to help people find their way to Web Pages that they desire. As a result, the number and types of channels that a marketer can leverage has also exploded—beyond organic and paid search, they can also leverage blogs, social media, video sharing, mobile content and ads, display ads, and many other channels.

Additionally, tracking the behavior of the actions of each visitor would allow the Web Page to be marketed more efficiently. In particular, many Web Pages track their organic search performance in search engines based on number of visits for certain keywords. However, they cannot determine how many visitors came as a result of a particular search engine result and rank position to the Web Page, instead they must estimate this based on the data (referral header) passed to the web page which only helps them determine the number of visitors that came from a specific keyword. Without understanding key attributes of their performance on the search engine, they cannot accurately determine the effectiveness of their marketing efforts. Moreover, they cannot determine how their organic search marketing efforts would impact what those visitors do on the Web Page when they have found the Web Page. For example, if a Web Page is selling merchandise, there is currently no way to determine who completed a particular purchase on the Web Page and compare that with how that visitor came to the Web Page.

Therefore, owners and designers of Web Pages must estimate how visitors have come to the Web Page and what they do once they are on the Web Page. This does not allow them to determine which actions would present a better chance for success of the Web Page. For example, a Web Page owner might be confronted with limited marketing budgets that allow them to either improve their ranking in search engine results or that will place advertisements for their Web Page on other Web Pages but not both. Currently, the Web Page owner must choose which strategy to follow with limited information on which would be more effective.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practiced.

BRIEF SUMMARY OF THE INVENTION

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential characteristics of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

A method of optimizing placement of references to an entity may include identifying at least search term to be optimized, determining a score for results of a search of a network with respect to the entity, determining costs associated with improving the score, and determining values associated with improving the score.

In another example, method for optimizing online references to an entity may include searching at least one channel on a network for references to the entity using a plurality of search terms to generate search results. The references associated with each of the plurality of search terms may be scored to generate scores for the references within the search results with respect to the entity. Conversions by one or more visits the entity with the search terms that directed the visits to the entity to determine a conversion rate may also be correlated. The method may also include determining a total value of the visits to the entity and displaying the search terms, the scores for the references within the search results with respect to the entity, the visits, the conversion rate and the total value.

In yet another example, a system for optimizing online references to an entity may include a correlator configured to determine internal data for search terms associated with the references, a deep index engine configured to generate scores for the references within the search results with respect to the entity, and a forecasting engine configured to correlate internal data with the scores for the references.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** illustrates a block diagram of a system for optimizing placement of references to an entity;

FIG. **2** illustrates a flowchart of an exemplary method of optimizing placement of references to an entity;

FIGS. **3** and **4** illustrate an exemplary method for identifying opportunities;

FIGS. **5** and **6** illustrate an exemplary method for forecasting results an initiative; and

FIG. **7** illustrates a chart for tracking results of an initiative.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Systems and methods are provided herein for combining data from internal sources (e.g. internal web analytics data, web server logs, and the like) with third party data (e.g., search engine data provided by search engines such as the CPC value of a keyword, the search frequency of a keyword) and external data (e.g., data crawled on external web pages). Using the combined data, the system may mine for trends and/or conduct automated analysis to surface opportunities (e.g., finds keywords that are spiking in search volume, that

the customer does not rank on and has a good opportunity to rank on because the competition is weak).

Systems and method are also provided to identify trends from internal/third party/external data in order to see where opportunities are (e.g., what are keywords that are spiking in search volume, what are keywords that my competition does not rank on, how are users changing their search behavior).

Alternatively or additionally, systems and methods may be provided herein to assign values to the data (e.g., what is the value of a keyword) based on automated value algorithms, values as some form of custom formula defined by user, apply probabilistic modeling to the data for the purpose of forecasting.

FIG. **1** illustrates a block diagram of a system **100** for optimizing placement of references to an entity within one or more channels. Entities can include individuals, corporations, brands, products, models or any other entities referenced anywhere on a network such as the Internet. The references may include links and/or references to one or more Web Pages or other media, such as display advertisements, associated with the entity. Accordingly, the references can include organic references, online advertisements including display advertisements, news items or any other reference to the entity.

FIG. **1** shows that the system **100** can include a network **105**. In at least one implementation, the network **105** can be used to connect the various parts of the system **100** to one another, such as between a webserver **110**, a deep index engine **120**, a correlator **130**, and a forecasting engine **140**. It will be appreciated that while these components are being shown as separate, the components may be combined as desired. Further, while one of each component is illustrated, it will be appreciated that the system **100** may include any number of each of the components shown.

As will be discussed in more detail hereinafter, the forecasting engine **140** is configured to determine a search term or search terms to optimize. The search term or terms may be selected from a group or basket of known search terms that may affect actions related to the entity. The forecasting engine **140** may also be configured to help marketers forecast the business value of optimization initiatives (e.g., if I work on optimizing for a given 5 keywords, what is the likely result of improvement in my search engine rank position and how much more incremental revenue will be generated from the improvement) and also take into account the difficulty and expense associated with the initiative.

In at least one example, the network **105** includes the Internet, including a global internetwork formed by logical and physical connections between multiple wide area networks and/or local area networks and can optionally include the World Wide Web ("Web"), including a system of interlinked hypertext documents accessed via the Internet. Alternately or additionally, the network **105** includes one or more cellular RF networks and/or one or more wired and/or wireless networks such as, but not limited to, 802.xx networks, Bluetooth access points, wireless access points, IP-based networks, or the like. The network **105** can also include servers that enable one type of network to interface with another type of network.

In at least one implementation, the web server **110** (or "webserver") can include any system capable of storing and transmitting a Web Page to a user. For example, the web server **110** can include a computer program that is responsible for accepting requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which can include HTML documents and linked objects for display to the user. Additionally or alternatively, the web server **110** can include the capability of logging some detailed information, about client requests and server responses, to log files.

The entity can include any number of Web Pages. The aggregation of references to the various Web Pages can be referred to as traffic. It should be noted that "Web Page" as used herein refers to any online posting, including domains, subdomains, Web posts, Uniform Resource Identifiers ("URIs"), Uniform Resource Locators ("URLs"), images, videos, or other piece of content and non-permanent postings such as e-mail and chat unless otherwise specified.

In at least one implementation, external references to a Web Page can include any reference to the Web Page which directs a visitor to the Web Page. For example, an external reference can include text documents, such as blogs, news items, customer reviews, e-mails or any other text document which discusses the Web Page. Additionally or alternatively, an external reference can include a Web Page which includes a link to the Web Page. For example, an external reference can include other Web Pages, search engine results pages, advertisements or the like.

In the illustrated example, the deep index engine **120** is configured to use search terms identified above to perform a search of the network to identify references to the entity. The deep index engine **120** is further configured to score the results of the search of the network with respect to the entity. This score may include a position at which references to the entity are displayed within the search results. The relative position of the references to the entity within the search result can affect how the references affect actions related to the entity. Accordingly, by determining the relative position of the references within search results, the deep index engine **120** is able to determine a current performance metric for each of the search terms as they relate to the entity.

Additionally or alternatively, the deep index engine **120** may be configured to score the search results for each of the search terms with respect to other entities, including entities found in the competitive listing for the search results. Accordingly, the deep index engine **120** may be configured to gather external data related to performance of other entities to establish current baselines for those entities as well.

Additionally or alternatively, the deep index engine **120** may be further configured to crawl the search results related to each of the search terms to retrieve external data. In particular, the deep index engine may be configured to crawl the search results for each of the search terms and analyze data associated with the crawl, including on-page information and back link data (e.g back link URL, anchor text, etc) for each URL in the search result. The deep index engine **120** may then analyze the data to identify additional search terms that may be relevant to the entity, but which may not have been searched or on which the entity does not rank. In at least one example, this analysis may include conducting a keyword frequency search. Accordingly, the deep index engine **120** may be configured to surface additional search terms. In at least one example, these additional search terms and opportunities identified and targeted in any channel (SEO, paid search, social networks, etc.) Cross-channel opportunities are also a part of the opportunity identification (e.g. if a customer is not ranking on a keyword on organic search that a competitor ranks on, the customer can immediately target this keyword in paid search.)

An exemplary deep index engine is described in more detail in copending U.S. patent application Ser. No. 12/436,704 entitled "COLLECTING AND SCORING ONLINE REFERENCES" filed May 6, 2009, the disclosure of which is hereby incorporated by reference in its entirety.

Additional current performance metrics may include internal data determined by the correlator **130**. In at least one implementation, the correlator **130** can determine how visitors are directed to the entity and how those visitors behave once there. For example, the correlator **130** can correlate conversion of visits to the search terms that drove the visits.

An exemplary correlator is described in more detail in co-pending U.S. patent application Ser. No. 12/574,069 filed Oct. 6, 2009 and entitled "CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES" the disclosure of which is hereby incorporated by reference in its entirety.

As will be discussed in more detail hereinafter, the forecasting engine **140** may receive data from third parties including information about network activity related to the search terms described above. The forecasting engine **140** may also be configured to receive the internal data, including the output of the correlator **130** as well as external data, including the output of the deep index engine **120**. The forecasting engine **140** may use the internal data, the third party data, and the external data to identify opportunities for optimizing placement of references to the entity as well as to forecasting the likely costs and benefits of improving references to the entity.

FIG. **2** illustrates a flowchart of an exemplary method of optimizing placement of references to an entity. The method can be implemented using software, hardware or any combination thereof. If the method is implemented using hardware, the steps of the method can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA) or any other logic device capable of carrying out software instructions or other logic functions.

Additionally or alternatively, the method can be implemented using a server or other single computing environment. If a server or other single computing environment is utilized, the conversions need not be divided into groups, since all conversions will be analyzed by the same server or single computing environment.

FIG. **2** illustrates a method of optimizing placement of references to an entity within one or more channels. As illustrated in FIG. **2**, the method begins at step **200** by determining search terms. In at least one example, search terms may include keywords retrieved from a keyword database. The keyword database contains one or more keywords to be used in the page search. In some embodiments, additional search terms may be surfaced by crawling previous search results, as introduced above.

At step **210**, internal data is retrieved related to the search terms. For example, previous actions related to the network to determine a total number of conversions associated with the search terms as well as the total value of those conversions. This internal data may be retrieved or calculated in any desired manner.

The method also includes at step **220** receiving third party data related to the search terms. This third party data may include any desired information, including information about network activity related to the search terms. For example, third party data may include, without limitation, search engine data such as cost per click (CPC) values for the search terms, search frequency for the keywords, and any other desired data that may be provided by third parties. Requests for and/or receipt of third party data may take place at any point, including simultaneous retrieving internal data related to the search terms at step **210**.

Still referring to FIG. **2**, the method also includes at step **230** performing a search in which the search terms are used to search the network for references to the entity. Any method may be used to search the network for references to the entity. Further, any number of channels within the network may be searched as desired. In at least one example, performing the search may include scoring the results of the search of the network with respect to the entity. This score may include a position at which references to the entity are displayed within the search results.

Performing the search may also include performing a crawl of the search results related to each of the search terms. In particular, the method may include crawling the search results for each of the search terms and analyzing data associated with the crawl, including on-page information and back link data (e.g. back link URL, anchor text, etc) for each URL in the search result.

At step **240**, the results of one or more of steps **200-210** may then be analyzed to identify opportunities and to forecast results of initiatives at step **250**. An exemplary method for identifying opportunities will be discussed with reference to FIGS. **3** and **4** and an exemplary method for forecasting will be discussed with reference to FIGS. **5** and **6**.

As illustrated in FIG. **3**, a method for identifying opportunities to optimize references may begin by correlating internal data and external data. Optionally, third party data may also be included in the correlation. In at least one example correlating internal and external data includes correlating scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms.

Correlating these variables may bring into focus he search terms score with respect to the entity and how that score eventually results in value to the entity. Accordingly, at step **310** the method may include displaying search results to a user. An example of such a display is illustrated in FIG. **4**.

Referring again to FIG. **3**, once the internal and external data have been correlated, search terms may be identified for investigation as at step **320**. Identifying search terms for investigation may include identifying search terms for which the references score poorly with respect to the entity. Such an example may include which scores place the references on a second page or worse on search results.

Conversion rates and/or total values may then be analyzed to determine whether the search terms are worth investigating. For example, if the search terms have a high conversion rate, it may be worth investigating improving the score for those search terms with respect to the entity. Further, if the total value associated with search term is relatively large despite a poor score, this may indicate that improving the score of the search term may be worth investigating. Accordingly, a method for identifying search terms for investigation may include determining a score threshold, such as a page rank score, determining a threshold conversion ratio and determining a threshold total value. If the parameters associated with a score are met and either or both of the conversion threshold or value threshold are met, the search term may automatically be identified for investigation.

Additionally or alternatively, the external data described above may be analyzed to score search results for references to another entity, such as a competitor. The scores associated with the search terms may then be analyzed to determine where another competitor may be weak. For example, if a competitor ranks low on a search term that has significant

traffic or visits associated therewith as reflected in the third party data, that search term may be identified for further investigation.

Additionally or alternatively, the external data analyzed to score search results for references to another may indicate where the entity is weak. For example, additional search may be identified by crawling search results for a given set of search terms, as described above. The additional search terms may then be searched and a score generated for the search results with respect to both the entity and to competitors. If the scores indicate that the competitors score well with respect to those search terms and the entity does not, that determination may indicate the search terms are worth investigating, such as by targeting the search terms in paid searches. In at least one example, a threshold rank may be determined for the entity, such as a rank that indicates that references to the entity are appearing on a third page or worse. Any threshold rank may be used as desired. In such an example, if a competitor scores better than the threshold rank with respect to the search terms and the entity scores worse than the threshold rank, the search terms may be automatically target for a paid search.

Additionally or alternatively, third party data may indicate that activity related to certain search parameters has spiked. This spike itself may identify the search terms as being worth investigating.

FIG. **5** illustrates a method for forecasting results of an initiative according to one example. The search terms may be generated by a user, may be surfaced according to the method for identifying opportunities described above, or by some other method. As a preliminary step, the search terms or other variables associated with the initiative may be analyzed as described with reference to FIGS. **2-3**. Thereafter, as illustrated in FIG. **5**, the method may begin by determining the current parameters associated with the search terms for actions related to the entity. These parameters may include the internal and external data, such as correlated scores for each of the search terms with respect to references to the entity, the total number of visits related to the network associated with each search term, the number of conversions associated with those visits, the ratio of conversions to visits, and the total value of the conversions associated with the search terms. These parameters may also include third party data.

Once the current parameters for the search terms are determined, at step **510** the method estimates the increase in actions associated with improving the scores for the search terms with respect to the entity. These estimates may be made a probabilistic model using data obtained from any of the sources described above. For example, it may be understood that keywords at given positions receive a relatively predictable percentage of the network traffic or visits for that page.

At step **520**, the method continues with determining a cost for improving scores. For example, improving scores may include building back links to the entity. Determining a cost of improving scores may include tracking previous increases of back links and correlating previous improvements in rank. A historical regression analysis or other methodology may then be applied to the previous efforts to estimate a cost for improving scores based on the cost and time associated with activities that improve the score.

At step **530**, the method continues with determining a value for improving scores using any desired calculation, such as user-defined formulas, probabilistic modeling or any other method. Accordingly, the present method allows marketers or other users to forecast likely outcomes for initiatives.

FIG. **6** illustrates a chart **600** that may be generated aid marketers in determining values of search terms. As illustrated in FIG. **6**, the chart may plot rank position on a search engine against keyword search volume. A number of "bubbles" **610** represent various search terms. Each bubble **610** may represent a search term or group of search terms. The bubbles may also be color coded as desired to indentify which entity is referenced. Diameters of the bubbles may represent conversion rates or other desired variables for the search terms.

FIG. **7** illustrates a chart showing how selected parameters may be tracked over time, including those described above. Such chart can provide a useful tool in tracking the progress of initiatives, such as those described above.

Embodiments within the scope of the present invention also include computer-readable media for carrying or having computer-executable instructions or data structures stored thereon. Such computer-readable media can be any available media that can be accessed by a general purpose or special purpose computer. By way of example, and not limitation, such computer-readable media can comprise RAM, ROM, EEPROM, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to carry or store desired program code means in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer. When information is transferred or provided over a network or another communications connection (either hardwired, wireless, or a combination of hardwired or wireless) to a computer, the computer properly views the connection as a computer-readable medium. Thus, any such connection is properly termed a computer-readable medium. Combinations of the above should also be included within the scope of computer-readable media.

Computer-executable instructions comprise, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing device to perform a certain function or group of functions. Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

As used herein, the term "module" or "component" can refer to software objects or routines that execute on the computing system. The different components, modules, engines, and services described herein may be implemented as objects or processes that execute on the computing system (e.g., as separate threads). While the system and methods described herein are preferably implemented in software, implementations in hardware or a combination of software and hardware are also possible and contemplated. In this description, a "computing entity" may be any computing system as previously defined herein, or any module or combination of modulates running on a computing system.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A method for optimizing online references to an entity that are non-paid advertisements, the method comprising:

searching at least one channel unassociated with paid advertisements on a network for references to the entity unassociated with paid advertisements using a plurality of search terms to generate search results that include a plurality of references;

scoring the references to the entity associated with each of the plurality of search terms from the plurality of references to generate scores for the references to the entity;

correlating conversions by one or more visits to a website of the entity through the reference with the search terms that directed the visits to the entity to determine a conversion rate;

determining a total value of the conversions to the entity;

correlating at least the total value of the conversions to the entity associated with the references to the entity and the scores for the references to the entity to identify one or more of the plurality of search terms; and

for the identified one or more of the plurality of search terms, forecasting an increase in conversions for the references to the entity associated with an increase in the scores for the references to the entity.

2. The method of claim **1**, wherein searching the at least one channel includes searching at least one of: organic searches, page searches, e-mail, blogs, social networks, social news, affiliate marketing, discussion forums, news sites, rich media, and social bookmarks.

3. The method of claim **1**, wherein using a plurality of search terms to generate search results includes using a plurality of keywords.

4. The method of claim **3**, wherein using a plurality of keywords further includes crawling previously returned search results and conducting a keyword frequency analysis to identify at least some of the plurality of keywords.

5. The method of claim **1**, wherein scoring the references to the entity associated with each of the plurality of search terms includes determining a keyword rank.

6. The method of claim **1**, further comprising scoring references unassociated with the entity and associated with each of the plurality of search terms to generate scores for the references unassociated with the entity within the search results with respect to competitive listings;

comparing the scores of the references to the entity with the scores for the references unassociated with the entity with respect to competitive listings; and

displaying the search terms, the competitive listings, and the scores for the references unassociated with the entity with respect to the competitive listings.

7. The method of claim **1**, further comprising determining costs for improving the scores of the references to the entity.

8. The method of claim **7**, further comprising determining values for improving the scores of the references to the entity associated with the search terms and selecting references to be improved based on determining the costs and values for improving the scores of the references to the entity associated with the search terms.

9. The method of claim **8**, further comprising optimizing the scores of the references to the entity based on the steps of determining the costs and values for improving the scores of the references associated with the search terms.

10. The method of claim **1**, further comprising:

crawling the plurality of search results to determine additional search terms;

searching the at least one channel unassociated with paid advertisements on the network using the additional search terms to generate additional search results;

determining scores for references to the entity and for references to an additional entity included in the additional search results;

analyzing the scores for the references to the entity and for the references to the additional entity to determine if the entity ranks with respect to the additional search terms and if the additional entity ranks with respect to the additional search terms; and

automatically targeting the search terms in a paid search if the additional entity ranks above a first threshold score and the entity ranks below a second threshold score.

11. A non-transitory computer readable storage medium configured to cause a system to perform operations of optimizing online references to an entity that are non-paid advertisements, the operations comprising:

searching at least one channel unassociated with paid advertisements on a network for references to the entity unassociated with paid advertisements using a plurality of search terms to generate search results that include a plurality of references;

scoring the references to the entity associated with each of the plurality of search terms from the plurality of references to generate scores for the references to the entity;

correlating conversions by one or more visits to a website of the entity through the reference with the search terms that directed the visits to the entity to determine a conversion rate;

determining a total value of the conversions to the entity;

correlating at least the total value of the conversions to the entity associated with the references to the entity and the scores for the references to the entity to identify one or more of the plurality of search terms; and

for the identified one or more of the plurality of search terms, forecasting an increase in conversions for the references to the entity associated with an increase in the scores for the references to the entity.

12. The non-transitory computer readable storage medium of claim **11**, wherein the operations further comprise scoring the references to the entity associated with each of the plurality of search terms includes determining a keyword rank.

13. The non-transitory computer readable storage medium of claim **11**, wherein the operations further comprise:

scoring references unassociated with the entity and associated with each of the plurality of search terms to generate scores for the references unassociated with the entity within the search results with respect to competitive listings;

comparing the scores of the references to the entity with the scores for the references unassociated with the entity with respect to competitive listings; and

displaying the search terms, the competitive listings, and the scores for the references unassociated with the entity with respect to the competitive listings.

14. The non-transitory computer readable storage medium of claim **11**, wherein the operations further comprise determining costs for improving the scores of the references to the entity.

15. The non-transitory computer readable storage medium of claim **14**, wherein the operations further comprise determining values for improving the scores of the references to the entity associated with the search terms and selecting references to be improved based on determining the costs and values for improving the scores of the references to the entity associated with the search terms.

* * * * *

EXHIBIT F

US008577863B2

(12) **United States Patent**
Yu et al.

(10) **Patent No.: US 8,577,863 B2**
(45) **Date of Patent: *Nov. 5, 2013**

(54) **CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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G06F 17/30 (2006.01)

(52) **U.S. Cl.**
USPC **707/706**; 707/748

(58) **Field of Classification Search**
USPC 707/706, 748
See application file for complete search history.

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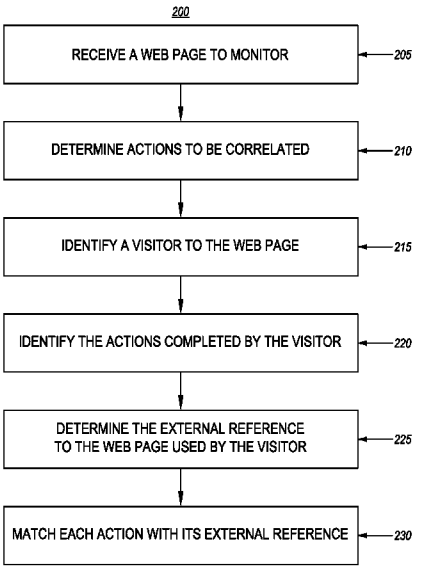
(57) **ABSTRACT**

One embodiment includes a method for correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page. The method includes receiving the Web Page to monitor and determining one or more conversions to correlate. The one or more conversions to correlate include one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page. The visitor to the Web Page completed at least one action included in the conversions to correlate. The method also includes identifying the at least one action completed by the visitor and identifying an external reference that directed the visitor to the Web Page. The external reference contains a reference to the Web Page.

7 Claims, 7 Drawing Sheets



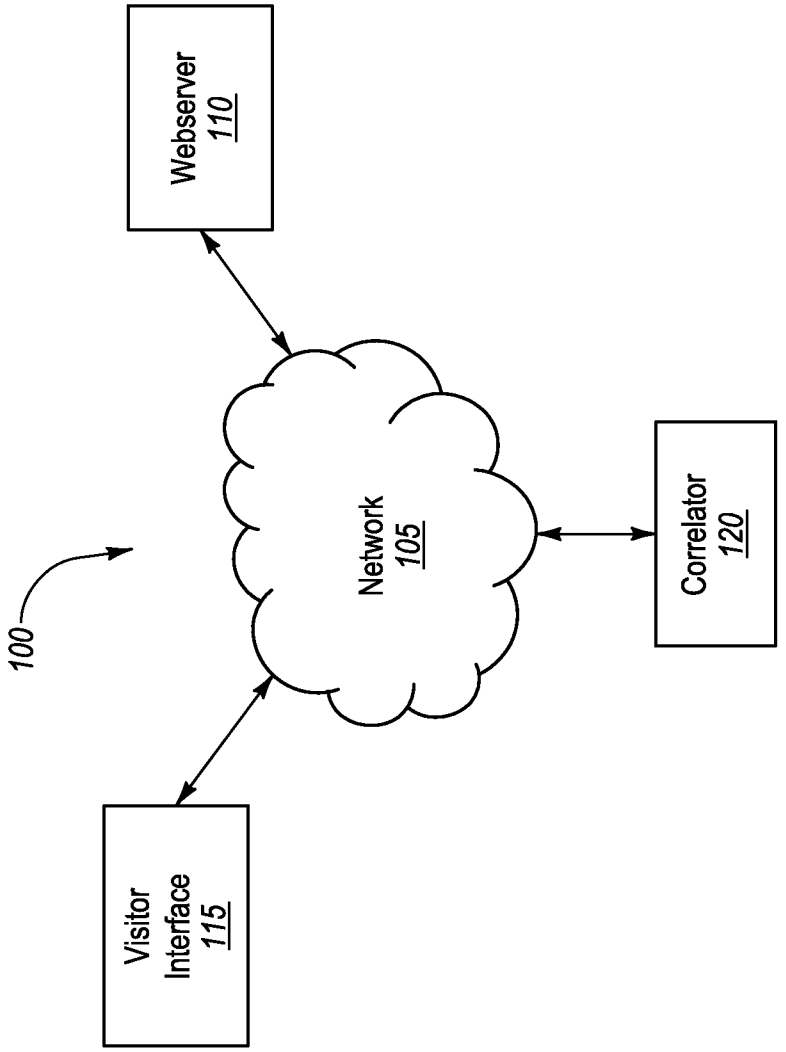

Webserver
110
Network
105
Correlator
120
Visitor
Interface
115
100

Fig. 1

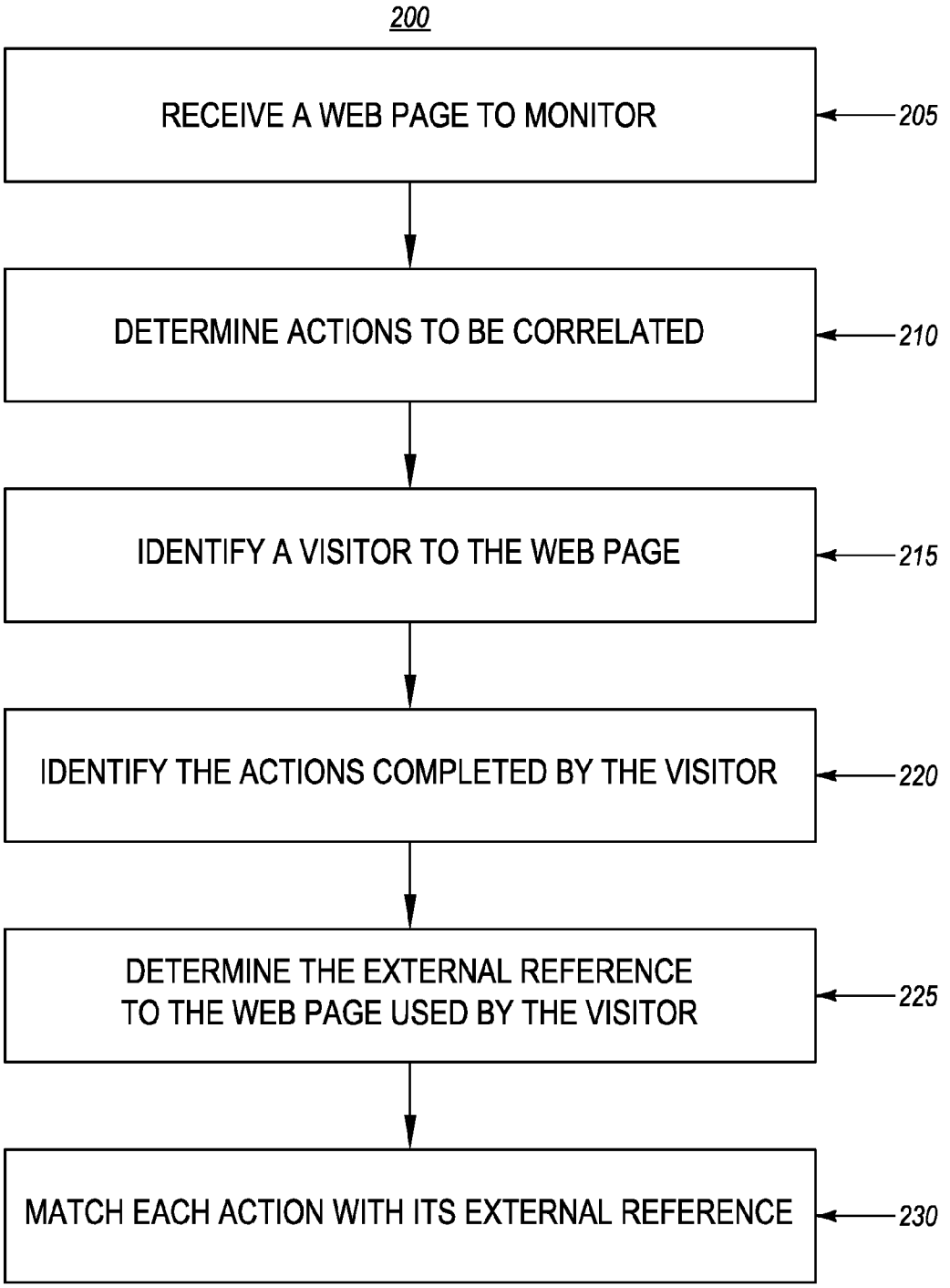

200
RECEIVE A WEB PAGE TO MONITOR
205
DETERMINE ACTIONS TO BE CORRELATED
210
IDENTIFY A VISITOR TO THE WEB PAGE
215
IDENTIFY THE ACTIONS COMPLETED BY THE VISITOR
220
DETERMINE THE EXTERNAL REFERENCE TO THE WEB PAGE USED BY THE VISITOR
225
MATCH EACH ACTION WITH ITS EXTERNAL REFERENCE
230

Fig. 2

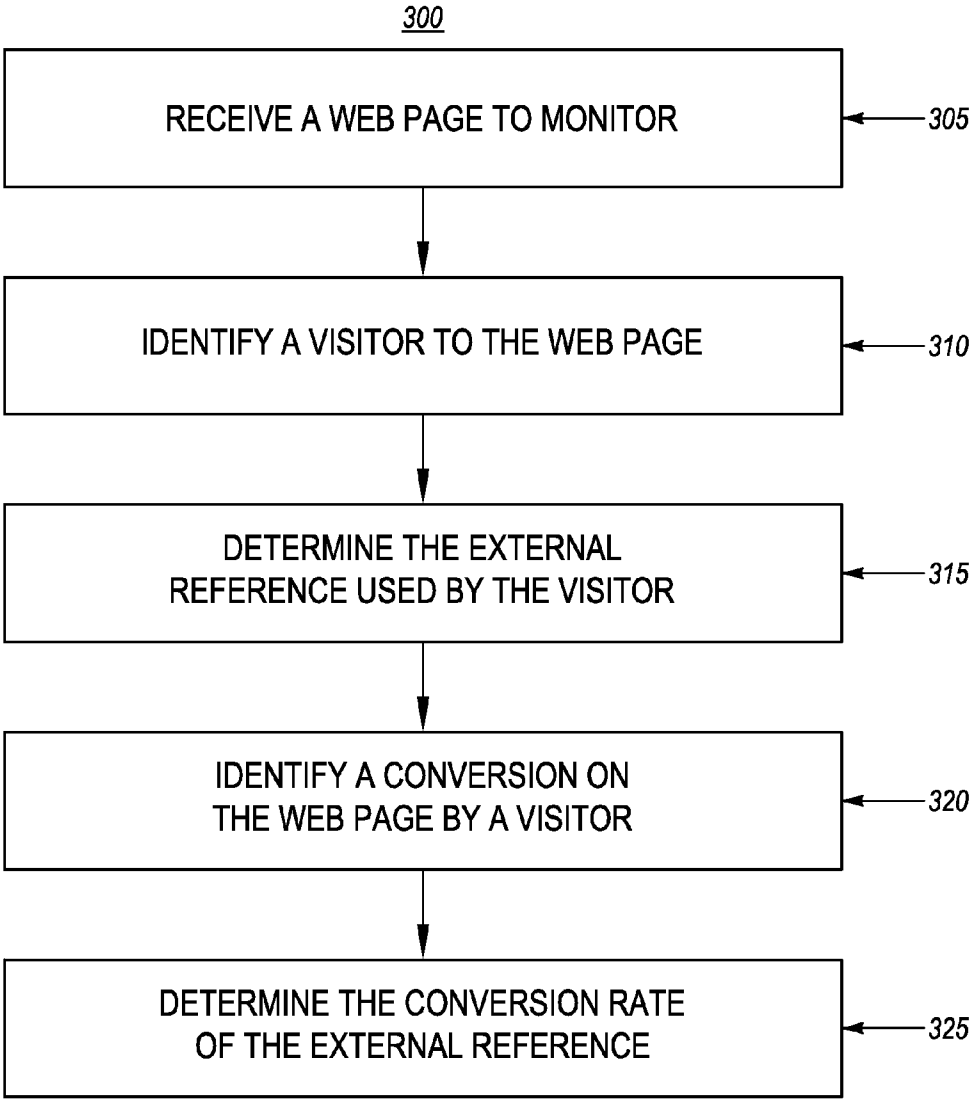

300
RECEIVE A WEB PAGE TO MONITOR
305
IDENTIFY A VISITOR TO THE WEB PAGE
310
DETERMINE THE EXTERNAL REFERENCE USED BY THE VISITOR
315
IDENTIFY A CONVERSION ON THE WEB PAGE BY A VISITOR
320
DETERMINE THE CONVERSION RATE OF THE EXTERNAL REFERENCE
325

Fig. 3

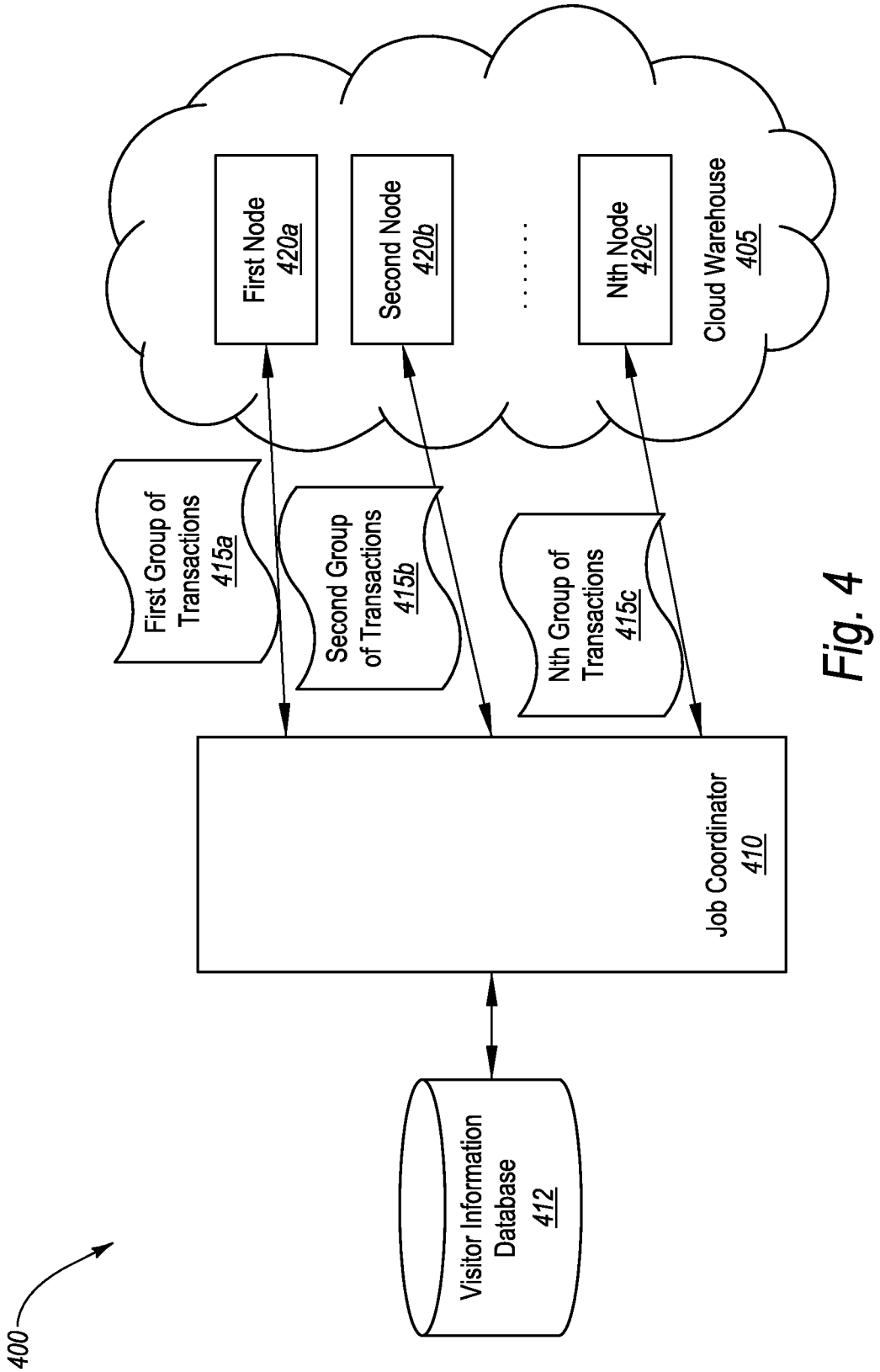

First Node
420a
Second Node
420b
Nth Node
420c
Cloud Warehouse
405
First Group of Transactions
415a
Second Group of Transactions
415b
Nth Group of Transactions
415c
Job Coordinator
410
Visitor Information Database
412
400

Fig. 4

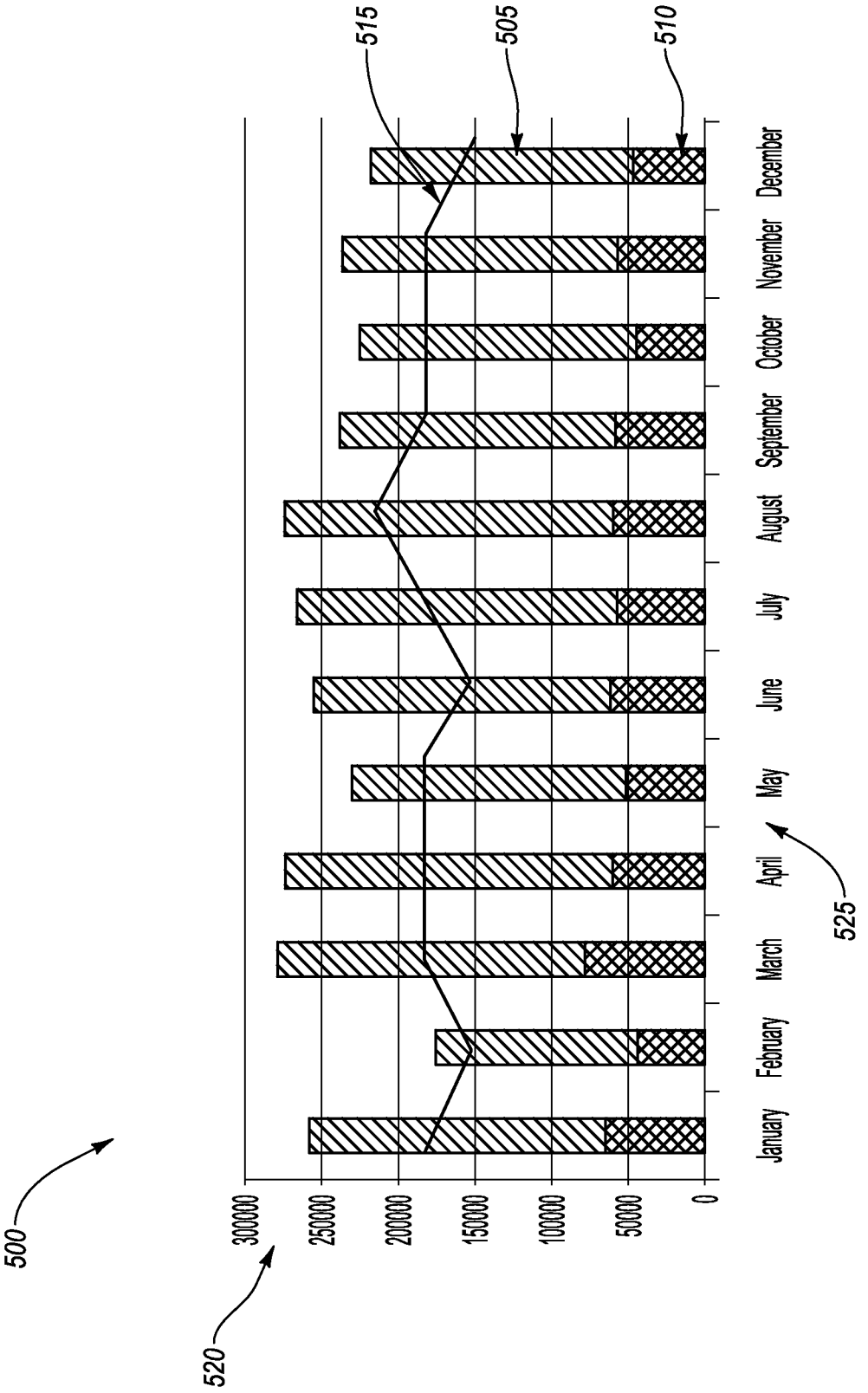

515
505
510
December
November
October
September
August
July
June
May
April
March
February
January
300000
250000
200000
150000
100000
50000
0
500
520
525

Fig. 5A

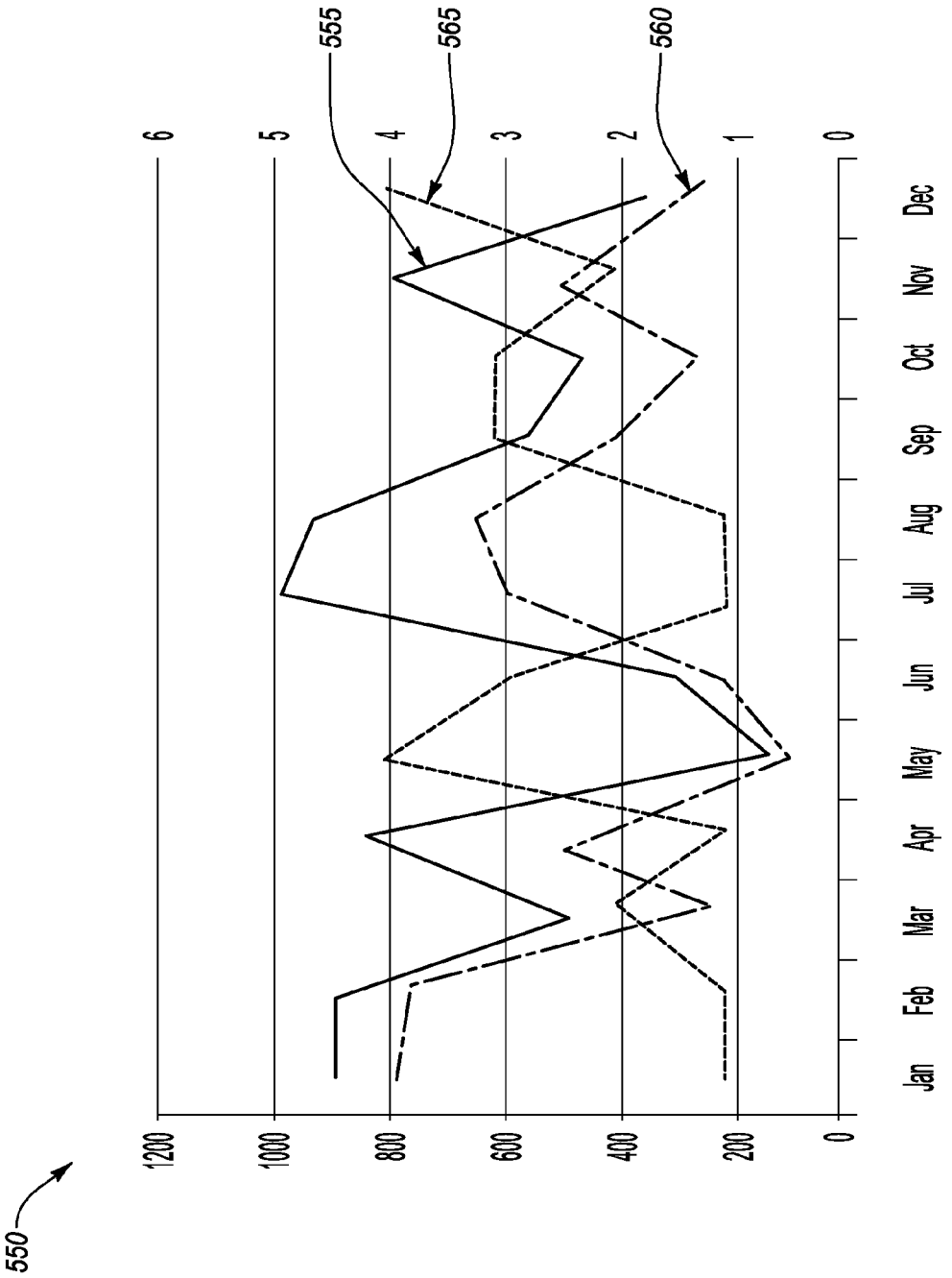
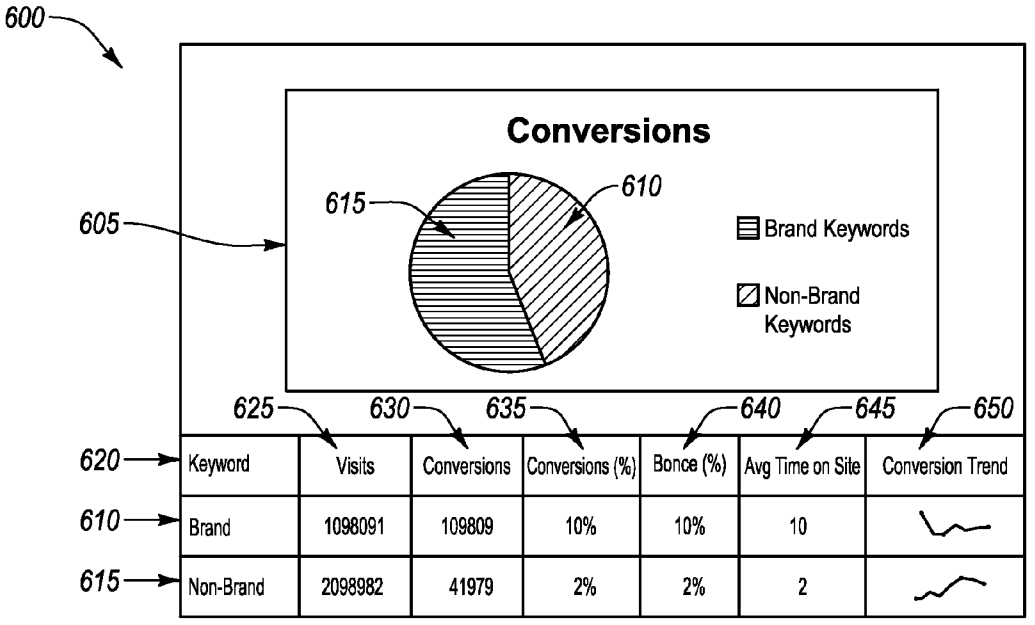
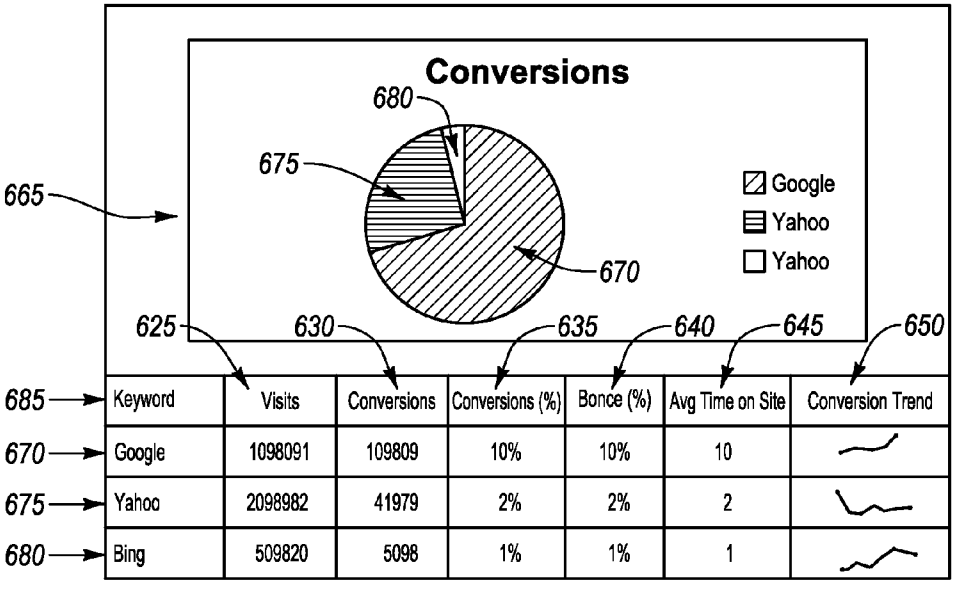

550
555
565
560
6
5
4
3
2
1
0
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Fig. 5B



Keyword	Visits	Conversions	Conversions (%)	Bonce (%)	Avg Time on Site	Conversion Trend
Brand	1098091	109809	10%	10%	10	
Non-Brand	2098982	41979	2%	2%	2	

Fig. 6A



Keyword	Visits	Conversions	Conversions (%)	Bonce (%)	Avg Time on Site	Conversion Trend
Google	1098091	109809	10%	10%	10	
Yahoo	2098982	41979	2%	2%	2	
Bing	509820	5098	1%	1%	1	

Fig. 6B

CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES

CROSS-REFERENCE TO RELATED APPLICATIONS

This patent application is a continuation of U.S. patent application Ser. No. 12/574,069, filed Oct. 6, 2009, which is incorporated herein by reference.

BACKGROUND

The Internet has changed the way people gather information, establish relationships with one another and even how people communicate with one another. Additionally, the Internet has changed the way companies seek potential customers and even what the meaning of a business is. It has changed the way companies advertise, sell, coordinate with one another and compete with one another. With this change has come a huge explosion in the number of Web Pages for people to visit. Search engines, such as Google, Bing, Yahoo and others have come into being to help people find their way to Web Pages that they desire. As a result, the number and types of channels that a marketer can leverage has also exploded—beyond organic and paid search, they can also leverage blogs, social media, video sharing, mobile content and ads, display ads, and many other channels.

However, many Web Pages do not have a good way of tracking how visitors have come to find their Web Pages and the details concerning the reference that drove the visitor to come to the web page. Indeed, many Web Pages cannot accurately determine how many people have visited the Web Page and are instead forced to estimate the number of visitors. Conventionally, this is done with a tracking pixel or some other similar mechanism. The tracking pixel constitutes the code to create a single pixel on the Web Page. However, the tracking pixel also contains the code to perform a certain action or request a certain item from a tracking server. The tracking server keeps track of how many actions or requests it receives, which is used to estimate the number of visitors who have visited the Web Page.

Nevertheless, this can lead to inaccuracies in many instances and provides little to no information about the marketers and the web page's performance from the external channel. In particular, it relies on the user's web browser to correctly execute the tracking pixel and on the tracking server to correctly track the number of actions or requests. However, the tracking pixel only sees very limited data from the referral headers about how the visitor came to the website. Without directly crawling and analyzing the page where the visitor came from, there is inaccurate and very inaccurate view into how the visitor got to a web page, what was our performance in those external channels, and how a marketer should optimize their online marketing campaigns.

However, the number of visitors to a Web Page, and their actions once there, may have a significant impact on the success of the Web Page. For example, many Web Pages rely on tracking the number of visitors to bring in advertising revenue to sustain the Web Page or supplement the revenue that the Web Page brings in. Therefore, accurately determining the number and behavior of visitors, how the visitors got to the web page, and correlating this with the marketing campaigns and efforts will help the marketer to focus on and optimize campaigns to bring additional revenue.

Additionally, tracking the behavior of the actions of each visitor would allow the Web Page to be marketed more efficiently. In particular, many Web Pages track their organic search performance in search engines based on number of visits for certain keywords. However, they cannot determine how many visitors came as a result of a particular search engine result and rank position to the Web Page, instead they must estimate this based on the data (referral header) passed to the web page which only helps them determine the number of visitors that came from a specific keyword. Without understanding key attributes of their performance on the search engine, they cannot accurately determine the effectiveness of their marketing efforts. Moreover, they cannot determine how their organic search marketing efforts would impact what those visitors do on the Web Page when they have found the Web Page. For example, if a Web Page is selling merchandise, there is currently no way to determine who completed a particular purchase on the Web Page and compare that with how that visitor came to the Web Page.

Therefore, owners and designers of Web Pages must estimate how visitors have come to the Web Page and what they do once they are on the Web Page. This does not allow them to determine which actions would present a better chance for success of the Web Page. For example, a Web Page owner might be confronted with limited marketing budgets that allow them to either improve their ranking in search engine results or that will place advertisements for their Web Page on other Web Pages but not both. Currently, the Web Page owner must choose which strategy to follow with limited information on which would be more effective.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practiced

BRIEF SUMMARY OF SOME EXAMPLE EMBODIMENTS

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential characteristics of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

One example embodiment includes a method for correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page. The method includes receiving the Web Page to monitor and determining one or more conversions to correlate. The one or more conversions to correlate include one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page. The visitor to the Web Page completed at least one action included in the conversions to correlate. The method also includes identifying the at least one action completed by the visitor and identifying an external reference that directed the visitor to the Web Page. The external reference contains a reference to the Web Page.

Another example embodiment includes a method for correlating external references to a Web Page with the number and value of conversions on the Web Page. The method includes receiving a Web Page to monitor and identifying a conversion on the Web Page. The conversion includes one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page, where the visitor to the Web Page completed the conversion on the Web Page. The method further includes

identifying an external reference that directed the visitor to the Web Page, where the external reference contains a reference to the Web Page.

Yet another example embodiment includes a system for correlating external references to a Web Page with the number of conversions on the Web Page. The system includes an information database. The information database includes data that identifies: one or more conversions on the Web Page, one or more visitors to the Web Page and one or more external references. The one or more external references include a reference to the Web Page used by the one or more visitors to the Web Page. The system also includes a job coordinator. The job coordinator is configured to divide the one or more conversions into one or more groups for correlating. The system further includes a cloud warehouse. The cloud warehouse includes one or more nodes that contain one more computing resources required to correlate the one or more conversions with the one or more visitors and the one or more external references. The job coordinator is also configured to assign each of the one or more groups to one of the one or more nodes in the cloud warehouse for correlation.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** illustrates a block diagram of a system for correlating external references to a Web Page with the number of conversions on the Web Page;

FIG. **2** is a flow diagram illustrating a method of correlating conversions by a visitor on a Web Page with an external reference;

FIG. **3** illustrates a method for determining the conversion rate of an external reference to a Web Page;

FIG. **4** illustrates a system for correlating conversions on a Web Page with an external reference using a cloud warehouse;

FIG. **5**A illustrates an example of a chart for presenting correlation results to a webmaster;

FIG. **5**B illustrates an alternative example of a chart for presenting correlation results to a webmaster;

FIG. **6**A illustrates an example of a display for presenting correlation results to a webmaster;

FIG. **6**B illustrates an alternative example of a display for presenting correlation results to a webmaster.

DETAILED DESCRIPTION OF SOME EXAMPLE EMBODIMENTS

Reference will now be made to the figures wherein like structures will be provided with like reference designations. It is understood that the figures are diagrammatic and schematic representations of some embodiments of the invention, and are not limiting of the present invention, nor are they necessarily drawn to scale.

FIG. **1** illustrates a block diagram of a system **100** for correlating external references to a Web Page with the number of conversions on the Web Page in accordance with some embodiments. It should be noted that "Web Page" as used herein refers to any online posting, including domains, subdomains, Web posts, Uniform Resource Identifiers ("URIs"), Uniform Resource Locators ("URLs"), images, videos, or other piece of content and non-permanent postings such as e-mail and chat unless otherwise specified.

In at least one implementation, correlating external references to a Web Page with the number of conversions on the Web Page can allow the webmaster to determine the number of conversions provided by each external reference. This can, in turn, allow a webmaster to focus on increasing the number or quality of references that will best lead to an increased number of conversions on the Web Page. For example, correlating keyword searches, and the ranking of the Web Page within the search results, in search engines that include a reference to the Web Page can allow a webmaster to focus on improving the ranking of the Web Page in searches for identified keywords that are more likely to lead to a greater number of conversions.

In at least one implementation, conversions include a visitor to a Web Page completing a desired action on the Web Page. In particular, the nature of the desired action can include any desired use of the Web Page. Web Pages may be created and maintained for different purposes. For example, Web Pages can be content driven. That is, the Web Page can be designed to provide access to certain content. For example, the Web Page can be designed to provide news, information, research help or any other content for the use of the visitor. Additionally or alternatively, the Web Page can be designed for e-commerce. That is, the Web Page can be designed to allow a visitor to purchase certain products, such as products produced and/or sold by a manufacturer or other entity. Alternately or additionally, a Web Page can be designed to generate leads for a business. For example, the Web Page can include information regarding a manufacturer of a certain part and contact information, so that potential customers of the product can contact the manufacturer. One of skill in the art will appreciate that a Web Page can be designed to include one or more of these uses or any other use as desired by the webmaster.

In at least one implementation, external references to a web page can include any reference to the Web Page which directs a visitor to the web page. For example, an external reference can include text documents, such as blogs, news items, customer reviews, e-mails or any other text document which discusses the Web Page. Additionally or alternatively, an external reference can include a Web Page which includes a link to the Web Page. For example, an external reference can include other Web Pages, search engine results pages, advertisements or the like.

In at least one implementation, in a content driven Web Page a completed conversion can include a visitor loading the Web Page. In particular, the webmaster can be concerned with the number of visitors. For example, the number of visitors can determine the amount of advertising revenue produced by the Web Page, as described below. Accordingly, correlating the external reference to the number of conversions in a content driven Web Page can include determining the amount of traffic to the Web Page that is driven to the Web Page by the external reference.

Additionally or alternatively, if a Web Page is designed for e-commerce, conversions can include the amount of commerce created by an external reference. For example, a conversion can include the visitor purchasing an item from the

Web Page. Additionally or alternatively, a conversion can include the amount spent by a customer on the Web Page. Accordingly, correlating the external reference to the number of conversions in an e-commerce site can include determining the number of visitors that are directed to the Web Page by an external reference and/or that purchase items from the Web Page. Additionally or alternatively, correlating the external reference to the number of conversions in an e-commerce site can include determining the average amount of money spent by visitors that are directed to the Web Page by an external reference.

In at least one implementation, if a Web Page is designed to generate leads to a business, conversions can include the number of visitors which contact the webmaster or other entity associated with the Web Page. For example, the Web Page can include a form that allows a user to request additional information regarding a particular product. Accordingly, correlating an external reference to the number of conversions in a lead generating Web Page can include determining the number of visitors and/or lead signups that have been directed by the external reference which complete the form for additional information.

FIG. **1** shows that the system **100** can include a network **105**. In at least one implementation, the network **105** can be used to connect the various parts of the system **100** to one another. The network **105** exemplarily includes the Internet, including a global internetwork formed by logical and physical connections between multiple wide area networks and/or local area networks and can optionally include the World Wide Web ("Web"), including a system of interlinked hypertext documents accessed via the Internet. Alternately or additionally, the network **105** includes one or more cellular RF networks and/or one or more wired and/or wireless networks such as, but not limited to, 802.xx networks, Bluetooth access points, wireless access points, IP-based networks, or the like. The network **105** can also include servers that enable one type of network to interface with another type of network.

FIG. **1** also shows that the system **100** can include a web server **110**. In at least one implementation, a web server **110** (or "webserver") can include any system capable of storing and transmitting a Web Page to a user. For example, the web server **110** can include a computer program that is responsible for accepting requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which can include HTML documents and linked objects for display to the user. Additionally or alternatively, the web server **110** can include a computing environment that can implement a computer program as described above.

In at least one implementation, the web server **110** can be capable of sending an error response if the request fails which may include some custom HTML or text messages to better explain the problem to end users. Additionally or alternatively, the web server **110** can include the capability of logging some detailed information, about client requests and server responses, to log files. In at least one implementation, this log information can be analyzed by a webmaster, as described below.

FIG. **1** further shows that the system includes a visitor interface **115**. In at least one implementation, the visitor interface **115** includes a web browser that is implemented on a client device, such as a laptop computer, desktop computer, smartphone, Personal Digital Assistant, or the like. In particular, a web browser is a software application for retrieving, presenting, and traversing Web Pages on a network. For example, Web Pages can contain hyperlinks (or "links") which can allow visitors to navigate their browsers to related resources.

In at least one implementation, a visitor interface **115** can be used to present a Web Page to a visitor. For example, a visitor can input the name of the Web Page into the visitor interface **115** which then loads the Web Page. In particular, the name of the Web Page can include a prefix. In at least one implementation, the prefix of the Web Page can determine how the Web Page will be interpreted by the visitor interface **115**. For example, the prefix can include "http:" which identifies a Web Page to be retrieved over the Hypertext Transfer Protocol (HTTP).

Additionally or alternatively, the prefix can include "https:" for HTTPS, "ftp:" for the File Transfer Protocol, "file:" for local files and "html:" for Hyper Text Markup Language. Additionally or alternatively, prefixes that the web browser cannot directly handle can be handed off to another application entirely. For example, "mailto:" Web Pages can be passed to the visitor's default e-mail application, and "news:" Web Pages can be passed to the visitor's default newsgroup reader.

In at least one implementation, in the case of http, https, file, and others, once the resource has been retrieved the visitor interface **115** can display it. Additionally or alternatively, html can be passed to the visitor interface's **115** layout engine to be transformed from markup to an interactive document. In particular, html can include or can load scripts (in languages such as JavaScript) which affect the behavior of html processors like Web browsers. Additionally or alternatively, visitor interfaces **115** can generally display any kind of content that can be part of a Web Page. Most visitor interfaces **115** can display images, audio, video, and XML files, and often have plug-ins to support Flash applications and Java applets. Upon encountering a file of an unsupported type or a file that is set up to be downloaded rather than displayed, the visitor interface **115** can prompt the user to save the file to disk.

FIG. **1** also shows that the system **100** includes a correlator **120**. In at lest one implementation, the correlator **120** can determine the number of conversions on a website that are due to a particular external reference. For example, the correlator **120** can determine what percentage of visitors that come to the Web Page from a particular external reference complete a conversion on the Web Page. Additionally or alternatively, the correlator **120** can determine what percentage of total conversions on the Web Page originate from a particular external reference.

FIG. **2** is a flow diagram illustrating a method **200** of correlating conversions by a visitor on a Web Page with an external reference in accordance with some embodiments. Correlating conversions by a visitor on a Web Page with an external reference can allow a webmaster to determine which external references are best at producing conversions. For example, a webmaster can determine which search results are most likely to result in desired conversions and can, therefore, focus marketing efforts on improving those search results, as discussed below.

The method **200** can be implemented using software, hardware or any combination thereof. If the method **200** is implemented using software, the steps of the method **200** can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method **200** is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA) or any other logic device capable of carrying out software instructions or other logic functions

In at least one implementation, the method **200** can be implemented using a cloud warehouse. In particular, a cloud warehouse includes purchasing processing power over a network. In particular, the user need not own the physical infrastructure serving as host to the software platform. Instead, the user rents usage from a third-party provider. A user need not rent from a particular provider. Instead, the user can rent on an "as available basis". That is, the user can automatically contact third-party providers and obtain resources as needed. Accordingly, a number of calculations can be done simultaneously, as the calculations can be done in parallel. Additionally, the calculations can be cheaper since the user need not purchase the physical infrastructure.

In particular, if the method **200** is implemented in a cloud warehouse, conversions may first be divided into groups. For example, the method **200** can be performed at certain time intervals, with all conversions within the time interval correlated at one time. E.g., the method **200** can be carried out once a day with all of the conversions completed during the day analyzed with one another. In at least one implementation, each group can be assigned to a different node within the cloud warehouse. Accordingly, each group can be analyzed in parallel.

Additionally or alternatively, the method **200** can be implemented using a server or other single computing environment. If a server or other single computing environment is utilized, the conversions need not be divided into groups, since all conversions will be analyzed by the same server or single computing environment. Accordingly, less overall processing can be necessary. However, the server or single computing environment can experience downtime or otherwise delay the results.

Additionally or alternatively, some combination of cloud warehouse and server can be utilized to implement the method **200**. For example, a server can be used to group conversions and send them to the cloud warehouse for processing. Additionally or alternatively, a cloud warehouse can be used to supplement the server as needed. For example, the cloud warehouse can be used if the amount of processing progresses beyond the abilities of the server.

FIG. **2** shows that the method **200** includes receiving **205** a Web Page to monitor. In at least one implementation, receiving **205** the Web Page to monitor includes receiving a domain name or a URL. For example, the webmaster can provide a URL and request that conversions are monitored on the Web Page for a certain period of time. Additionally or alternatively, receiving **205** the Web Page to monitor can include providing the code of the Web Page for the addition of one or more software products capable of tracking conversions, as described below.

FIG. **2** also shows that the method **200** includes determining **210** the type of conversions to be correlated. In at least one implementation, the conversions to be correlated can include purchases, following a link, following an advertisement, selecting content, such as images, videos and text, participating in a discussion or chat board, participating in a game, posting content, such as a blog, feeds or status updates, bookmarking a page, adding a content feed, such as rss or any other conversion on the Web Page that the webmaster desires to correlate.

FIG. **2** further shows that the method **200** includes identifying **215** a visitor to the Web Page. In at least one implementation, identifying **215** a visitor to the Web Page includes determining the Internet Protocol (IP) address of the visitor. In particular, an IP address is a numerical label that is assigned to devices participating in a computer network utilizing the Internet Protocol for communication between its nodes. Additionally or alternatively, identifying **215** a visitor can include providing a cookie to the visitor's web browser. In particular, a cookie (also tracking cookie, browser cookie, and HTTP cookie) can be a small piece of text stored on a user's computer by a web browser. For example, a cookie can consist of one or more name-value pairs containing bits of information such as user preferences, shopping cart contents, the identifier for a server-based session or other data used by websites.

Additionally or alternatively, identifying **215** a visitor to the Web Page can include providing a script or other software module in the Web Page code which identifies the visitor. For example, identifying **215** a visitor can include adding a JavaScript to the code of the Web Page which, when executed, can send desired information back to the web server. In at least one implementation, the code is executed by the visitor's browser and can track the actions of the visitor while on the Web Page. For example, the code can record the nature and time of actions of a purchase by the visitor so that the visitor, and therefore the external reference used by the visitor, can later be correlated with the purchase.

FIG. **2** also shows that the method **200** includes identifying **220** the conversions completed by the visitor. In at least one implementation, conversions on a Web Page can number in the millions. For example, popular social networking or content driven Web Pages can be visited by millions of people each day. Accordingly, a conversion on the Web Page needs to be matched with the visitor which performed the action. As discussed above, the conversions can be matched to which visitor performed them using code added to the Web Page and executed by the visitor's web browser. Additionally or alternatively, the Web Page may identify the IP address of user's who perform the action, which can later be matched to a list of all visitors and all actions of the visitor can be grouped with one another for analysis, as discussed below.

FIG. **2** also shows that the method **200** includes determining **225** the external reference to the Web Page used by the visitor. In at least one implementation, the external reference to the Web Page can include any reference which links to the Web Page. In particular, a link is a reference in a document to an external or internal piece of information. In at least one implementation, some text or other item in external reference is highlighted so that when clicked, the visitor's web browser automatically displays another page or changes the current page to show the referenced content.

Additionally or alternatively, determining **225** the external reference can include parsing the log files provided by the web server. In at least one implementation, web servers can provide log files to a web server when requesting a Web Page stored on the web server. These log files can include information about the external reference, including the URL of the external reference. Additionally or alternatively, the log files can include information regarding searches if the external reference is a search engine.

Additionally or alternatively, determining **225** the external reference can include parsing the search header of the Web Page request. In at least one implementation, the search header of the Web Page request can include information about the external reference which directed the visitor to the Web Page. For example, the search header can include the search engine used and the keyword searched.

In at least one implementation, determining **225** the external reference can include analyzing the full funnel of the visitor's activity prior to the visitor's conversion. In particular, the full funnel of the visitor's activity can include activity that results in the visitor coming to the Web Page that is not directly prior to the conversion. For example, the full funnel

of the visitor's activity can include previous keyword searches. E.g., if the visitor comes to the Web Page and does not complete a conversion, but later returns and completes a conversion, the full funnel of the visitor's activity can include the visitor's visit to the external reference prior to the conversion. Additionally or alternatively, the full funnel of the visitor's activity can include the full path followed by the visitor to the Web Page. For example, the full funnel of the visitor's activity could include a keyword search, which leads to a blog about a product, which leads to a side-by-side review of related products which leads to the Web Page.

Additionally or alternatively, determining **225** the external reference can include determining the analytics of the external reference. In at least one implementation, the analytics of the external reference can include one or more channels. In particular, channels can include organic searches, organic links, paid links, page searches, linked advertisement networks, banner advertisements, contextual advertisements, e-mail, blogs, social networks, social news, affiliate marketing, mobile advertisements, media advertisements, video advertisements, videos, images, discussion forums, paid advertisements, display advertisements, news sites, rich media, social bookmarks, paid searches, wiki, mobile content, and in-game advertisements. Nevertheless, the channels are not limited to those mentioned but can include any relevant areas of the network, whether now existing or created in the future.

Additionally or alternatively, the analytics of the external reference can include one or more signals. In at least one implementation, the one or more signals include information about the external references to the Web Page. For example, advertisements placed at the top of a Web Page are much more visible, and therefore, are generally more expensive and are considered more effective than advertisements placed at the bottom of a Web Page. Therefore, if the external reference includes online advertisements, advertisement placement is an analytic of the Web Page that can be evaluated. Alternately or additionally, the one or more signals can include a keyword used in a search which identified the Web Page and the ranking of the Web Page within the search, and the competitive listings (other pages that rank within the search). Additionally or alternatively, the one or more signals can include one or more of: calendar date of the external reference, time of day the external reference was accessed or the like.

In at least one implementation, the one or more signals can include information about a link provided in the external reference to the Web Page. For example, the one or more signals can include the anchor text of the link. Anchor text (also link label or link title) is the visible, clickable text in a hyperlink. Additionally or alternatively, the one or more signals can include link tags. Link tags are information about the link. For example, the link tag can include a "nofollow" tag. Nofollow is an HTML attribute value used to instruct some search engines that a hyperlink should not influence the link target's ranking in a search engine's index.

Additionally or alternatively, signals within an e-mail message to be evaluated can include frequency of the e-mail message received, outbound links on the e-mail message, calendar date of the e-mail message received, time of day of the e-mail message received, or the like. In blogs, signals can include the number of mentions, and the sentiment of the mentions. For social media channels signals can include the number of user generated content with references and the number of votes for those references. For social networks, signals can include the number of mentions or number of applications that mention the page. Nevertheless, the signals to be evaluated are not limited to those mentioned but can include any relevant information about the references to the Web Page, whether now existing or created in the future.

In at least one implementation, detailed information about an external reference can be obtained by crawling the external reference. For example, crawling the external reference can include deep crawls and dynamic crawls. In particular, deep crawls include crawling the Internet for online references to the entity. Crawling the Internet can include searching one or more channels of the Internet for references to the Web Page and evaluating one or more signals in the reference.

In contrast, dynamic crawls can include evaluating references that have not been previously encountered in deep crawls. For example, dynamic crawls can include evaluating a reference to determine which channels the reference appears in and what signals the reference contains. In at least one implementation, a dynamic crawl can determine how the Web Page was referenced in a channel. For example, a dynamic crawl of a search results page can determine where the Web Page ranked in a keyword search, what competitors showed up in the keyword search, where the competitors ranked in the keyword search, how many visitors came to the Web Page from the searches results or any other analytics which can allow the webmaster to determine the effectiveness of marketing the Web Page within the external reference. Additionally or alternatively, a dynamic crawl of a blog, would include crawling the external reference, identifying that the external reference is a blog, determining the subject matter of the blog, determining the sentiment of the blog or any other analytics that can allow the webmaster to determine the effectiveness of the blog in producing conversions on the Web Page.

In at least one implementation, dynamic crawls can be used on external references that are more likely to change quickly. For example, social networking sites, such as Twitter or Facebook, can include a sharp increase in the number of mentions of a Web Page as users of the social network pass the information to one another. Accordingly, constant crawling of the external reference can indicate changes in conversion numbers that result from the changing mentions in the external reference.

Additional information regarding channels, signals, and the collecting and scoring of online references is provided in U.S. patent application Ser. No. 12/436,704, entitled "COLLECTING AND SCORING ONLINE REFERENCES," filed May 6, 2009. The foregoing patent application is incorporated herein by reference in its entirety.

FIG. **2** further shows that the method **200** includes matching **230** each conversion with the referring external reference. In particular, matching **230** each conversion with the referring external reference can include matching a particular visitor with a particular conversion and further matching the visitor with an external reference. For example, if a particular conversion is matched with a particular visitor, the log files can be searched for the identified visitor. The log files that have been identified can then be parsed to determine the external reference used by the visitor to find the Web Page.

One skilled in the art will appreciate that, for this and other processes and methods disclosed herein, the functions performed in the processes and methods may be implemented in differing order. Furthermore, the outlined steps and operations are only provided as examples, and some of the steps and operations may be optional, combined into fewer steps and operations, or expanded into additional steps and operations without detracting from the essence of the disclosed embodiments.

FIG. **3** illustrates a method **300** for determining the conversion rate of an external reference to a Web Page in accor-

dance with some embodiments. The method **300** can be implemented using software, hardware or any combination thereof. If the method **300** is implemented using software, the steps of the method **300** can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method **300** is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA), cloud warehouse or any other logic device capable of carrying out software instructions or other logic functions

FIG. **3** shows that the method **300** includes receiving **305** a Web Page to monitor. In at least one implementation, receiving **305** the Web Page to monitor includes receiving a domain name or a URL. For example, the webmaster can provide a URL and request that conversions are monitored on the Web Page for a certain period of time. Additionally or alternatively, receiving **305** the Web Page to monitor can include providing the code of the Web Page for the addition of one or more software products capable of tracking conversions, as described below.

In at least one implementation, receiving **305** a Web Page to monitor can include receiving one or more entry pages to the Web Page. For example, the Web Page to monitor can include a collection of pages. In particular, the Web Page can include a main or home page which serves as an entry page and includes links to other pages grouped within the collection of pages. That is, the entry page allows a visitor to select other pages within the Web Page. In at least one implementation, the entry page can include the page to which some or all of the external references point.

FIG. **3** further shows that the method **300** includes identifying **310** a visitor to the Web Page. In at least one implementation, identifying **310** a visitor to the Web Page includes determining the Internet Protocol (IP) address of the visitor. Additionally or alternatively, identifying **310** a visitor can include providing a cookie to the visitor's web browser.

Additionally or alternatively, identifying **310** a visitor to the Web Page can include providing a script or other software module in the Web Page code which identifies the visitor. For example, identifying **310** a visitor can include adding a JavaScript to the code of the Web Page which, when executed, can send desired information back to the web server. In at least one implementation, the code is executed by the visitor's browser and can track the actions of the visitor while on the Web Page. For example, the code can record the nature and time of actions of a purchase by the visitor so that the visitor, and therefore the external reference used by the visitor, can later be correlated with the purchase.

FIG. **3** further shows that the method **300** includes determining **315** the external reference used by the visitor. In at least one implementation, identifying an external reference includes identifying a previous Web Page visited by the user which contains a reference to the Web Page. In particular, an external reference can include any Web Page which directs a visitor to the monitored Web Page. For example, an external reference can include a search engine which directs the visitor to the Web Page based on the results of a keyword search. Additionally or alternatively, an external reference can include an advertisement placed on a Web Page which directs a visitor to the Web Page. For example, the advertisements can include advertisements placed through an ad placement service or can include advertisements that are contracted for specifically on a certain Web Page. Additionally or alternatively, an external reference can include direct references to the Web Page. For example, direct references can include references from a business partner or associate or from a reviewer or other content provider.

In at least one implementation, the external reference can include a group of external references. For example, a webmaster can be interested in the number of conversions based on a search that includes different city names. For example, if a business is located in numerous cities, the webmaster can be interested in the number of conversions that come from a keyword search that includes any of the city names, regardless of which city is actually searched. Accordingly, the external references can be grouped with one another, regardless of which city is actually searched.

In at least one implementation, the external reference can be determined **315** using log files included in a server request. For example, the log files can be parsed to determine Web Pages previously accessed by the visitor to the Web Page. Additionally or alternatively, the external reference can be determined **315** from a search referral header. For example, if the previous Web Page was a search engine, the request to the web server for the Web Page might include a search header which contains information regarding the external reference.

FIG. **3** further shows that the method **300** includes determining **320** whether the visitor completes a conversion on the Web Page. In at least one implementation, the cookie and/or JavaScript included with the Web Page code can track whether the user completes a conversion and transmit the information to the web server or to destination designated to receive the information. Additionally or alternatively, whenever a conversion is complete, the Web Page code can request the appropriate information regarding the visitor. This information can, in turn be matched to an identified visitor, as described above.

FIG. **3** further shows that the method **300** includes determining **325** the conversion rate of the external reference. As described above, the conversion rate can include the number of conversions on a website that are due to a particular external reference. For example, the conversion rate can include the percentage of visitors that come to the Web Page from a particular external reference complete a conversion on the Web Page. Additionally or alternatively, the conversion rate can include the percentage of total conversions on the Web Page that originate from a particular external reference.

In at least one implementation, determining **325** the conversion rate of the external reference can include determining the conversion rate of a single entry page. For example, the conversion rate can include the number of conversions on a single page within a Web Page. Additionally or alternatively, determining **325** the conversion rate of the external reference can include determining the conversion rate of all pages within the Web Page. For example, the webmaster can only be interested in the number of people that complete conversions of any type, whether included in an original search or whether arrived at by browsing the Web Page.

Additionally or alternatively, determining **325** the conversion rate of the external reference can include determining the conversion rate of a group of external references. In particular, the webmaster can group one or more external references based on criteria selected by the webmaster. For example, the webmaster can include all external references that contain a single keyword, regardless of other keywords present in the external references. Accordingly, the webmaster can be flexible in determining the grouping of external references and in the corresponding conversion rate of the group of external references.

In at least one implementation, the method can further include providing recommendations to the webmaster. In particular, a recommendation can be made to the webmaster that allows the webmaster to better utilize available marketing techniques. For example, a recommendation can be made to

the webmaster regarding search engine optimization. If the Web Page ranks low in a keyword search where there are a high number of searches or a high rate of conversion, a recommendation can be made to focus marketing efforts on improving the ranking of the Web Page within that keyword search. A further recommendation can be made for the webmaster to more actively monitor references that are not currently being monitored. Additionally or alternatively, a recommendation can be made regarding which channels or signals need to be focused on for improved marketing. For example, a recommendation can be made about the number of backlinks to the Web Page and how the webmaster can increase the number of backlinks. In at least one implementation, a recommendation can be made regarding the Web Page's competitive landscape. For example, a competitor's Web Page can be monitored and the webmaster can be alerted when a competitor's keyword rank changes or the competitor's number of backlinks increases. Additionally or alternatively, a recommendation can be made regarding changes in the Web Pages external references. For example, an alert can be provided to the webmaster if a change occurs in a keyword ranking that leads to a high number of conversions on the Web Page.

FIG. **4** illustrates a system **400** for correlating conversions on a Web Page with an external reference using a cloud warehouse **405** in accordance with some implementations. In at least one implementation, a cloud warehouse **405** can allow multiple implementations of software to run simultaneously, decreasing the time it takes to make the correlations. Additionally or alternatively, using a cloud warehouse **405** can reduce costs and speed results.

FIG. **4** shows that the system **400** can include a job coordinator **410**. In at least one implementation, the job coordinator **410** receives information form an information database **412**. The data in the information database **412** can be received from code embedded in the Web Page, from log files, from search headers or through some other method, as discussed above. In particular, the information database **412** can include data that is needed to correlate conversion on a Web Page with an external reference. For example, the data can identify conversions on the Web Page. Additionally or alternatively, the data can identify visitors to the Web Page. Additionally or alternatively, the data can include external references to the Web Page that directed a visitor to the Web Page.

In at least one implementation, the job coordinator **410** can assign all completed conversions to different groups **415***a*, **415***b*, **415***c* (collectively "groups **415**") for processing. For example, the job coordinator **410** can divide conversions into groups **415** of a certain number of conversions. Additionally or alternatively, the job coordinator **410** can divide conversions into groups **415** based on the amount of information to be parsed. For example, if a high number of conversions need to be correlated, the job coordinator **410** can reduce the number of conversions in each group **415**.

Additionally or alternatively, the job coordinator **410** can divide the conversions into groups **415** based on other criteria. For example, if multiple Web Pages are being analyzed simultaneously, the job coordinator **410** can divide the conversions into groups **415** based on the Web Page being analyzed. Additionally or alternatively, the job coordinator **410** can divide the conversions into groups **415** based on preferences set by the webmaster. For example, if the webmaster prefers lower cost, the job coordinator **410** can divide the conversions into a smaller number of groups **415** to decrease processing cost. Additionally or alternatively, if the web master prefers faster return time, the job coordinator **410** can divide the conversions into a larger number of groups **415** to decrease processing time.

In at least one implementation, the job coordinator **410** can include a computing environment. In particular, the job coordinator **410** can include a processor, an FPGA, memory, or any other hardware or software necessary for performing its intended function. For example, the job coordinator **410** can include a server which is configured to assign the conversions to groups **415** and present them to a cloud warehouse **405** for analysis.

FIG. **4** also shows that the job coordinator **410** can assign the different groups **415** of conversions to different nodes **420***a*, **420***b*, **420***c* (collectively "nodes **420**") within a cloud warehouse **405** for processing. In at least one implementation, the job coordinator **410** can assign the different groups **415** to different nodes **420** based on preferences set by the webmaster. For example, if the webmaster prefers to keep costs low, the job coordinator **410** can assign the groups **415** to cheaper nodes **420** or can assign the groups **415** to nodes **420** during non-peak hours, when rates might be cheaper. Additionally or alternatively, if the webmaster prefers faster return time, the job coordinator **410** can assign the groups **415** to the fastest available to be analyzed immediately.

FIG. **4** further shows that the system includes a cloud warehouse **405**. In at least one implementation, a cloud warehouse **405** includes one or more nodes **420**. In particular, the one or more nodes **420** include a computing environment that is capable of executing software or other commands. The one or more nodes **420** can be leased as needed for use by someone other than the hardware owner.

In at least one implementation, the use of the nodes **420** can be pre-arranged. I.e., the time and manner of using the nodes **420** can be arranged ahead of time or according to a pre-arranged schedule. Additionally or alternatively, the nodes **420** can be made available on an "as needed" basis. For example, the cloud warehouse **405** can keep an updated list of available nodes. The cloud warehouse **405** can then communicate this information to the job coordinator **410**, which then assigns the different groups **415** to available nodes **420**. Additionally or alternatively, the cloud warehouse **405** can receive the groups **415** and assign the groups **415** to different nodes **420** as they become available.

FIG. **5**A illustrates an example of a chart **500** for presenting correlation results to a webmaster in accordance with some embodiments. In at least one implementation, the chart **500** can allow the webmaster to determine the effectiveness of a particular marketing campaign. In particular, the chart **500** can be a bar graph, as shown in FIG. **5**A. For example, the chart **500** can show how visits **505**, conversions **510** and monetary value **515** of the conversions have changed over time. In particular, the chart **500** can include correlation results for a particular external reference. For example, the chart **500** can include the number of visitors **505**, the number of conversions **510** and the monetary value **515** of the conversions as a result of a particular keyword search in a search engine.

In at least one implementation, the chart **500** can show the number of conversions **510** and the number of visitors **505** as integer values. Additionally or alternatively, the chart **500** can show the number of conversions **510** as a percentage of the number of visitors as a y-axis **520**. Further, the chart **500** can include the monetary value **515** of the conversions **510**. For example, the chart **500** can include the total monetary value **515** of all conversions **510**. Additionally or alternatively, the chart **500** can include the average monetary value **515** of each conversion **510** or each visit **505**. Accordingly, a webmaster

can easily see how many visits **505** result in conversions **510** and how much monetary value **515** each visit **505** or conversion **510** brings.

In at least one implementation, a chart **500** can include time ranges as an x-axis **525**. For example, the x-axis **525** can show time intervals of one month. Additionally or alternatively, the x-axis **525** can show time of day, day of the week, or years. In at least one implementation, the webmaster can change the values shown on the x-axis **525**, as desired. Accordingly, a web master can easily evaluate how effective external references have been in creating conversions.

FIG. **5**B illustrates an alternative example of a chart **550** for presenting correlation results to a webmaster in accordance with some embodiments. In at least one implementation, the chart **550** can allow the webmaster to determine the effectiveness of a particular marketing campaign. For example, the chart **550** can show rankings **565** in a keyword search have changed over time and how visits **555** and conversions **560** that result from the keyword search have changed with changes in the Web Pages ranking.

FIGS. **6**A and **6**B illustrate examples of displays **600** and **660** for presenting correlation results to a user, in accordance with some embodiments. FIG. **6**A illustrates a display **600** that includes a pie chart **605** which shows conversions that result from search results. In at least one implementation, a pie chart **605** can be used to illustrate percent of visits or conversions that result from a particular external reference or group of external references. For example, FIG. **6**A shows a pie chart **605** which shows conversions that occur because of search engine results. The pie chart divides conversions into two categories. The first category is conversions which results from brand keywords **610**. In at least one implementation, brand keywords **610** can include keywords that are specific to the Web Page. For example, brand keywords **610** can include company name, the name of specific products or trademarked names. The second category in FIG. **6**A is conversions which result from non-brand keywords **615**. In at least one implementation, non-brand keywords **615** include keywords that relate to the general area of the Web Page. For example, non-brand keywords **615** can include keywords that relate to the type of product sold or the type of business.

FIG. **6**A also shows that the display **600** can include a table **620** that gives numerical information regarding visitors to the web-page separated by brand **610** and non-brand **615** keyword searches. In particular, the table **620** shows information regarding the number of visitors **625** as a result of both brand **610** and non-brand **615** keyword searches. Additionally, the table **620** shows the number of conversions as both an integer value **630** and as a percentage **635** of visitors **625**. Further the table **620** shows the bounce rate **640** and the average time **645** on the site. In at least one implementation, bounce rate **640** includes the number of visitors **625** to the Web Page who leave without visiting any other pages within a website. FIG. **6**A also shows that the table **620** includes the conversion trend **650**. In at least one implementation, the conversion trend **650** can include the number of conversions **630** that result within a specific amount of time. Additionally or alternatively, the conversion trend **650** can include the conversion percentage **635** of visitors within a specified time range.

FIG. **6**B illustrates a display **660** that includes a pie chart **665** which shows conversions that result from search results. In contrast to FIG. **6**A, FIG. **6**B shows the same analytic data except the categories have been modified to include search results as a function of the search engine used. For example, FIG. **6**B shows analytics based on whether the visitor searched on Google **670**, Yahoo **675** or Bing **680**. In at least one implementation, a pie chart **665** can be used to illustrate percent of visits or conversions that result from a particular external reference or group of external references. For example, FIG. **6**B shows a pie chart **665** which shows conversions that occur because of search engine results. The pie chart divides conversions into three categories. The first category is conversions which results from searches using Google **670**. The second category in FIG. **6**B is conversions which result from searches using Yahoo **675**. The third category in FIG. **6**B is conversions which result from searches using Bing **680**.

FIG. **6**B also shows that the display **660** can include a table **685** that gives numerical information regarding visitors to the web-page separated by searches in Google **670**, Yahoo **675** and Bing **680**. In particular, the table **685** shows information regarding the number of visitors **625** as a result of searches in Google **670**, Yahoo **675** and Bing **680**. Additionally, the table **685** shows the number of conversions as both an integer value **630** and as a percentage **635** of visitors **625**. Further the table **685** shows the bounce rate **640** and the average time **645** on the site. In at least one implementation, bounce rate **640** includes the number of visitors **625** to the Web Page who leave without visiting any other pages within a website. FIG. **6**B also shows that the table **685** includes the conversion trend **650**. In at least one implementation, the conversion trend **650** can include the number of conversions **630** that result within a specific amount of time. Additionally or alternatively, the conversion trend **650** can include the conversion percentage **635** of visitors within a specified time range.

One of ordinary skill in the art will recognize that the displays **600** and **660** can include any relevant web analytics whether obtained through the methods described above or in some other manner. One of ordinary skill in the art will further recognize that the displays **600** and **660** can be broken down into different categories without restriction and that the categories of external references and the analytics are illustrative only and not restrictive.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A method of correlating an external reference to a Web Page with a conversion performed on the Web Page to provide information regarding an effectiveness of an organic marketing campaign, the method comprising:

identifying a Web Page;

identifying a plurality of visitors to the Web Page;

identifying a plurality of conversions on the Web Page, each conversion performed by one of the plurality of visitors;

for each conversion on the Web Page, identifying a search results page that includes an organic link to the Web Page that directed the one of the plurality of visitors associated with the respective conversion to the Web Page, wherein identifying the search results page includes parsing a search referral header contained in the Web Page when accessed using the organic link from the search results page;

identifying a plurality of keywords, each of the keywords used in at least one search that produced one of the identified search results pages;

identifying a ranking of the Web Page on each of the identified search results pages by crawling each of the identified search results pages; and

determining a correlation between the ranking of the Web Page on each of the identified search results pages, the plurality of conversions on the Web Page, and the plurality of keywords.

2. The method of claim **1**, wherein the Web Page includes one or more entry pages, wherein the one or more entry pages includes one or more links to additional pages within the Web Page.

3. The method of claim **1**, wherein the conversion on the Web Page includes a purchase by the visitor of an item from the Web Page.

4. The method of claim **3**, further comprising identifying an amount of money spent by the visitor on the purchase.

5. The method of claim **1**, wherein the conversion on the Web Page includes following a link on the Web Page to a second Web Page.

6. The method of claim **1**, wherein the conversion on the Web Page includes loading the Web Page.

7. The method of claim **1**, wherein the conversion on the Web Page includes following a link on the Web Page to a second Web Page.

* * * * *

EXHIBIT G

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Yu et al.

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(45) **Date of Patent: *Mar. 11, 2014**

(54) **CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES**

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G06F 17/30 (2006.01)

(52) **U.S. Cl.**
USPC **707/706**; 707/748

(58) **Field of Classification Search**
USPC 707/706, 748
See application file for complete search history.

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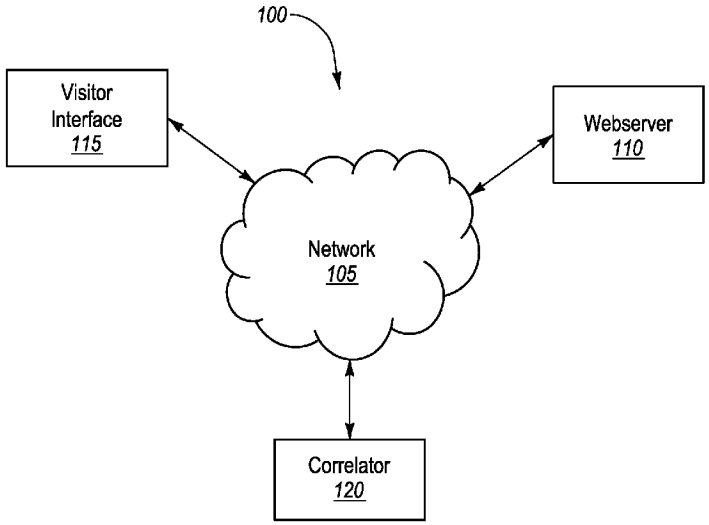
(57) **ABSTRACT**

One embodiment includes a method for correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page. The method includes receiving the Web Page to monitor and determining one or more conversions to correlate. The one or more conversions to correlate include one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page. The visitor to the Web Page completed at least one action included in the conversions to correlate. The method also includes identifying the at least one action completed by the visitor and identifying an external reference that directed the visitor to the Web Page. The external reference contains a reference to the Web Page.

17 Claims, 7 Drawing Sheets



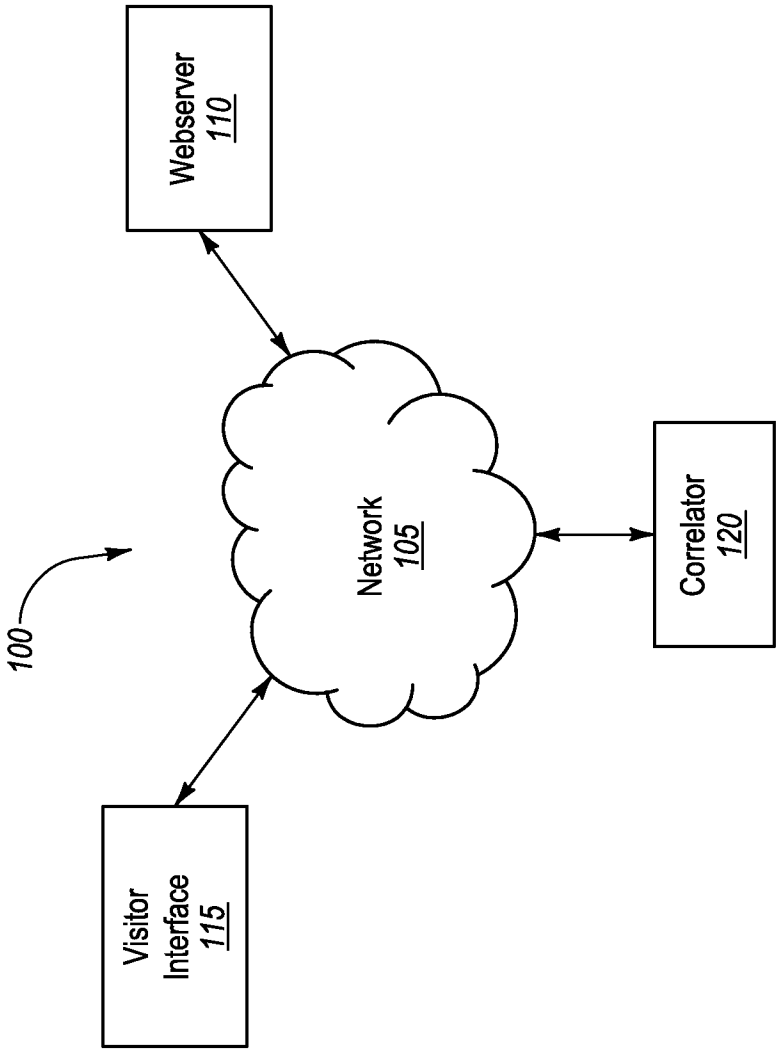

Webserver
110
Network
105
Correlator
120
Visitor
Interface
115
100

Fig. 1

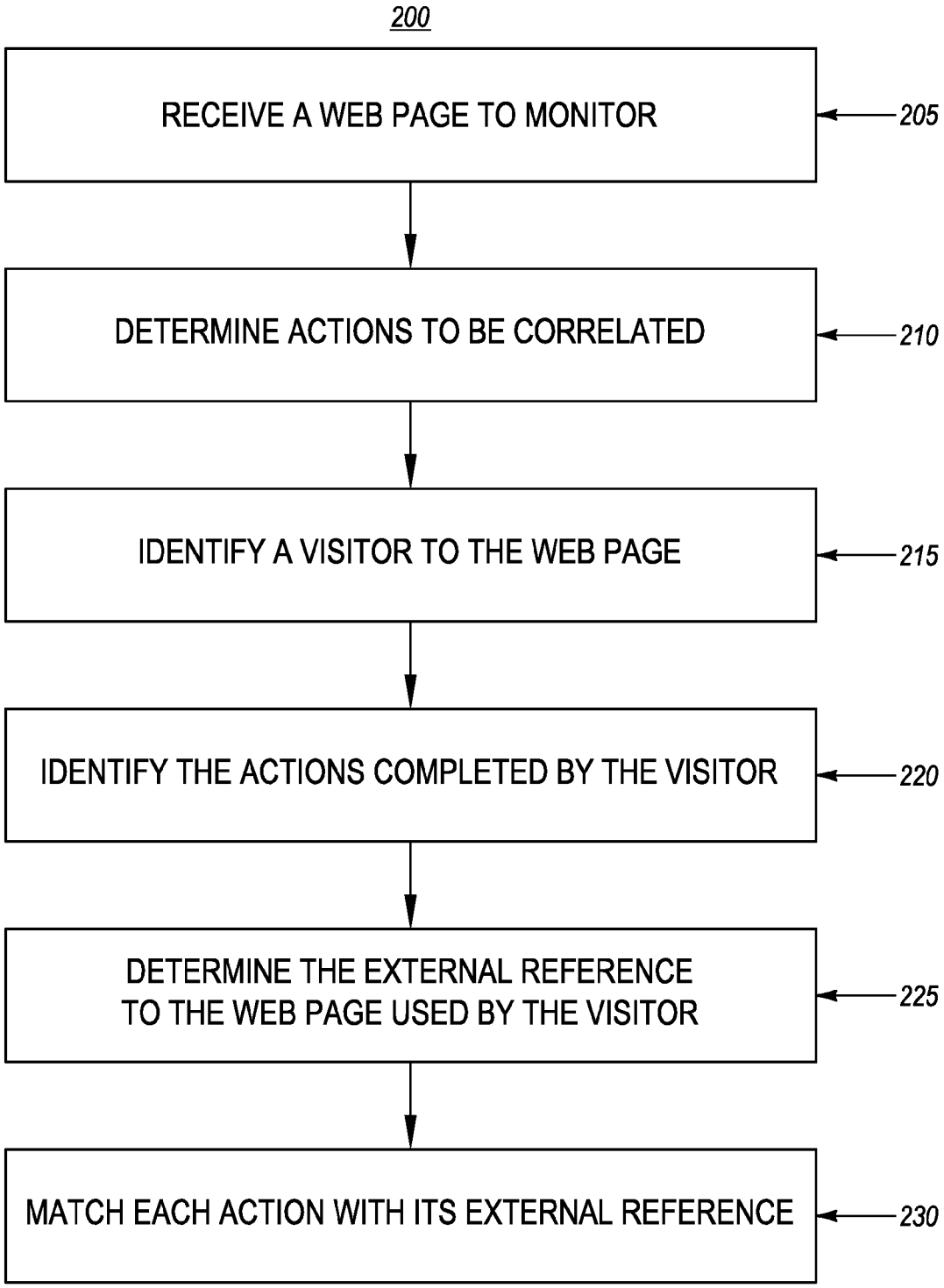

200
RECEIVE A WEB PAGE TO MONITOR
205
DETERMINE ACTIONS TO BE CORRELATED
210
IDENTIFY A VISITOR TO THE WEB PAGE
215
IDENTIFY THE ACTIONS COMPLETED BY THE VISITOR
220
DETERMINE THE EXTERNAL REFERENCE TO THE WEB PAGE USED BY THE VISITOR
225
MATCH EACH ACTION WITH ITS EXTERNAL REFERENCE
230

Fig. 2

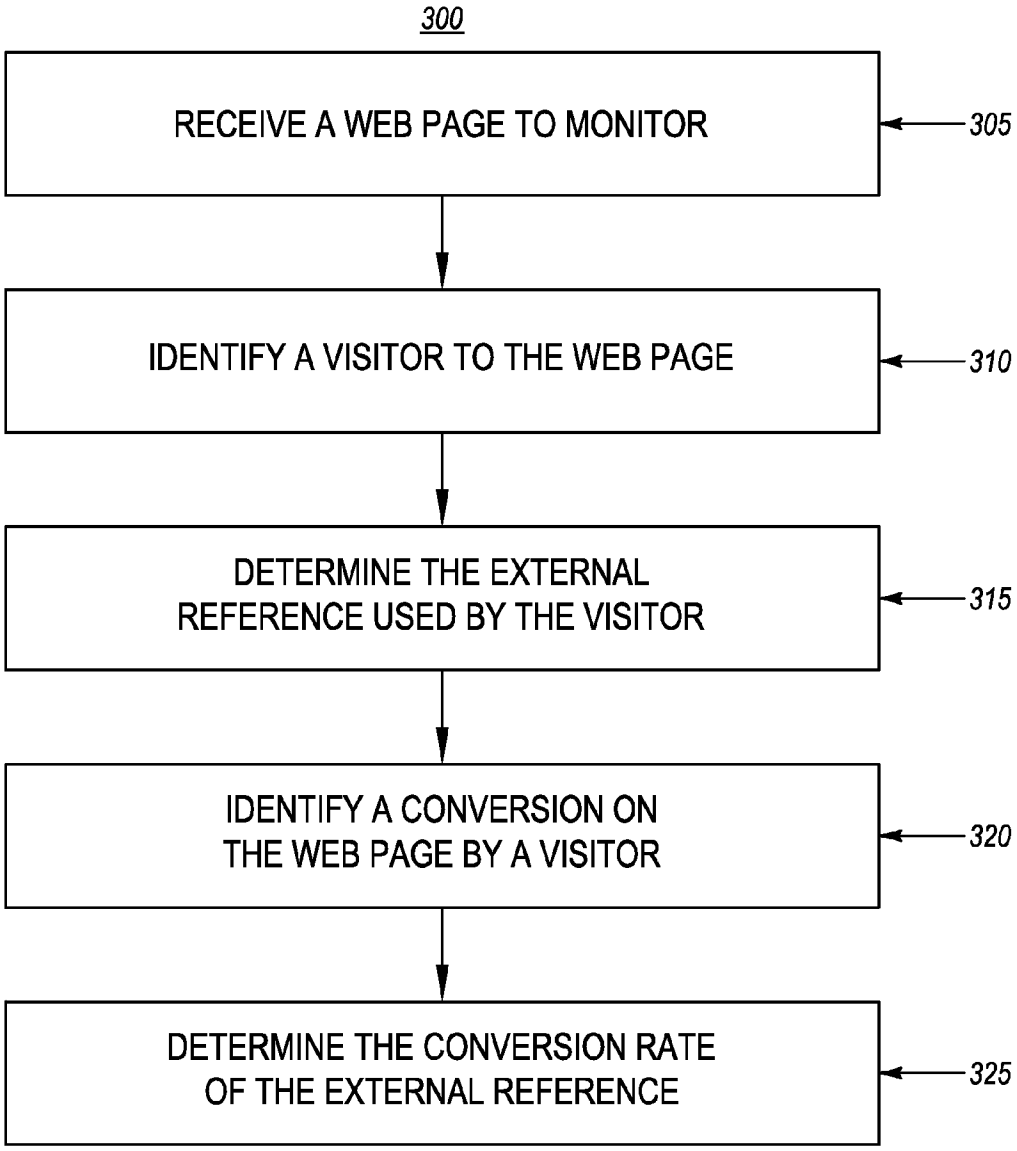

300
RECEIVE A WEB PAGE TO MONITOR
305
IDENTIFY A VISITOR TO THE WEB PAGE
310
DETERMINE THE EXTERNAL REFERENCE USED BY THE VISITOR
315
IDENTIFY A CONVERSION ON THE WEB PAGE BY A VISITOR
320
DETERMINE THE CONVERSION RATE OF THE EXTERNAL REFERENCE
325

Fig. 3

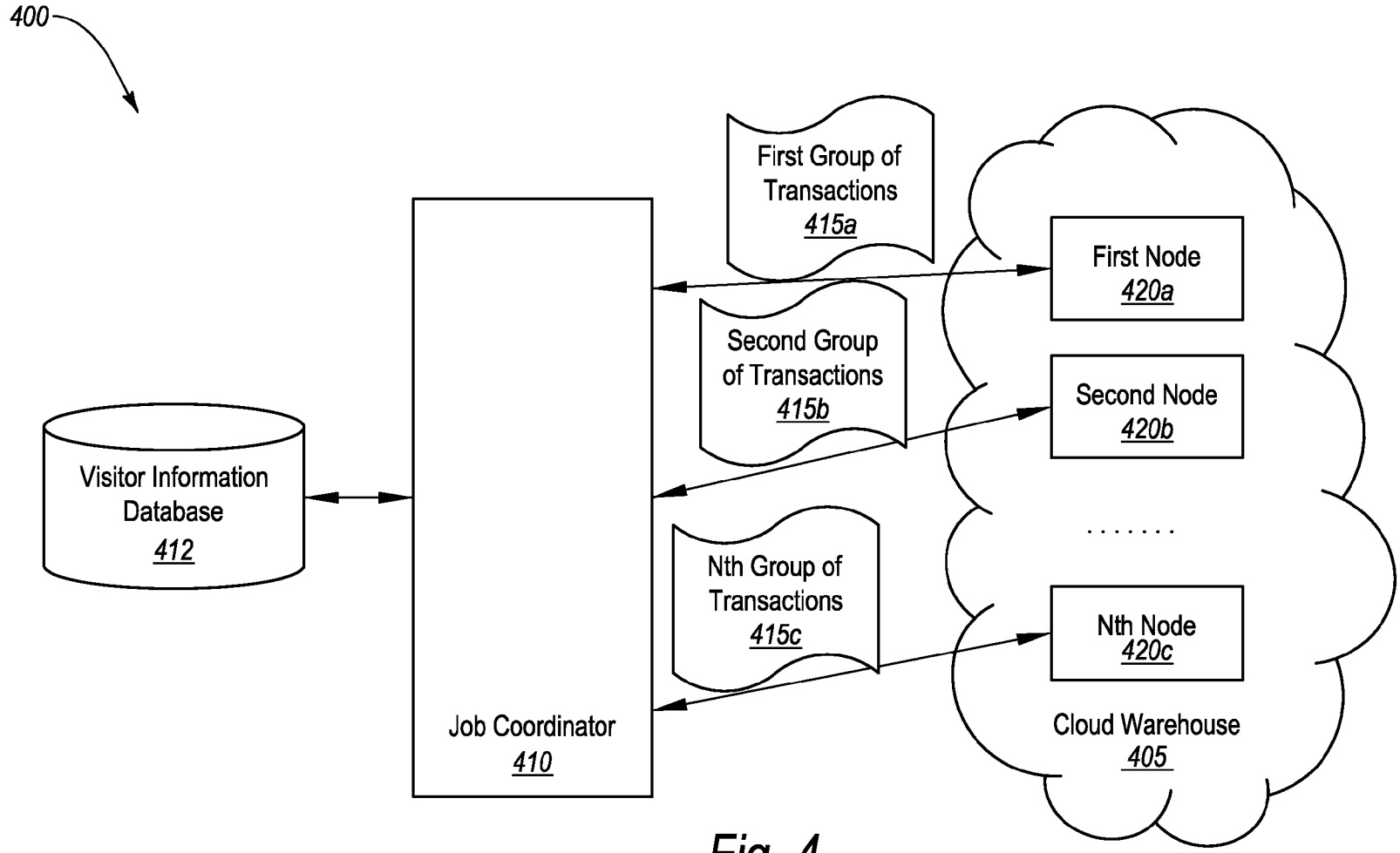

400
First Group of Transactions
415a
Second Group of Transactions
415b
Nth Group of Transactions
415c
Visitor Information Database
412
Job Coordinator
410
First Node
420a
Second Node
420b
.....
Nth Node
420c
Cloud Warehouse
405

Fig. 4

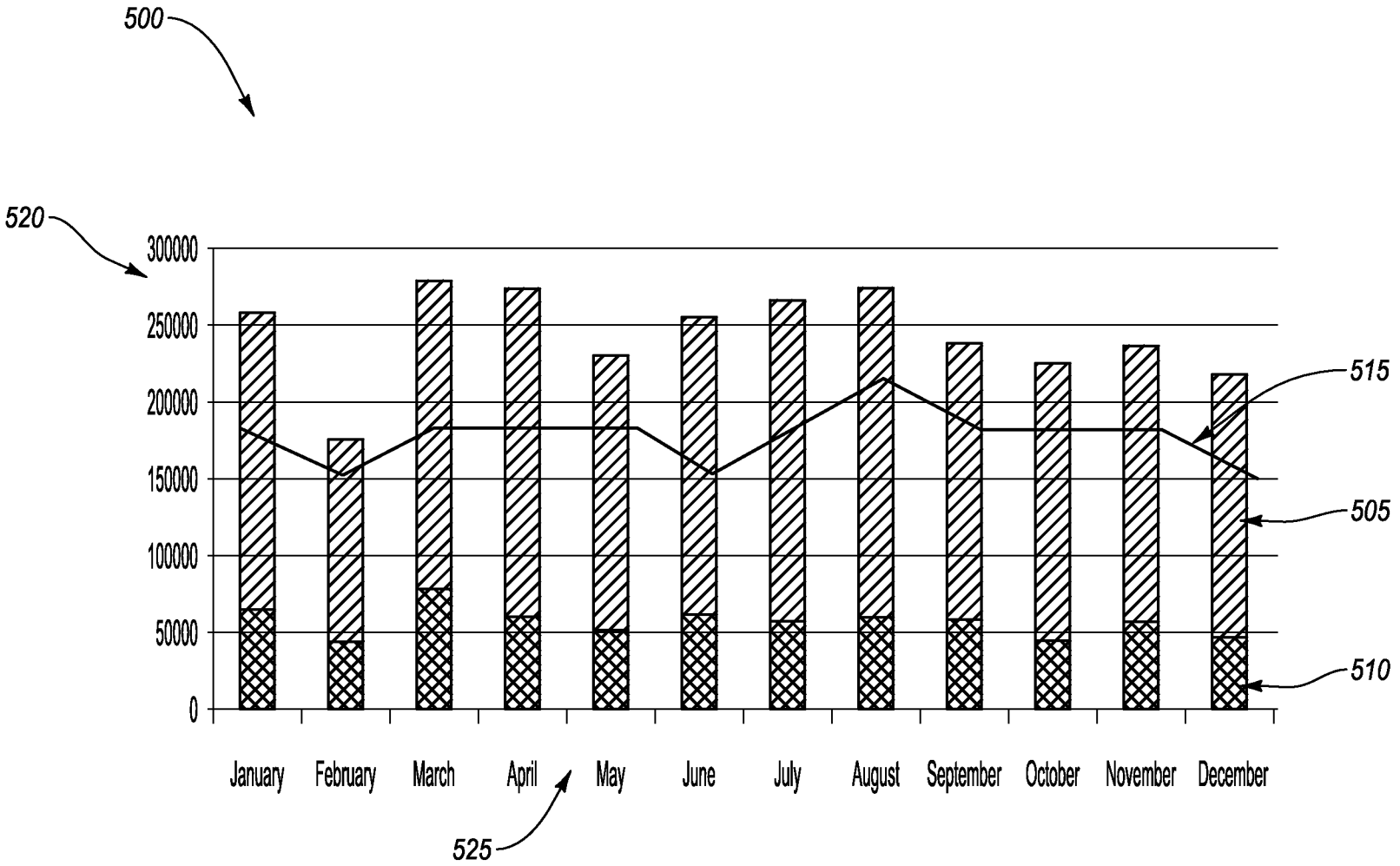

500
520
300000
250000
200000
150000
100000
50000
0
January
February
March
April
May
June
July
August
September
October
November
December
515
505
510
525

Fig. 5A

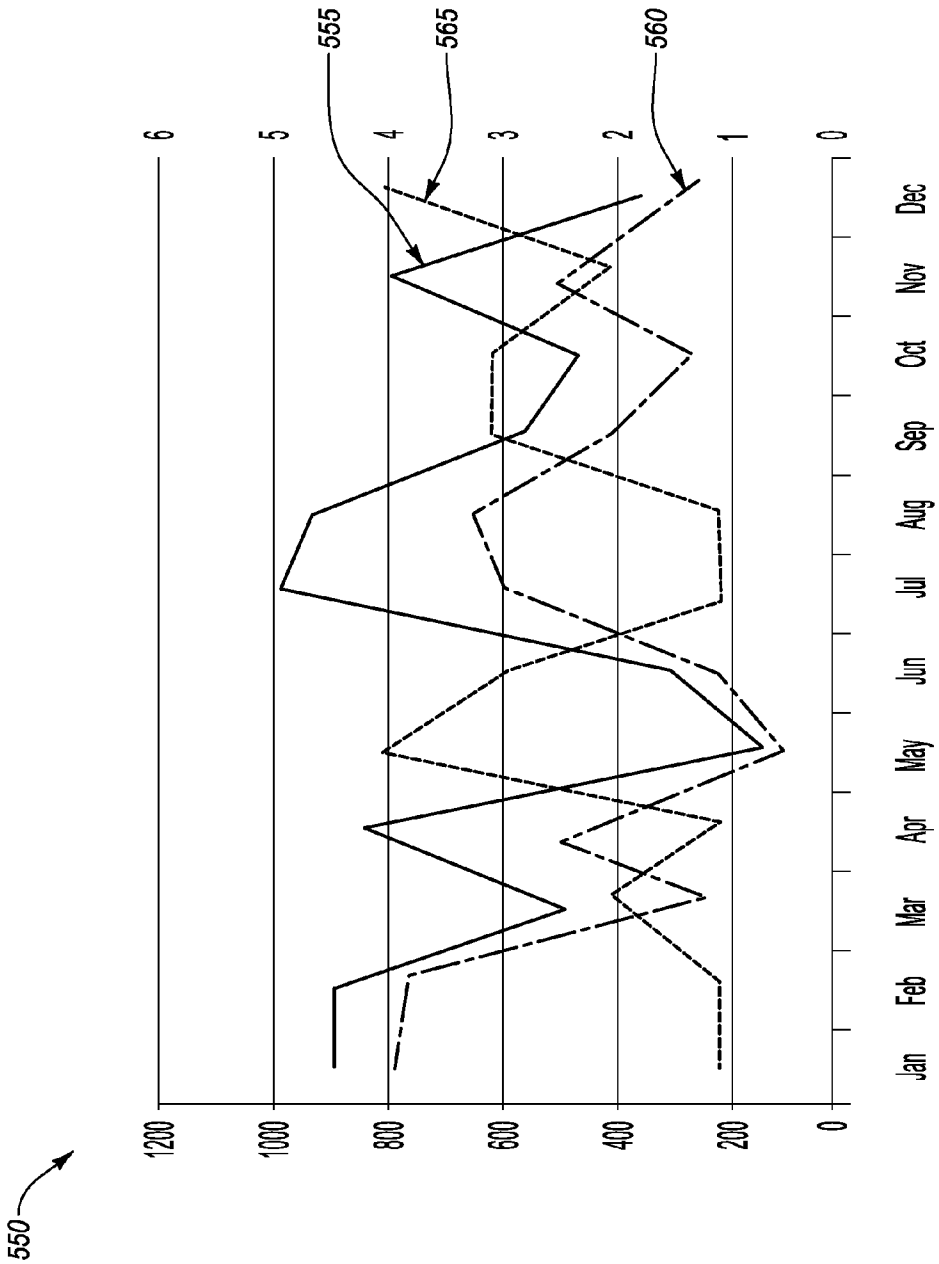
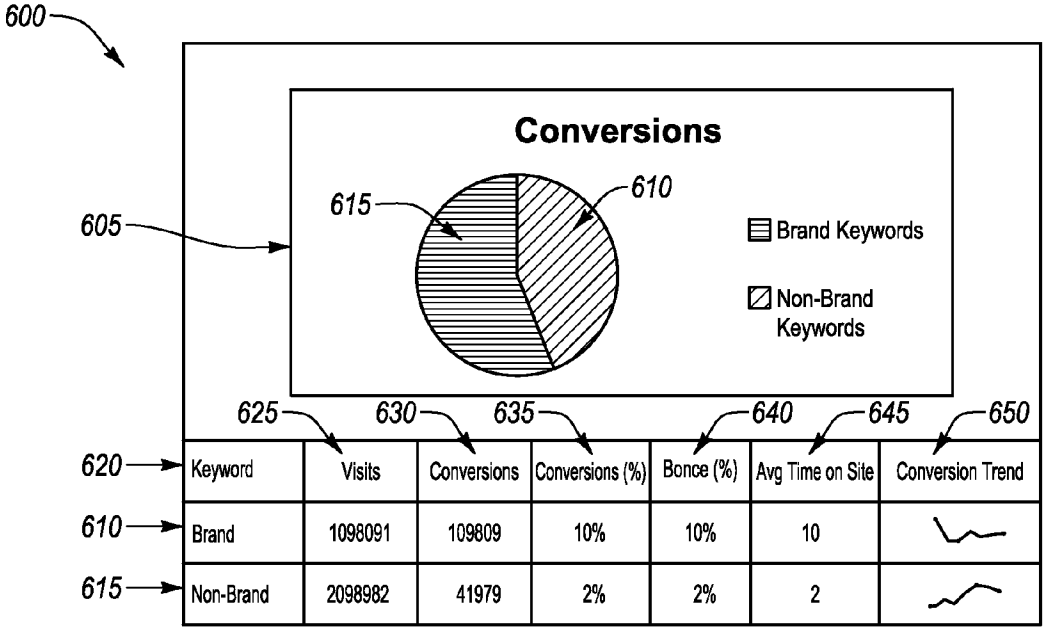
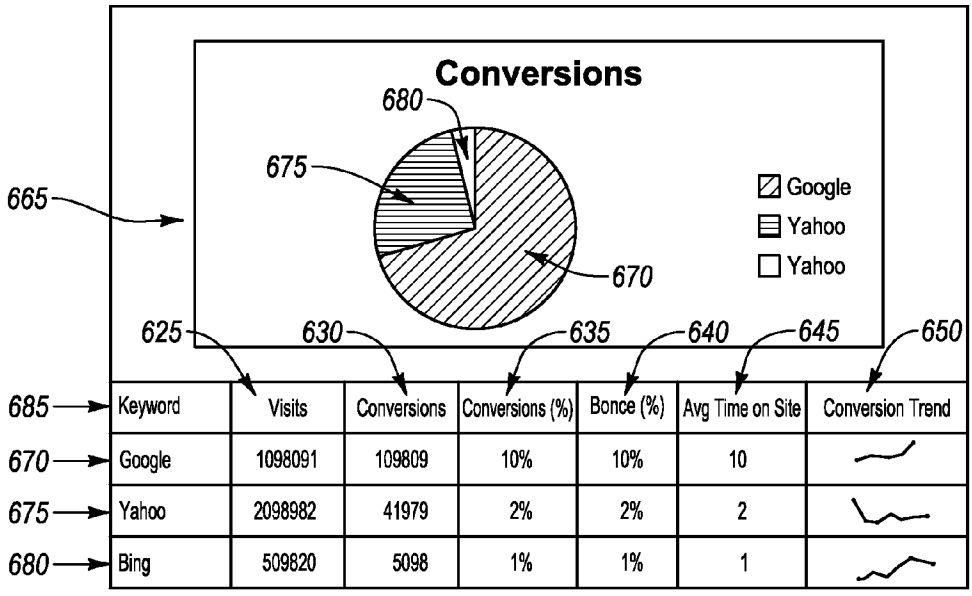

550
555
565
560
6
5
4
3
2
1
0
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Fig. 5B



Keyword	Visits	Conversions	Conversions (%)	Bonce (%)	Avg Time on Site	Conversion Trend
Brand	1098091	109809	10%	10%	10	
Non-Brand	2098982	41979	2%	2%	2	

Fig. 6A



Keyword	Visits	Conversions	Conversions (%)	Bonce (%)	Avg Time on Site	Conversion Trend
Google	1098091	109809	10%	10%	10	
Yahoo	2098982	41979	2%	2%	2	
Bing	509820	5098	1%	1%	1	

Fig. 6B

CORRELATING WEB PAGE VISITS AND CONVERSIONS WITH EXTERNAL REFERENCES

BACKGROUND

The Internet has changed the way people gather information, establish relationships with one another and even how people communicate with one another. Additionally, the Internet has changed the way companies seek potential customers and even what the meaning of a business is. It has changed the way companies advertise, sell, coordinate with one another and compete with one another. With this change has come a huge explosion in the number of Web Pages for people to visit. Search engines, such as Google, Bing, Yahoo and others have come into being to help people find their way to Web Pages that they desire. As a result, the number and types of channels that a marketer can leverage has also exploded—beyond organic and paid search, they can also leverage blogs, social media, video sharing, mobile content and ads, display ads, and many other channels.

However, many Web Pages do not have a good way of tracking how visitors have come to find their Web Pages and the details concerning the reference that drove the visitor to come to the web page. Indeed, many Web Pages cannot accurately determine how many people have visited the Web Page and are instead forced to estimate the number of visitors. Conventionally, this is done with a tracking pixel or some other similar mechanism. The tracking pixel constitutes the code to create a single pixel on the Web Page. However, the tracking pixel also contains the code to perform a certain action or request a certain item from a tracking server. The tracking server keeps track of how many actions or requests it receives, which is used to estimate the number of visitors who have visited the Web Page.

Nevertheless, this can lead to inaccuracies in many instances and provides little to no information about the marketers and the web page's performance from the external channel. In particular, it relies on the user's web browser to correctly execute the tracking pixel and on the tracking server to correctly track the number of actions or requests. However, the tracking pixel only sees very limited data from the referral headers about how the visitor came to the website. Without directly crawling and analyzing the page where the visitor came from, there is inaccurate and very inaccurate view into how the visitor got to a web page, what was our performance in those external channels, and how a marketer should optimize their online marketing campaigns.

However, the number of visitors to a Web Page, and their actions once there, may have a significant impact on the success of the Web Page. For example, many Web Pages rely on tracking the number of visitors to bring in advertising revenue to sustain the Web Page or supplement the revenue that the Web Page brings in. Therefore, accurately determining the number and behavior of visitors, how the visitors got to the web page, and correlating this with the marketing campaigns and efforts will help the marketer to focus on and optimize campaigns to bring additional revenue.

Additionally, tracking the behavior of the actions of each visitor would allow the Web Page to be marketed more efficiently. In particular, many Web Pages track their organic search performance in search engines based on number of visits for certain keywords. However, they cannot determine how many visitors came as a result of a particular search engine result and rank position to the Web Page, instead they must estimate this based on the data (referral header) passed to the web page which only helps them determine the number

of visitors that came from a specific keyword. Without understanding key attributes of their performance on the search engine, they cannot accurately determine the effectiveness of their marketing efforts. Moreover, they cannot determine how their organic search marketing efforts would impact what those visitors do on the Web Page when they have found the Web Page. For example, if a Web Page is selling merchandise, there is currently no way to determine who completed a particular purchase on the Web Page and compare that with how that visitor came to the Web Page.

Therefore, owners and designers of Web Pages must estimate how visitors have come to the Web Page and what they do once they are on the Web Page. This does not allow them to determine which actions would present a better chance for success of the Web Page. For example, a Web Page owner might be confronted with limited marketing budgets that allow them to either improve their ranking in search engine results or that will place advertisements for their Web Page on other Web Pages but not both. Currently, the Web Page owner must choose which strategy to follow with limited information on which would be more effective.

The subject matter claimed herein is not limited to embodiments that solve any disadvantages or that operate only in environments such as those described above. Rather, this background is only provided to illustrate one exemplary technology area where some embodiments described herein may be practiced

BRIEF SUMMARY OF SOME EXAMPLE EMBODIMENTS

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential characteristics of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

One example embodiment includes a method for correlating external references to a Web Page with conversions performed by one or more visitors to the Web Page. The method includes receiving the Web Page to monitor and determining one or more conversions to correlate. The one or more conversions to correlate include one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page. The visitor to the Web Page completed at least one action included in the conversions to correlate. The method also includes identifying the at least one action completed by the visitor and identifying an external reference that directed the visitor to the Web Page. The external reference contains a reference to the Web Page.

Another example embodiment includes a method for correlating external references to a Web Page with the number and value of conversions on the Web Page. The method includes receiving a Web Page to monitor and identifying a conversion on the Web Page. The conversion includes one or more actions performed on the Web Page by a visitor to the Web Page. The method also includes identifying the visitor to the Web Page, where the visitor to the Web Page completed the conversion on the Web Page. The method further includes identifying an external reference that directed the visitor to the Web Page, where the external reference contains a reference to the Web Page.

Yet another example embodiment includes a system for correlating external references to a Web Page with the number of conversions on the Web Page. The system includes an information database. The information database includes

data that identifies: one or more conversions on the Web Page, one or more visitors to the Web Page and one or more external references. The one or more external references include a reference to the Web Page used by the one or more visitors to the Web Page. The system also includes a job coordinator. The job coordinator is configured to divide the one or more conversions into one or more groups for correlating. The system further includes a cloud warehouse. The cloud warehouse includes one or more nodes that contain one more computing resources required to correlate the one or more conversions with the one or more visitors and the one or more external references. The job coordinator is also configured to assign each of the one or more groups to one of the one or more nodes in the cloud warehouse for correlation.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** illustrates a block diagram of a system for correlating external references to a Web Page with the number of conversions on the Web Page;

FIG. **2** is a flow diagram illustrating a method of correlating conversions by a visitor on a Web Page with an external reference;

FIG. **3** illustrates a method for determining the conversion rate of an external reference to a Web Page;

FIG. **4** illustrates a system for correlating conversions on a Web Page with an external reference using a cloud warehouse;

FIG. **5**A illustrates an example of a chart for presenting correlation results to a webmaster;

FIG. **5**B illustrates an alternative example of a chart for presenting correlation results to a webmaster;

FIG. **6**A illustrates an example of a display for presenting correlation results to a webmaster;

FIG. **6**B illustrates an alternative example of a display for presenting correlation results to a webmaster.

DETAILED DESCRIPTION OF SOME EXAMPLE EMBODIMENTS

Reference will now be made to the figures wherein like structures will be provided with like reference designations. It is understood that the figures are diagrammatic and schematic representations of some embodiments of the invention, and are not limiting of the present invention, nor are they necessarily drawn to scale.

FIG. **1** illustrates a block diagram of a system **100** for correlating external references to a Web Page with the number of conversions on the Web Page in accordance with some embodiments. It should be noted that "Web Page" as used herein refers to any online posting, including domains, subdomains, Web posts, Uniform Resource Identifiers ("URIs"), Uniform Resource Locators ("URLs"), images, videos, or other piece of content and non-permanent postings such as e-mail and chat unless otherwise specified.

In at least one implementation, correlating external references to a Web Page with the number of conversions on the Web Page can allow the webmaster to determine the number of conversions provided by each external reference. This can, in turn, allow a webmaster to focus on increasing the number or quality of references that will best lead to an increased number of conversions on the Web Page. For example, correlating keyword searches, and the ranking of the Web Page within the search results, in search engines that include a reference to the Web Page can allow a webmaster to focus on improving the ranking of the Web Page in searches for identified keywords that are more likely to lead to a greater number of conversions.

In at least one implementation, conversions include a visitor to a Web Page completing a desired action on the Web Page. In particular, the nature of the desired action can include any desired use of the Web Page. Web Pages may be created and maintained for different purposes. For example, Web Pages can be content driven. That is, the Web Page can be designed to provide access to certain content. For example, the Web Page can be designed to provide news, information, research help or any other content for the use of the visitor. Additionally or alternatively, the Web Page can be designed for e-commerce. That is, the Web Page can be designed to allow a visitor to purchase certain products, such as products produced and/or sold by a manufacturer or other entity. Alternately or additionally, a Web Page can be designed to generate leads for a business. For example, the Web Page can include information regarding a manufacturer of a certain part and contact information, so that potential customers of the product can contact the manufacturer. One of skill in the art will appreciate that a Web Page can be designed to include one or more of these uses or any other use as desired by the webmaster.

In at least one implementation, external references to a web page can include any reference to the Web Page which directs a visitor to the web page. For example, an external reference can include text documents, such as blogs, news items, customer reviews, e-mails or any other text document which discusses the Web Page. Additionally or alternatively, an external reference can include a Web Page which includes a link to the Web Page. For example, an external reference can include other Web Pages, search engine results pages, advertisements or the like.

In at least one implementation, in a content driven Web Page a completed conversion can include a visitor loading the Web Page. In particular, the webmaster can be concerned with the number of visitors. For example, the number of visitors can determine the amount of advertising revenue produced by the Web Page, as described below. Accordingly, correlating the external reference to the number of conversions in a content driven Web Page can include determining the amount of traffic to the Web Page that is driven to the Web Page by the external reference.

Additionally or alternatively, if a Web Page is designed for e-commerce, conversions can include the amount of commerce created by an external reference. For example, a conversion can include the visitor purchasing an item from the Web Page. Additionally or alternatively, a conversion can include the amount spent by a customer on the Web Page. Accordingly, correlating the external reference to the number of conversions in an e-commerce site can include determining the number of visitors that are directed to the Web Page by an external reference and/or that purchase items from the Web Page. Additionally or alternatively, correlating the external

reference to the number of conversions in an e-commerce site can include determining the average amount of money spent by visitors that are directed to the Web Page by an external reference.

In at least one implementation, if a Web Page is designed to generate leads to a business, conversions can include the number of visitors which contact the webmaster or other entity associated with the Web Page. For example, the Web Page can include a form that allows a user to request additional information regarding a particular product. Accordingly, correlating an external reference to the number of conversions in a lead generating Web Page can include determining the number of visitors and/or lead signups that have been directed by the external reference which complete the form for additional information.

FIG. **1** shows that the system **100** can include a network **105**. In at least one implementation, the network **105** can be used to connect the various parts of the system **100** to one another. The network **105** exemplarily includes the Internet, including a global internetwork formed by logical and physical connections between multiple wide area networks and/or local area networks and can optionally include the World Wide Web ("Web"), including a system of interlinked hypertext documents accessed via the Internet. Alternately or additionally, the network **105** includes one or more cellular RF networks and/or one or more wired and/or wireless networks such as, but not limited to, 802.xx networks, Bluetooth access points, wireless access points, IP-based networks, or the like. The network **105** can also include servers that enable one type of network to interface with another type of network.

FIG. **1** also shows that the system **100** can include a web server **110**. In at least one implementation, a web server **110** (or "webserver") can include any system capable of storing and transmitting a Web Page to a user. For example, the web server **110** can include a computer program that is responsible for accepting requests from clients (user agents such as web browsers), and serving them HTTP responses along with optional data contents, which can include HTML documents and linked objects for display to the user. Additionally or alternatively, the web server **110** can include a computing environment that can implement a computer program as described above.

In at least one implementation, the web server **110** can be capable of sending an error response if the request fails which may include some custom HTML or text messages to better explain the problem to end users. Additionally or alternatively, the web server **110** can include the capability of logging some detailed information, about client requests and server responses, to log files. In at least one implementation, this log information can be analyzed by a webmaster, as described below.

FIG. **1** further shows that the system includes a visitor interface **115**. In at least one implementation, the visitor interface **115** includes a web browser that is implemented on a client device, such as a laptop computer, desktop computer, smartphone, Personal Digital Assistant, or the like. In particular, a web browser is a software application for retrieving, presenting, and traversing Web Pages on a network. For example, Web Pages can contain hyperlinks (or "links") which can allow visitors to navigate their browsers to related resources.

In at least one implementation, a visitor interface **115** can be used to present a Web Page to a visitor. For example, a visitor can input the name of the Web Page into the visitor interface **115** which then loads the Web Page. In particular, the name of the Web Page can include a prefix. In at least one implementation, the prefix of the Web Page can determine how the Web Page will be interpreted by the visitor interface **115**. For example, the prefix can include "http:" which identifies a Web Page to be retrieved over the Hypertext Transfer Protocol (HTTP).

Additionally or alternatively, the prefix can include "https:" for HTTPS, "ftp:"for the File Transfer Protocol, "file:" for local files and "html:" for Hyper Text Markup Language. Additionally or alternatively, prefixes that the web browser cannot directly handle can be handed off to another application entirely. For example, "mailto:" Web Pages can be passed to the visitor's default e-mail application, and "news:" Web Pages can be passed to the visitor's default newsgroup reader.

In at least one implementation, in the case of http, https, file, and others, once the resource has been retrieved the visitor interface **115** can display it. Additionally or alternatively, html can be passed to the visitor interface's **115** layout engine to be transformed from markup to an interactive document. In particular, html can include or can load scripts (in languages such as JavaScript) which affect the behavior of html processors like Web browsers. Additionally or alternatively, visitor interfaces **115** can generally display any kind of content that can be part of a Web Page. Most visitor interfaces **115** can display images, audio, video, and XML files, and often have plug-ins to support Flash applications and Java applets. Upon encountering a file of an unsupported type or a file that is set up to be downloaded rather than displayed, the visitor interface **115** can prompt the user to save the file to disk.

FIG. **1** also shows that the system **100** includes a correlator **120**. In at lest one implementation, the correlator **120** can determine the number of conversions on a website that are due to a particular external reference. For example, the correlator **120** can determine what percentage of visitors that come to the Web Page from a particular external reference complete a conversion on the Web Page. Additionally or alternatively, the correlator **120** can determine what percentage of total conversions on the Web Page originate from a particular external reference.

FIG. **2** is a flow diagram illustrating a method **200** of correlating conversions by a visitor on a Web Page with an external reference in accordance with some embodiments. Correlating conversions by a visitor on a Web Page with an external reference can allow a webmaster to determine which external references are best at producing conversions. For example, a webmaster can determine which search results are most likely to result in desired conversions and can, therefore, focus marketing efforts on improving those search results, as discussed below.

The method **200** can be implemented using software, hardware or any combination thereof. If the method **200** is implemented using software, the steps of the method **200** can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method **200** is implemented using software, the steps can be carried out by a processor, field-programmable gate array (FPGA) or any other logic device capable of carrying out software instructions or other logic functions.

In at least one implementation, the method **200** can be implemented using a cloud warehouse. In particular, a cloud warehouse includes purchasing processing power over a network. In particular, the user need not own the physical infrastructure serving as host to the software platform. Instead, the user rents usage from a third-party provider. A user need not rent from a particular provider. Instead, the user can rent on an "as available basis". That is, the user can automatically contact third-party providers and obtain resources as needed.

Accordingly, a number of calculations can be done simultaneously, as the calculations can be done in parallel. Additionally, the calculations can be cheaper since the user need not purchase the physical infrastructure.

In particular, if the method **200** is implemented in a cloud warehouse, conversions may first be divided into groups. For example, the method **200** can be performed at certain time intervals, with all conversions within the time interval correlated at one time. E.g., the method **200** can be carried out once a day with all of the conversions completed during the day analyzed with one another. In at least one implementation, each group can be assigned to a different node within the cloud warehouse. Accordingly, each group can be analyzed in parallel.

Additionally or alternatively, the method **200** can be implemented using a server or other single computing environment. If a server or other single computing environment is utilized, the conversions need not be divided into groups, since all conversions will be analyzed by the same server or single computing environment. Accordingly, less overall processing can be necessary. However, the server or single computing environment can experience downtime or otherwise delay the results.

Additionally or alternatively, some combination of cloud warehouse and server can be utilized to implement the method **200**. For example, a server can be used to group conversions and send them to the cloud warehouse for processing. Additionally or alternatively, a cloud warehouse can be used to supplement the server as needed. For example, the cloud warehouse can be used if the amount of processing progresses beyond the abilities of the server.

FIG. **2** shows that the method **200** includes receiving **205** a Web Page to monitor. In at least one implementation, receiving **205** the Web Page to monitor includes receiving a domain name or a URL. For example, the webmaster can provide a URL and request that conversions are monitored on the Web Page for a certain period of time. Additionally or alternatively, receiving **205** the Web Page to monitor can include providing the code of the Web Page for the addition of one or more software products capable of tracking conversions, as described below.

FIG. **2** also shows that the method **200** includes determining **210** the type of conversions to be correlated. In at least one implementation, the conversions to be correlated can include purchases, following a link, following an advertisement, selecting content, such as images, videos and text, participating in a discussion or chat board, participating in a game, posting content, such as a blog, feeds or status updates, bookmarking a page, adding a content feed, such as rss or any other conversion on the Web Page that the webmaster desires to correlate.

FIG. **2** further shows that the method **200** includes identifying **215** a visitor to the Web Page. In at least one implementation, identifying **215** a visitor to the Web Page includes determining the Internet Protocol (IP) address of the visitor. In particular, an IP address is a numerical label that is assigned to devices participating in a computer network utilizing the Internet Protocol for communication between its nodes. Additionally or alternatively, identifying **215** a visitor can include providing a cookie to the visitor's web browser. In particular, a cookie (also tracking cookie, browser cookie, and HTTP cookie) can be a small piece of text stored on a user's computer by a web browser. For example, a cookie can consist of one or more name-value pairs containing bits of information such as user preferences, shopping cart contents, the identifier for a server-based session or other data used by websites.

Additionally or alternatively, identifying **215** a visitor to the Web Page can include providing a script or other software module in the Web Page code which identifies the visitor. For example, identifying **215** a visitor can include adding a JavaScript to the code of the Web Page which, when executed, can send desired information back to the web server. In at least one implementation, the code is executed by the visitor's browser and can track the actions of the visitor while on the Web Page. For example, the code can record the nature and time of actions of a purchase by the visitor so that the visitor, and therefore the external reference used by the visitor, can later be correlated with the purchase.

FIG. **2** also shows that the method **200** includes identifying **220** the conversions completed by the visitor. In at least one implementation, conversions on a Web Page can number in the millions. For example, popular social networking or content driven Web Pages can be visited by millions of people each day. Accordingly, a conversion on the Web Page needs to be matched with the visitor which performed the action. As discussed above, the conversions can be matched to which visitor performed them using code added to the Web Page and executed by the visitor's web browser. Additionally or alternatively, the Web Page may identify the IP address of user's who perform the action, which can later be matched to a list of all visitors and all actions of the visitor can be grouped with one another for analysis, as discussed below.

FIG. **2** also shows that the method **200** includes determining **225** the external reference to the Web Page used by the visitor. In at least one implementation, the external reference to the Web Page can include any reference which links to the Web Page. In particular, a link is a reference in a document to an external or internal piece of information. In at least one implementation, some text or other item in external reference is highlighted so that when clicked, the visitor's web browser automatically displays another page or changes the current page to show the referenced content.

Additionally or alternatively, determining **225** the external reference can include parsing the log files provided by the web server. In at least one implementation, web servers can provide log files to a web server when requesting a Web Page stored on the web server. These log files can include information about the external reference, including the URL of the external reference. Additionally or alternatively, the log files can include information regarding searches if the external reference is a search engine.

Additionally or alternatively, determining **225** the external reference can include parsing the search header of the Web Page request. In at least one implementation, the search header of the Web Page request can include information about the external reference which directed the visitor to the Web Page. For example, the search header can include the search engine used and the keyword searched.

In at least one implementation, determining **225** the external reference can include analyzing the full funnel of the visitor's activity prior to the visitor's conversion. In particular, the full funnel of the visitor's activity can include activity that results in the visitor coming to the Web Page that is not directly prior to the conversion. For example, the full funnel of the visitor's activity can include previous keyword searches. E.g., if the visitor comes to the Web Page and does not complete a conversion, but later returns and completes a conversion, the full funnel of the visitor's activity can include the visitor's visit to the external reference prior to the conversion. Additionally or alternatively, the full funnel of the visitor's activity can include the full path followed by the visitor to the Web Page. For example, the full funnel of the visitor's activity could include a keyword search, which leads to a blog

about a product, which leads to a side-by-side review of related products which leads to the Web Page.

Additionally or alternatively, determining **225** the external reference can include determining the analytics of the external reference. In at least one implementation, the analytics of the external reference can include one or more channels. In particular, channels can include organic searches, organic links, paid links, page searches, linked advertisement networks, banner advertisements, contextual advertisements, e-mail, blogs, social networks, social news, affiliate marketing, mobile advertisements, media advertisements, video advertisements, videos, images, discussion forums, paid advertisements, display advertisements, news sites, rich media, social bookmarks, paid searches, wiki, mobile content, and in-game advertisements. Nevertheless, the channels are not limited to those mentioned but can include any relevant areas of the network, whether now existing or created in the future.

Additionally or alternatively, the analytics of the external reference can include one or more signals. In at least one implementation, the one or more signals include information about the external references to the Web Page. For example, advertisements placed at the top of a Web Page are much more visible, and therefore, are generally more expensive and are considered more effective than advertisements placed at the bottom of a Web Page. Therefore, if the external reference includes online advertisements, advertisement placement is an analytic of the Web Page that can be evaluated. Alternately or additionally, the one or more signals can include a keyword used in a search which identified the Web Page and the ranking of the Web Page within the search, and the competitive listings (other pages that rank within the search). Additionally or alternatively, the one or more signals can include one or more of: calendar date of the external reference, time of day the external reference was accessed or the like.

In at least one implementation, the one or more signals can include information about a link provided in the external reference to the Web Page. For example, the one or more signals can include the anchor text of the link. Anchor text (also link label or link title) is the visible, clickable text in a hyperlink. Additionally or alternatively, the one or more signals can include link tags. Link tags are information about the link. For example, the link tag can include a "nofollow" tag. Nofollow is an HTML attribute value used to instruct some search engines that a hyperlink should not influence the link target's ranking in a search engine's index.

Additionally or alternatively, signals within an e-mail message to be evaluated can include frequency of the e-mail message received, outbound links on the e-mail message, calendar date of the e-mail message received, time of day of the e-mail message received, or the like. In blogs, signals can include the number of mentions, and the sentiment of the mentions. For social media channels signals can include the number of user generated content with references and the number of votes for those references. For social networks, signals can include the number of mentions or number of applications that mention the page. Nevertheless, the signals to be evaluated are not limited to those mentioned but can include any relevant information about the references to the Web Page, whether now existing or created in the future.

In at least one implementation, detailed information about an external reference can be obtained by crawling the external reference. For example, crawling the external reference can include deep crawls and dynamic crawls. In particular, deep crawls include crawling the Internet for online references to the entity. Crawling the Internet can include searching one or more channels of the Internet for references to the Web Page and evaluating one or more signals in the reference.

In contrast, dynamic crawls can include evaluating references that have not been previously encountered in deep crawls. For example, dynamic crawls can include evaluating a reference to determine which channels the reference appears in and what signals the reference contains. In at least one implementation, a dynamic crawl can determine how the Web Page was referenced in a channel. For example, a dynamic crawl of a search results page can determine where the Web Page ranked in a keyword search, what competitors showed up in the keyword search, where the competitors ranked in the keyword search, how many visitors came to the Web Page from the searches results or any other analytics which can allow the webmaster to determine the effectiveness of marketing the Web Page within the external reference. Additionally or alternatively, a dynamic crawl of a blog, would include crawling the external reference, identifying that the external reference is a blog, determining the subject matter of the blog, determining the sentiment of the blog or any other analytics that can allow the webmaster to determine the effectiveness of the blog in producing conversions on the Web Page.

In at least one implementation, dynamic crawls can be used on external references that are more likely to change quickly. For example, social networking sites, such as Twitter or Facebook, can include a sharp increase in the number of mentions of a Web Page as users of the social network pass the information to one another. Accordingly, constant crawling of the external reference can indicate changes in conversion numbers that result from the changing mentions in the external reference.

Additional information regarding channels, signals, and the collecting and scoring of online references is provided in U.S. patent application Ser. No. 12/436,704, entitled "COLLECTING AND SCORING ONLINE REFERENCES," filed May 6, 2009. The foregoing patent application is incorporated herein by reference in its entirety.

FIG. **2** further shows that the method **200** includes matching **230** each conversion with the referring external reference. In particular, matching **230** each conversion with the referring external reference can include matching a particular visitor with a particular conversion and further matching the visitor with an external reference. For example, if a particular conversion is matched with a particular visitor, the log files can be searched for the identified visitor. The log files that have been identified can then be parsed to determine the external reference used by the visitor to find the Web Page.

One skilled in the art will appreciate that, for this and other processes and methods disclosed herein, the functions performed in the processes and methods may be implemented in differing order. Furthermore, the outlined steps and operations are only provided as examples, and some of the steps and operations may be optional, combined into fewer steps and operations, or expanded into additional steps and operations without detracting from the essence of the disclosed embodiments.

FIG. **3** illustrates a method **300** for determining the conversion rate of an external reference to a Web Page in accordance with some embodiments. The method **300** can be implemented using software, hardware or any combination thereof. If the method **300** is implemented using software, the steps of the method **300** can be stored in a computer-readable medium, to be accessed as needed to perform their functions. Additionally, if the method **300** is implemented using software, the steps can be carried out by a processor, field-pro-

grammable gate array (FPGA), cloud warehouse or any other logic device capable of carrying out software instructions or other logic functions.

FIG. **3** shows that the method **300** includes receiving **305** a Web Page to monitor. In at least one implementation, receiving **305** the Web Page to monitor includes receiving a domain name or a URL. For example, the webmaster can provide a URL and request that conversions are monitored on the Web Page for a certain period of time. Additionally or alternatively, receiving **305** the Web Page to monitor can include providing the code of the Web Page for the addition of one or more software products capable of tracking conversions, as described below.

In at least one implementation, receiving **305** a Web Page to monitor can include receiving one or more entry pages to the Web Page. For example, the Web Page to monitor can include a collection of pages. In particular, the Web Page can include a main or home page which serves as an entry page and includes links to other pages grouped within the collection of pages. That is, the entry page allows a visitor to select other pages within the Web Page. In at least one implementation, the entry page can include the page to which some or all of the external references point.

FIG. **3** further shows that the method **300** includes identifying **310** a visitor to the Web Page. In at least one implementation, identifying **310** a visitor to the Web Page includes determining the Internet Protocol (IP) address of the visitor. Additionally or alternatively, identifying **310** a visitor can include providing a cookie to the visitor's web browser.

Additionally or alternatively, identifying **310** a visitor to the Web Page can include providing a script or other software module in the Web Page code which identifies the visitor. For example, identifying **310** a visitor can include adding a JavaScript to the code of the Web Page which, when executed, can send desired information back to the web server. In at least one implementation, the code is executed by the visitor's browser and can track the actions of the visitor while on the Web Page. For example, the code can record the nature and time of actions of a purchase by the visitor so that the visitor, and therefore the external reference used by the visitor, can later be correlated with the purchase.

FIG. **3** further shows that the method **300** includes determining **315** the external reference used by the visitor. In at least one implementation, identifying an external reference includes identifying a previous Web Page visited by the user which contains a reference to the Web Page. In particular, an external reference can include any Web Page which directs a visitor to the monitored Web Page. For example, an external reference can include a search engine which directs the visitor to the Web Page based on the results of a keyword search. Additionally or alternatively, an external reference can include an advertisement placed on a Web Page which directs a visitor to the Web Page. For example, the advertisements can include advertisements placed through an ad placement service or can include advertisements that are contracted for specifically on a certain Web Page. Additionally or alternatively, an external reference can include direct references to the Web Page. For example, direct references can include references from a business partner or associate or from a reviewer or other content provider.

In at least one implementation, the external reference can include a group of external references. For example, a webmaster can be interested in the number of conversions based on a search that includes different city names. For example, if a business is located in numerous cities, the webmaster can be interested in the number of conversions that come from a keyword search that includes any of the city names, regardless of which city is actually searched. Accordingly, the external references can be grouped with one another, regardless of which city is actually searched.

In at least one implementation, the external reference can be determined **315** using log files included in a server request. For example, the log files can be parsed to determine Web Pages previously accessed by the visitor to the Web Page. Additionally or alternatively, the external reference can be determined **315** from a search referral header. For example, if the previous Web Page was a search engine, the request to the web server for the Web Page might include a search header which contains information regarding the external reference.

FIG. **3** further shows that the method **300** includes determining **320** whether the visitor completes a conversion on the Web Page. In at least one implementation, the cookie and/or JavaScript included with the Web Page code can track whether the user completes a conversion and transmit the information to the web server or to destination designated to receive the information. Additionally or alternatively, whenever a conversion is complete, the Web Page code can request the appropriate information regarding the visitor. This information can, in turn be matched to an identified visitor, as described above.

FIG. **3** further shows that the method **300** includes determining **325** the conversion rate of the external reference. As described above, the conversion rate can include the number of conversions on a website that are due to a particular external reference. For example, the conversion rate can include the percentage of visitors that come to the Web Page from a particular external reference complete a conversion on the Web Page. Additionally or alternatively, the conversion rate can include the percentage of total conversions on the Web Page that originate from a particular external reference.

In at least one implementation, determining **325** the conversion rate of the external reference can include determining the conversion rate of a single entry page. For example, the conversion rate can include the number of conversions on a single page within a Web Page. Additionally or alternatively, determining **325** the conversion rate of the external reference can include determining the conversion rate of all pages within the Web Page. For example, the webmaster can only be interested in the number of people that complete conversions of any type, whether included in an original search or whether arrived at by browsing the Web Page.

Additionally or alternatively, determining **325** the conversion rate of the external reference can include determining the conversion rate of a group of external references. In particular, the webmaster can group one or more external references based on criteria selected by the webmaster. For example, the webmaster can include all external references that contain a single keyword, regardless of other keywords present in the external references. Accordingly, the webmaster can be flexible in determining the grouping of external references and in the corresponding conversion rate of the group of external references.

In at least one implementation, the method can further include providing recommendations to the webmaster. In particular, a recommendation can be made to the webmaster that allows the webmaster to better utilize available marketing techniques. For example, a recommendation can be made to the webmaster regarding search engine optimization. If the Web Page ranks low in a keyword search where there are a high number of searches or a high rate of conversion, a recommendation can be made to focus marketing efforts on improving the ranking of the Web Page within that keyword search. A further recommendation can be made for the webmaster to more actively monitor references that are not cur-

rently being monitored. Additionally or alternatively, a recommendation can be made regarding which channels or signals need to be focused on for improved marketing. For example, a recommendation can be made about the number of backlinks to the Web Page and how the webmaster can increase the number of backlinks. In at least one implementation, a recommendation can be made regarding the Web Page's competitive landscape. For example, a competitor's Web Page can be monitored and the webmaster can be alerted when a competitor's keyword rank changes or the competitor's number of backlinks increases. Additionally or alternatively, a recommendation can be made regarding changes in the Web Pages external references. For example, an alert can be provided to the webmaster if a change occurs in a keyword ranking that leads to a high number of conversions on the Web Page.

FIG. **4** illustrates a system **400** for correlating conversions on a Web Page with an external reference using a cloud warehouse **405** in accordance with some implementations. In at least one implementation, a cloud warehouse **405** can allow multiple implementations of software to run simultaneously, decreasing the time it takes to make the correlations. Additionally or alternatively, using a cloud warehouse **405** can reduce costs and speed results.

FIG. **4** shows that the system **400** can include a job coordinator **410**. In at least one implementation, the job coordinator **410** receives information form an information database **412**. The data in the information database **412** can be received from code embedded in the Web Page, from log files, from search headers or through some other method, as discussed above. In particular, the information database **412** can include data that is needed to correlate conversion on a Web Page with an external reference. For example, the data can identify conversions on the Web Page. Additionally or alternatively, the data can identify visitors to the Web Page. Additionally or alternatively, the data can include external references to the Web Page that directed a visitor to the Web Page.

In at least one implementation, the job coordinator **410** can assign all completed conversions to different groups **415***a*, **415***b*, **415***c* (collectively "groups **415**") for processing. For example, the job coordinator **410** can divide conversions into groups **415** of a certain number of conversions. Additionally or alternatively, the job coordinator **410** can divide conversions into groups **415** based on the amount of information to be parsed. For example, if a high number of conversions need to be correlated, the job coordinator **410** can reduce the number of conversions in each group **415**.

Additionally or alternatively, the job coordinator **410** can divide the conversions into groups **415** based on other criteria. For example, if multiple Web Pages are being analyzed simultaneously, the job coordinator **410** can divide the conversions into groups **415** based on the Web Page being analyzed. Additionally or alternatively, the job coordinator **410** can divide the conversions into groups **415** based on preferences set by the webmaster. For example, if the webmaster prefers lower cost, the job coordinator **410** can divide the conversions into a smaller number of groups **415** to decrease processing cost. Additionally or alternatively, if the web master prefers faster return time, the job coordinator **410** can divide the conversions into a larger number of groups **415** to decrease processing time.

In at least one implementation, the job coordinator **410** can include a computing environment. In particular, the job coordinator **410** can include a processor, an FPGA, memory, or any other hardware or software necessary for performing its intended function. For example, the job coordinator **410** can include a server which is configured to assign the conversions to groups **415** and present them to a cloud warehouse **405** for analysis.

FIG. **4** also shows that the job coordinator **410** can assign the different groups **415** of conversions to different nodes **420***a*, **420***b*, **420***c* (collectively "nodes **420**") within a cloud warehouse **405** for processing. In at least one implementation, the job coordinator **410** can assign the different groups **415** to different nodes **420** based on preferences set by the webmaster. For example, if the webmaster prefers to keep costs low, the job coordinator **410** can assign the groups **415** to cheaper nodes **420** or can assign the groups **415** to nodes **420** during non-peak hours, when rates might be cheaper. Additionally or alternatively, if the webmaster prefers faster return time, the job coordinator **410** can assign the groups **415** to the fastest available to be analyzed immediately.

FIG. **4** further shows that the system includes a cloud warehouse **405**. In at least one implementation, a cloud warehouse **405** includes one or more nodes **420**. In particular, the one or more nodes **420** include a computing environment that is capable of executing software or other commands. The one or more nodes **420** can be leased as needed for use by someone other than the hardware owner.

In at least one implementation, the use of the nodes **420** can be pre-arranged. I.e., the time and manner of using the nodes **420** can be arranged ahead of time or according to a pre-arranged schedule. Additionally or alternatively, the nodes **420** can be made available on an "as needed" basis. For example, the cloud warehouse **405** can keep an updated list of available nodes. The cloud warehouse **405** can then communicate this information to the job coordinator **410**, which then assigns the different groups **415** to available nodes **420**. Additionally or alternatively, the cloud warehouse **405** can receive the groups **415** and assign the groups **415** to different nodes **420** as they become available.

FIG. **5**A illustrates an example of a chart **500** for presenting correlation results to a webmaster in accordance with some embodiments. In at least one implementation, the chart **500** can allow the webmaster to determine the effectiveness of a particular marketing campaign. In particular, the chart **500** can be a bar graph, as shown in FIG. **5**A. For example, the chart **500** can show how visits **505**, conversions **510** and monetary value **515** of the conversions have changed over time. In particular, the chart **500** can include correlation results for a particular external reference. For example, the chart **500** can include the number of visitors **505**, the number of conversions **510** and the monetary value **515** of the conversions as a result of a particular keyword search in a search engine.

In at least one implementation, the chart **500** can show the number of conversions **510** and the number of visitors **505** as integer values. Additionally or alternatively, the chart **500** can show the number of conversions **510** as a percentage of the number of visitors as a y-axis **520**. Further, the chart **500** can include the monetary value **515** of the conversions **510**. For example, the chart **500** can include the total monetary value **515** of all conversions **510**. Additionally or alternatively, the chart **500** can include the average monetary value **515** of each conversion **510** or each visit **505**. Accordingly, a webmaster can easily see how many visits **505** result in conversions **510** and how much monetary value **515** each visit **505** or conversion **510** brings.

In at least one implementation, a chart **500** can include time ranges as an x-axis **525**. For example, the x-axis **525** can show time intervals of one month. Additionally or alternatively, the x-axis **525** can show time of day, day of the week, or years. In at least one implementation, the webmaster can change the

values shown on the x-axis **525**, as desired. Accordingly, a web master can easily evaluate how effective external references have been in creating conversions.

FIG. **5**B illustrates an alternative example of a chart **550** for presenting correlation results to a webmaster in accordance with some embodiments. In at least one implementation, the chart **550** can allow the webmaster to determine the effectiveness of a particular marketing campaign. For example, the chart **550** can show rankings **565** in a keyword search have changed over time and how visits **555** and conversions **560** that result from the keyword search have changed with changes in the Web Pages ranking.

FIGS. **6**A and **6**B illustrate examples of displays **600** and **660** for presenting correlation results to a user, in accordance with some embodiments. FIG. **6**A illustrates a display **600** that includes a pie chart **605** which shows conversions that result from search results. In at least one implementation, a pie chart **605** can be used to illustrate percent of visits or conversions that result from a particular external reference or group of external references. For example, FIG. **6**A shows a pie chart **605** which shows conversions that occur because of search engine results. The pie chart divides conversions into two categories. The first category is conversions which results from brand keywords **610**. In at least one implementation, brand keywords **610** can include keywords that are specific to the Web Page. For example, brand keywords **610** can include company name, the name of specific products or trademarked names. The second category in FIG. **6**A is conversions which result from non-brand keywords **615**. In at least one implementation, non-brand keywords **615** include keywords that relate to the general area of the Web Page. For example, non-brand keywords **615** can include keywords that relate to the type of product sold or the type of business.

FIG. **6**A also shows that the display **600** can include a table **620** that gives numerical information regarding visitors to the web-page separated by brand **610** and non-brand **615** keyword searches. In particular, the table **620** shows information regarding the number of visitors **625** as a result of both brand **610** and non-brand **615** keyword searches. Additionally, the table **620** shows the number of conversions as both an integer value **630** and as a percentage **635** of visitors **625**. Further the table **620** shows the bounce rate **640** and the average time **645** on the site. In at least one implementation, bounce rate **640** includes the number of visitors **625** to the Web Page who leave without visiting any other pages within a website. FIG. **6**A also shows that the table **620** includes the conversion trend **650**. In at least one implementation, the conversion trend **650** can include the number of conversions **630** that result within a specific amount of time. Additionally or alternatively, the conversion trend **650** can include the conversion percentage **635** of visitors within a specified time range.

FIG. **6**B illustrates a display **660** that includes a pie chart **665** which shows conversions that result from search results. In contrast to FIG. **6**A, FIG. **6**B shows the same analytic data except the categories have been modified to include search results as a function of the search engine used. For example, FIG. **6**B shows analytics based on whether the visitor searched on Google **670**, Yahoo **675** or Bing **680**. In at least one implementation, a pie chart **665** can be used to illustrate percent of visits or conversions that result from a particular external reference or group of external references. For example, FIG. **6**B shows a pie chart **665** which shows conversions that occur because of search engine results. The pie chart divides conversions into three categories. The first category is conversions which results from searches using Google **670**. The second category in FIG. **6**B is conversions which result from searches using Yahoo **675**. The third category in FIG. **6**B is conversions which result from searches using Bing **680**.

FIG. **6**B also shows that the display **660** can include a table **685** that gives numerical information regarding visitors to the web-page separated by searches in Google **670**, Yahoo **675** and Bing **680**. In particular, the table **685** shows information regarding the number of visitors **625** as a result of searches in Google **670**, Yahoo **675** and Bing **680**. Additionally, the table **685** shows the number of conversions as both an integer value **630** and as a percentage **635** of visitors **625**. Further the table **685** shows the bounce rate **640** and the average time **645** on the site. In at least one implementation, bounce rate **640** includes the number of visitors **625** to the Web Page who leave without visiting any other pages within a website. FIG. **6**B also shows that the table **685** includes the conversion trend **650**. In at least one implementation, the conversion trend **650** can include the number of conversions **630** that result within a specific amount of time. Additionally or alternatively, the conversion trend **650** can include the conversion percentage **635** of visitors within a specified time range.

One of ordinary skill in the art will recognize that the displays **600** and **660** can include any relevant web analytics whether obtained through the methods described above or in some other manner. One of ordinary skill in the art will further recognize that the displays **600** and **660** can be broken down into different categories without restriction and that the categories of external references and the analytics are illustrative only and not restrictive.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A method of correlating an external reference to one or more entry web pages with one or more conversions performed as a result of visits to the entry web pages to provide information regarding an effectiveness of an organic marketing campaign, the method comprising:

identifying a plurality of entry web pages;

by a computing device, identifying a plurality of visitors to the entry web pages;

by the computing device, identifying a plurality of conversions performed as a result of visits to the entry web pages, each conversion performed by one of the visitors;

by the computing device, analyzing information regarding the conversions and the visits, wherein the information regarding the conversions and the visits were generated by an independent system;

by the computing device, for each visit to one of the entry web pages, identifying an organic referral originating from a search engine that directed the one of the visitors associated with the respective visit to the web page, wherein identifying the organic referral from the search engine comprises parsing a referral header associated with the entry web page;

by the computing device, requesting, using one or more keywords, organic search results from the search engine that originated the organic search referral;

by the computing device, receiving the organic search results from the search engine; and

by the computing device, analyzing the organic search results to determine rank positions of the entry web pages; and

by the computing device, determining a correlation between the rank positions of the entry web pages, the conversions, and the keywords.

2. The method of claim **1**, wherein a conversion performed as a result of a visit to an entry web page comprises making a purchase on a website.

3. The method of claim **1**, wherein a conversion performed as a result of a visit to an entry web page comprises following a link on a website, selecting content on the website, or contacting a third party using contact information displayed on the website.

4. The method of claim **1**, wherein a conversion performed as a result of a visit to an entry web page comprises posting content on a website or submitting information using a form on the website.

5. The method of claim **1**, wherein the analyzing the organic search results to determine rank positions of the entry web pages comprises:

determining that at least one of the entry web pages is listed in the organic search results; and

determining where the at least one of the entry web pages appears in the organic search results.

6. The method of claim **1**, further comprising:

determining monetary value of the conversions, wherein the monetary value comprises a total monetary value of the conversions, an average monetary value of the conversions, or a monetary value for each conversion.

7. A method of correlating an external reference to one or more entry web pages with one or more conversions performed as a result of visits to the entry web pages to provide information regarding an effectiveness of an organic marketing campaign, the method comprising:

identifying a plurality of entry web pages;

by a computing device, identifying a plurality of visits to the entry web pages;

by the computing device, identifying a plurality of conversions performed as a result of visits to the entry web pages, each conversion performed within the context of a visit starting at the entry web page;

by the computing device, analyzing information regarding the conversions and the visits, wherein the information regarding the conversions and the visits were generated by an independent system;

by the computing device, for each visit to one of the entry web pages, identifying an organic referral from a search engine that triggered the respective visit to the web page, wherein identifying the organic referral from the search engine comprises parsing a referral header associated with the entry web page;

by the computing device, requesting, using one or more keywords, organic search results from the search engine that originated the organic search referral;

by the computing device, receiving the organic search results from the search engine; and

by the computing device, analyzing the organic search results to determine rank positions of the entry web pages; and

by the computing device, determining a correlation between the search-engine rankings of the web pages, the conversions, and the keywords.

8. The method of claim **7**, wherein a conversion performed as a result of a visit to an entry web page comprises making a purchase on a website.

9. The method of claim **7**, wherein a conversion performed as a result of a visit to an entry web page comprises following a link on a website, selecting content on the website, or contacting a third party using contact information displayed on the website.

10. The method of claim **7**, wherein a conversion performed as a result of a visit to an entry web page comprises posting content on a website or submitting information using a form on the website.

11. The method of claim **7**, wherein the analyzing the organic search results to determine rank positions of the entry web pages comprises:

determining that at least one of the entry web pages is listed in the organic search results; and

determining where the at least one of the entry web pages appears in the organic search results.

12. The method of claim **7**, further comprising:

determining monetary value of the conversions, wherein the monetary value comprises a total monetary value of the conversions, an average monetary value of the conversions, or a monetary value for each conversion.

13. A method for estimating the value of an organic marketing campaign, the method comprising:

receiving an identification of one or more entry pages associated with a website;

receiving one or more keywords related to the entry pages;

by a computing device, receiving conversion data, wherein the conversion data comprises referral information identifying visits to at least one of the entry pages, wherein the visits consist of organic referrals from a search engine that triggered the visits to the at least one of the entry pages, wherein each organic referral was identified based on a referral header associated with the visit to the respective entry web page;

by the computing device, analyzing information regarding the conversion data and the visits, wherein the information regarding the conversion data and the visits were generated by an independent system;

by the computing device, requesting, using the keywords, organic search results from the search engine that originated at least one of the organic referrals;

by the computing device, receiving the organic search results from the search engine;

by the computing device, analyzing the organic search results to determine rank positions of the entry pages; and

by the computing device, determining a correlation between the rank positions of the entry pages, the conversion data, and the keywords.

14. The method of claim **13**, wherein a conversion performed as a result of a visit to an entry web page comprises making a purchase on a website, posting content on a website or submitting information using a form on the website.

15. The method of claim **13**, wherein a conversion performed as a result of a visit to an entry web page comprises following a link on a website, selecting content on the website, or contacting a third party using contact information displayed on the website.

16. The method of claim **13**, wherein the analyzing the organic search results to determine rank positions of the entry pages comprises:

determining that at least one of the entry pages is listed in the organic search results; and

determining where the at least one of the entry pages appears in the organic search results.

17. The method of claim 13, further comprising:

determining monetary value of the conversions, wherein the monetary value comprises a total monetary value of the conversions, an average monetary value of the conversions, or a monetary value for each conversion.

* * * * *

EXHIBIT H

Bilski Blog

The Fenwick & West Bilski Blog

06/16/2016

Two Years After Alice: A Survey of the Impact of a "Minor Case" (Part 1)

By: Robert R. Sachs

Two years ago this Sunday, the Supreme Court in *Alice Corp. Pty Ltd. v. CLS Bank Int'l*[1] addressed a relatively narrow issue: does a claim reciting a generic computer implementation transform an abstract idea into a patent-eligible invention? The Court considered this a "minor case" in which it did not break new ground, but instead simply followed its decisions in *Bilski*[2] and *Mayo*.[3] The Court reiterated a two-step test set forth in *Mayo* determine whether the claim recites a judicial exception and if so, determine whether the claim recites an "inventive concept," something "significantly more" than the exception and "*enough*" to transform the claim into eligible subject matter.[4] The Court applied this test to find that Alice's claim simply recited a fundamental economic practice of risk intermediation through third party settlement, and then held that the presence of generic computing elements or steps was not sufficient to provide an inventive concept.[5] To the Court, this was an easy case.

Three aspects of the decision are worth noting. First, the Court did not see the case as presenting a difficult question of defining what is an *abstract idea*. "In any event, we need not labor to delimit the precise contours of the "abstract ideas" category in this case....Both [*Alice* and *Bilski's* claims] are squarely within the realm of "abstract ideas" as we have used that term.[6] In other words, whatever an *abstract idea* was before *Alice*, it was the same afterward: there was no expansion of the scope of the term.

Second, the Court's decision was not addressing the patent eligibility of software in this particular case, let alone in general. During oral argument, the Court was told by CLS—and accepted the representation that—"they [Alice] have no software...they've never written software."[7] Even Alice acknowledged to the Court that it would have been trivially easy to write the software, agreeing with Justice Kennedy that:

> any computer group of people sitting around a coffee shop in Silicon Valley could do this over a weekend.[8]

In other words, to the Court, this case was not about a software invention, but a business method that just happen to be implemented in software.

The Court was also led to believe that its decision would not be broadly applicable. CLS told the Court:

> This is not the death of software patents... This will not affect software patents.[9]

Likewise, the Solicitor General reassured the Court that they need not address the patent eligibility of the software to decide the matter. The Court apparently accepted this view, as indicated by Justice Sotomayor:

> What's the necessity for us to announce a general rule with respect to software? There is no software being patented in this case.[10]

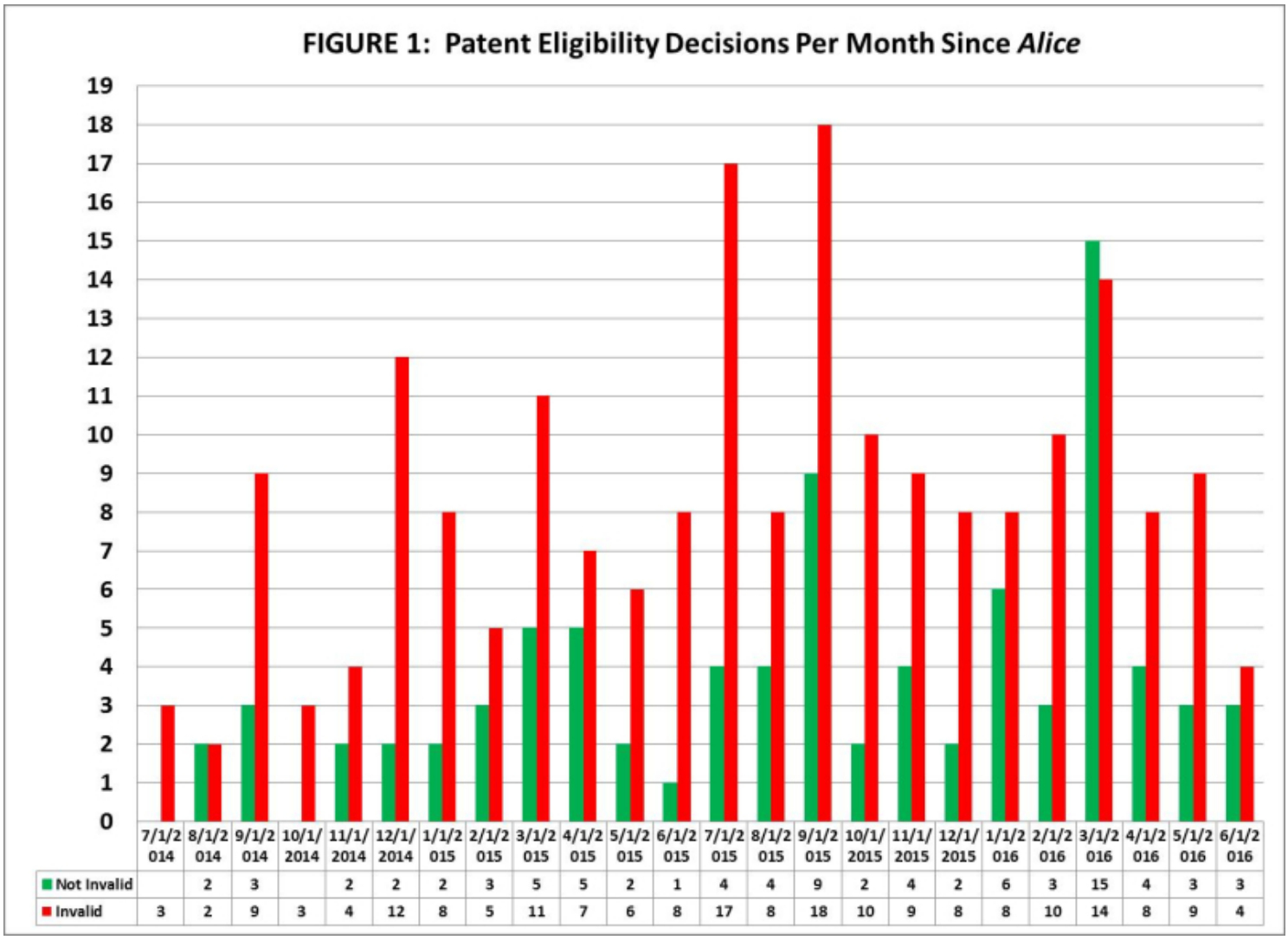
Indeed, the Court's decision makes no mention of the eligibility of software as general matter; rather they only considered whether a "generic computer...transform[] a patent-ineligible abstract idea into a patent-eligible invention," whether "a the mere instruction to "implemen[t]" an abstract idea "on . . . a computer" suffices.[11] It is a misreading of *Alice* to say the Court held that software was abstract to begin with, or that the presence of a generic computer was evidence that the invention was an abstract idea.

Third, and most important, the Court was obviously aware that the lack of definition in both steps of the *Mayo* test created the risk of an over-expansive application of the judicial exceptions. Thus, the Court extended a theme found in *Benson*[12] and *Bilski*,[13] that Section 101 should not be interpreted to impede innovation, particularly in the realm of computer technology. The *Alice* Court made clear that the judicial exceptions must be cautiously applied: "we tread carefully in construing this exclusionary principle lest it swallow all of patent law. At some level, "all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas."[14]

However limited the Court believed or intended the *Alice* decision to be, the case has been broadly interpreted by both the federal courts and the USPTO, and the impact has been dramatic.[15] I call this (legal) phenomenon *AliceStorm*. What follows is a survey of AliceStorm in the federal courts and USPTO.

The Impact of *AliceStorm*

Figure 1 shows the number of district court and Federal Circuit decisions addressing § 101 related motions on the merits since *Alice* was decided, through June 8, 2016.16 Except for an artificial spike in March 2016, in every month since *Alice*. the number of decisions invalidating at least one patent in suit has equaled or exceeded those upholding all of the contested patents.17



Here's the first clue that the Court did not anticipate, let alone intend, AliceStorm. CLS told the Court that the issue was "a very small problem" that impacted only the "most marginal, most dubious, most skeptical patents," noting that in the four years "since *Bilski*, there have only been 57 district court decisions on Section 101 issues" and "only 12 Federal Circuit decisions total."18 Yet, in only two years since *Alice*, there have been four times as many district court decisions (247), with the Federal Circuit close behind (40)—reflecting that the patent defense bar saw the applicability of *Alice* quite differently from the Court.

Table 1 summarizes these decisions, along with some additional data:

Table 1: Summary of § 101 Motions Since *Alice*

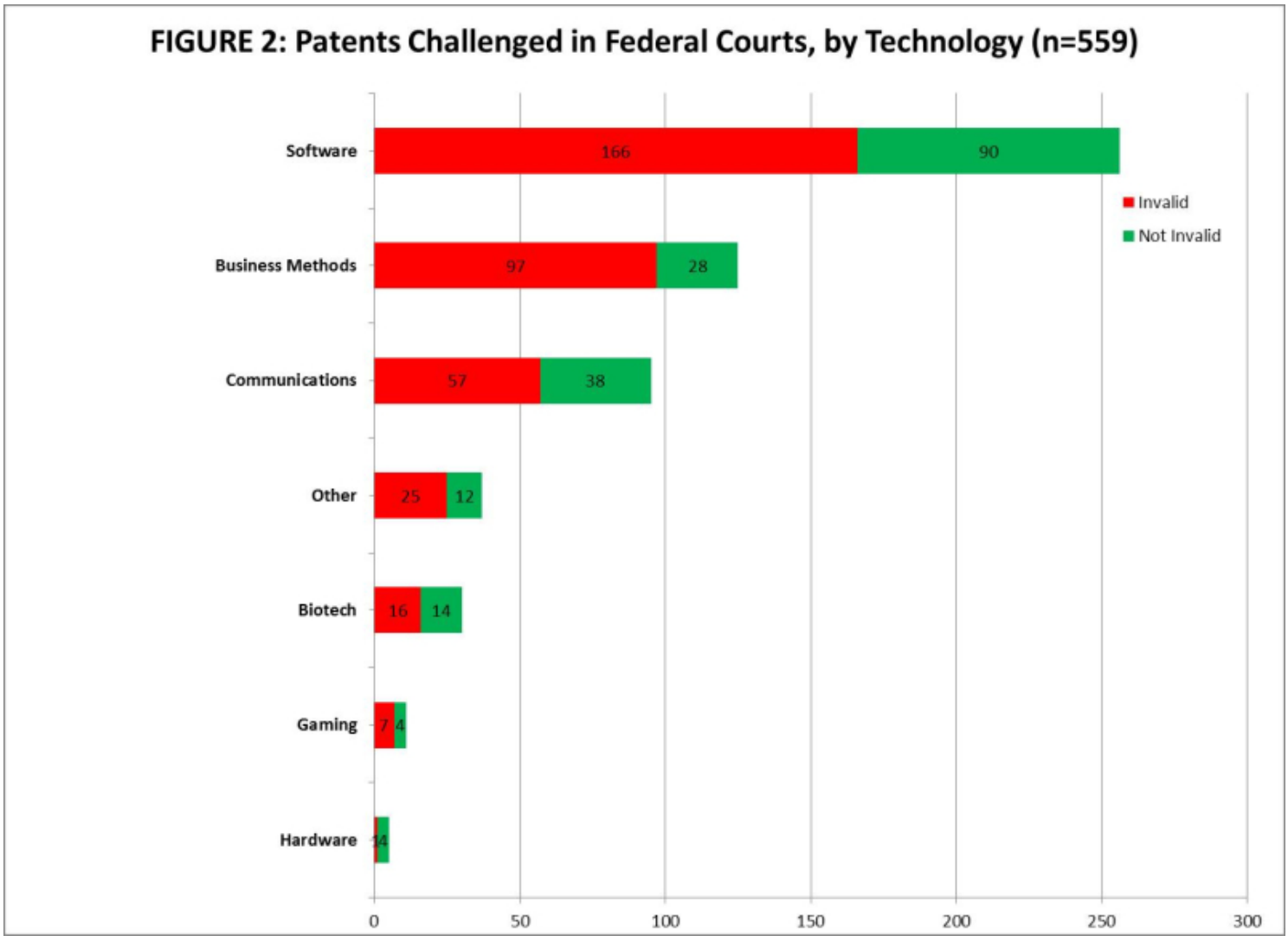
	Total	Total Invalid Under §101	% Invalid
Fed. Ct. Decisions	287	201	70.0%
Federal Circuit	40	38	95.0%
District Courts	247	163	66.0%
Patents	559	369	66.0%
Claims	15392	9907	64.4%
Motions on Pleadings	158	106	67.1%
PTAB CBM Institutions	122	102	83.6%
PTAB CBM Final	82	79	96%

Through 6/8/16

The 70% overall success rate of § 101 defense motions is extremely impressive—and remarkably steady, down only slightly from the 71.7% I found last year. The success rate on § 101 motions on the pleadings has been even more constant, 67.1% this year versus 67.0% last year. The percentage of patents invalidated has also been constant year over year, 66% vs. 65%. Even more remarkable is the consistency of the Federal Circuit. Last year at this time they had decided only thirteen § 101 decisions, and found only one case, *DDR Holdings,* patent eligible.19 In the year since, they have decided more than twice that many (27) cases and still found only one case with patent-eligible claims, *Enfish, LLC v. Microsoft Corp*.20

The Patent Trials and Appeals Board is likewise a good bet for patent defendants seeking to invalidate patents under Covered Business Method Review. The PTAB has granted 83.6% of the CBM petitions in which they considered a § 101 argument on the merits, and reaffirmed 96% of those decisions as Final Decisions. This trend is likely to continue, as the Federal Circuit in *Versata Development Group*.21 upheld both the USPTO's broad interpretation of "financial product or service" necessary to obtain Section 18 standing, as well as its very narrow definition of "technological invention" that would preclude it.22 This is because to the extent that the PTAB is willing to classify a patent as non-technological financial product or service in deciding whether the patent qualifies for CBM review, it is predisposed to finding the patent directed to ineligible abstract ideas.

As explained above, the Court did not see *Alice* as a software patent case, but rather an example of a fundamental business method simply implemented on a computer. Even today the common perception is that the patents being invalidated after *Alice* are generally business method patents. Figure 2 shows that this is not the case.

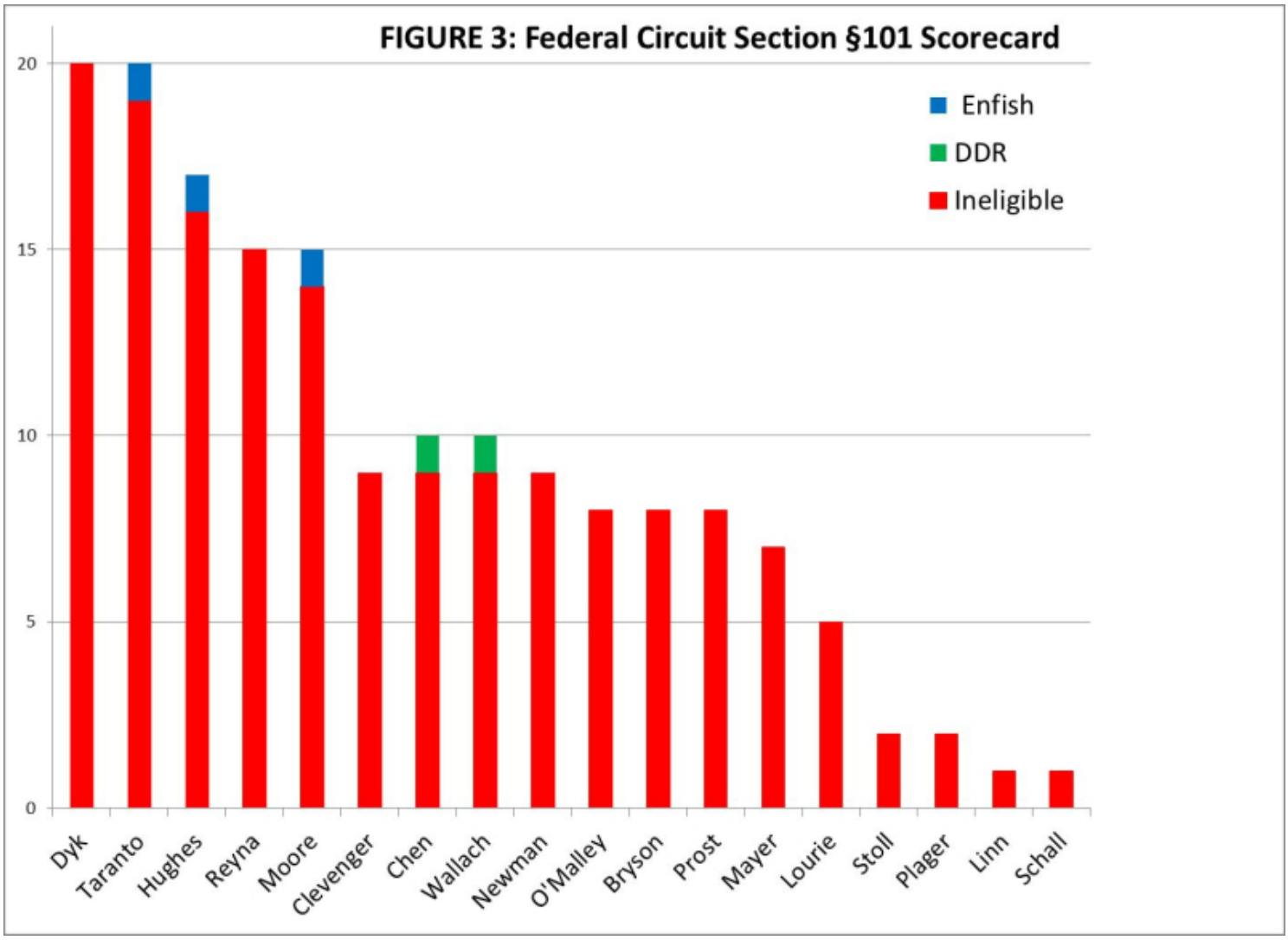


Business method patents (patents classified in U.S. Patent Class 705) account for 125 (22.4%) of the challenged patents, and similarly 26.3% of the invalidated patents. But software patents account for 256 (45.8%) of the challenged patents and similarly 45% of the invalidated ones. Thus, if the Court was expecting that Alice's patents were representative of a "small problem" that would not impact software patents either they were sorely misled, they failed to understand the scope of their decision, or the lower courts have failed to heed the Court's cautionary notes. Or all three.

Figure 2 also shows the impact of *Mayo* and *Myriad*, with 53% of biotech related patents being invalidated under § 101. In the majority of these cases, the rulings are based on the grounds that the claims are directed to "laws of nature" or "natural products." The problem

here is that the Supreme Court's definition of a law of nature—as a correlation that "exists in principle apart from any human action," is scientifically incorrect.23 As a result, courts unfortunately invalidated applications of the discoveries about nature that have historically been patent eligible.

Let's return to the Federal Circuit. Here is how the judges of that court have voted on patent eligibility:



The forty Federal Circuit decisions are remarkable for two reasons. First, the obvious: that thirty-eight went against the patentee, even though many, indeed most, of these cases had reasonable arguments for the eligibility of the claims. While the Federal Circuit has *said*24 that the line of patent eligibility is not always clear, they *behave* as if the line is laser straight and bright. Less obvious is that in forty decisions there have been 120 decision opportunities by the individual judges, and yet there have been no dissents in any of the cases invalidating the patents in suit.25 This lack of dissent—including none from Judge Newman, the court's primary dissenter—is well below the court's average rate of dissents over the same period.26

In the district courts, the confusion over not just the boundaries of abstract ideas, but the entire approach, is apparent. Some courts conflate eligibility with novelty and uniqueness,27 others focus on a lack of specificity.28 Most apparent is a return to the pre-1952's nebulous standard of "inventiveness," based on *Alice*'s requirement for an "inventive concept."29 In particular, there is a persistent view that automation of existing processes is *per se* ineligible, as opposed to being simply obvious.30

On Monday I'll review the impact of AlicesStorm at the USPTO.

Footnotes:

1 134 S.Ct. 2347 (2014).

2 *Bilski v. Kappos*, 130 S.Ct. 3218 (2010).

3 *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

4 134 S. Ct. at 2355.

5 Id. at 2360.

6 Id. at 2357.

7 *Alice Corp.Pty. v. CLS Bank Int'l.,* No. 13-298 Oral Argument Transcript ("*Alice* Oral Argument"), (Mar. 31, 2014), p. 30.

8 Id. at 12.

9 Id. at 42-43.

10 Id. at 46.

11 *Alice,* 134 S.Ct. at 2352.

12 *Gottshalk v. Benson*, 409 U.S. 63, 71 (1972) "It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.... It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose.").

13 *Bilksi v. Kappos*, 130 S. Ct. 3218, 3226 (2010) ("This Court has "more than once cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.")

14 *Alice*, 134 S.Ct. at 2354.

15 See, https://goo.gl/QymRX9.

16 It is telling indicator of *AliceStorm* these numbers are *already out of date*. There have been several district court and PTAB decisions since this data was compiled on June 12, 2016.

17 A split decision, one in which the court invalidates some patents or claims but not others, is included in both the eligibility and ineligibility counts.

18 *Alice* Oral Argument. at 42-43.

19 *DDR Holdings, LLC v. Hotels.Com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014).

20 2015-1244 (Fed. Cir. May 12, 2016).

21 *Versata Development Group v. SAP Am., Inc.,* 793 F.3d 1306 (Fed. Cir. 2015). Versata is seeking certiorari of the Federal Circuit decision, arguing, inter alia, that PTAB's definition of "financial service" covers a salesman quoting the price of a mattress.

22 Id., at 1325, 1326.

23 See, Robert R. Sachs, Jennifer R. Bush, "Prometheus Unbound: The Untethering of Laws of Nature and Patent Eligibility From Scientific Reality," Bilski Blog, July 3, 2013, at http://goo.gl/KUIkvV.

24 See *DDR Holdings, LLC v. Hotels.com, L.P.,* 773 F.3d 1245, 1255 (Fed. Cir. 2014); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1345 (Fed. Cir. 2015) ("Recently, the courts have focused on the patent eligibility of "abstract ideas," for precision has been elusive in defining an all-purpose boundary between the abstract and the concrete, leaving innovators and competitors uncertain as to their legal rights").

25 The low number of dissents is partly a result of the fact that half of the decisions are per curiam, in which a dissent is very rare.

26 Between *Alice* and April 25, 2016, there were 108 dissents in 1724 Federal Circuit cases (6.2%), with J. Newman issuing 35, more twice that of Reyna (14), the next most prolific dissent. Statistically speaking, one would have "expected" about 2 or 3 dissents thus far.

27 *OpenTV, Inc. v. Apple, Inc.*, No. 5:15-cv-02008-EJD (N.D. Cal.1/28/2016) ("The concept of a database is not novel or unique. *See Alice*, 134 S. Ct. at 2360; Information exchanged between a database (as part of or remote from a computer) and the computer is not novel and adds nothing to the 101 analysis.").

28 See, e.g, *Intellectual Ventures I v. Canon Inc.* (D. Del. 11/9/2015) (Noting that *DDR Holdings* provides "a benchmark of specificity to which other claims can be compared," and that "even though most of the patent claims now being challenged under § 101 would have survived such challenges if mounted at the time of issuance, these claims are now in jeopardy under the heightened specificity required by the Federal Circuit post-*Alice.*); *Clear With Computers LLC v. Altec Indus., Inc.* 2015 U.S. Dist. LEXIS 28816 (E.D. Tex. 3/3/2015) ("The additional recitation of specific computer components such as a "database," "memory," "transceiver" and "wire-based network," and computer functions such as "storing," "transmitting" and "receiving," are incapable of conferring the requisite specificity."); *Source Search Techs., LLC v. Kayak Software Corp.,* 111 F. Supp. 3d 603, 617 (D.N.J. 2015) ("*That specificity removes the claims from the abstract realm."* (emphasis in original))

29 See*, e.g., Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 2015 U.S. Dist. LEXIS 62601 (D. Md. 6/11/2015 ("The use of generic hardware and software running an intrusion detection application is not viewed as new and inventive"); *HealthTrio, LLC v. Aetna, Inc.*

No. 12-CV-03229-REB-MJW, 2015 WL 5675303 (D. Colo. Sept. 28, 2015) ("because Plaintiff's insight…is not a sufficiently inventive concept, the Court concludes that the patents are drawn to an ineligible subject matter").

30 *GT Nexus, Inc. v. Inttra, Inc.* U.S. Dist. LEXIS 150579 (N.D. Cal., 11/5/2015). ("Here, the Court finds that the patent claims merely automate the practice of booking and tracking shipping containers; this automation is insufficient to transform the nature of the patents."); *Hewlett-Packard Co. v. ServiceNow, Inc.*, 2015 U.S. Dist. LEXIS 29384 (N.D. Cal.,3/10/2015 ("the automation of IT incident resolution is an abstract idea, not patentable under § 101."); *Parus Holdings, Inc. v. Sallie Mae Bank,* 2015 U.S. Dist. LEXIS 137444 (D. Del. 10/8/2015) ("Organizing business functions based on commands provided by a user is tantamount to the automation of the management of business communications usually performed by human administrative assistants (the identified purpose of the invention)."); *Cogent Med., Inc. v. Elsevier Inc.*, 70 F. Supp. 3d 1058, 1060 (N.D. Cal. 2014) ("the '879 Patent claims no more than a computer automation of what "can be performed in the human mind, or by a human using a pen and paper.""); *Voxathon LLC v. Alpine Elecs. of Am., Inc.*,Case No. 2:15-cv-562-JRG (E.D. Tex. 1/20/2016) ("Claim 1 is really nothing more than the automation of responding to the sender of a message received on a telephone.").

in #AliceStorm, Abstract Ideas, Software | Permalink

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Comments

Doug Lyon said…
The test of an abstract idea is based on an undefined standard for
what is abstract. The precise reach of the undefined standard can hardly
be considered meaningful, when creating a test
"we know it when we see it?"- Justice Stewart.

Reply 04/25/2017 at 04:12 AM
Mark Nowotarski said…
Excellent statistics on the challenges faced by business method patents since Alice. The question I've been focusing on is not so much what is being rejected, but rather, what is being allowed. If you look at individual art units, you can get enough examples to develop a sense of what that particular art unit considers to be statutory. Here's an example from art unit 3693 – finance. These are the 12 patents issued from that art unit since January 1 of this year. It seems clear to me that one type of financial invention this art unit will consider to be statutory is where physical input is provided by a sensory device (e.g. telematics, electrical device, etc.) That accounts for 7 of the 12 allowances. For the other allowances, I'm not sure there is enough data to come to a conclusion.

PATENTS ISSUED BY ART UNIT 3693 (FINANCE) JAN TO JUNE 2016

US9368002 Claim 1: An apparatus for detecting a partial retrieval of currency… comprising… A TRACK COMPRISING THREE TRACK SEGMENTS …
US9361599 Claim 1: A risk unit based insurance system, comprising…AT LEAST ONE VEHICLE OPERATING SENSOR …
US9355391 Claim 1: A computer-implemented method …comprising…A DIGITAL WALLET MODULE…
US9342850 Claim 1: A method of operating a resource allocation system, comprising…A PLURALITY OF DEVICE CONTROLLERS…
US9280790 Claim1: A method for displaying market data comprising…DISPLAYING A PRICE AXIS…
US9269109 Claim 1: An automated data processing system …comprising … TELEMATICS SENSORS…
US9269108 Claim 1: A method for generating an offer value…comprising. .. a value at which electricity can be supplied BY A GENERATOR
US9262786 Claim 1:A system …wherein…AN AMOUNT OF STORAGE SPACE…IS REDUCED…
US9262782 Claim 1: A computer-implemented secure transaction processing system…WHEREIN SAID WSA IS CONFIGURED TO USE WEB SOCKETS…
US9245297 Claim 1: A method for generating a bid value…comprising …AN ELECTRICAL DEVICE…
US9240026 Claim 1: A method… comprising…computing hardware…ASSOCIATED WITH AN ELECTRICAL DEVICE…
US9235847 Claim 1: A computer-implemented method comprising: identifying… one or more …ELECTRICAL COMPONENTS…

Reply 06/21/2016 at 11:53 AM
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(URLs automatically linked.)

Email address is not displayed with comment.

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EXHIBIT I

Lex Machina
Patent Litigation Year in Review 2016

Lex Machina™
a LexisNexis® Company

by Brian C. Howard J.D./M.A
Associate General Counsel & Legal Data Scientist
and Jason Maples J.D./LL.M.
Legal Data Expert

Published March 2017

Executive Summary

Lex Machina's fourth annual Patent Litigation Year in Review examines the key trends in the legal landscape of 2016 and places them in the context of recent years, showcasing the value of Legal Analytics® in informing business and strategic decisions about litigation.

This report provides insight into the quantitative aspects of patent litigation. Practitioners can find data to give them an edge at all stages of a case: from top parties and firms for business development or outside counsel selection, to jurisdictional analysis, the timing of key case events, the likelihood of winning invalidity or infringement findings, all the way to data on damages. Regardless of which side of a complaint (or retainer agreement) one finds oneself, understanding the data behind the business of patent litigation has become indispensable to assessing strategic opportunities and risk, and to budgeting accordingly.

Lex Machina's 2016 Patent Litigation Year in Review surveys and summarizes the key trends that have emerged over the last year.

Based on the same data driving Lex Machina's platform, this report examines filing trends, case timing, motions, judges, top law firms, patent trends, parties, and damages to showcase the power of Legal Analytics .

This report examines the key axes of legal data and their interactions, drawing upon Lex Machina's platform that combines data from PACER, the Patent Trial and Appeal Board (PTAB), the U.S. International Trade Commission (ITC), the U.S. Food and Drug Administration (FDA) Orange Book on Abbreviated New Drug Applications (ANDAs), and more.

Key trends and highlights from 2016 include:

Filing Trends:

- In 2016, 4,537 patent cases were filed - a 22% decline from 2015.
- Cases were filed relatively evenly the last three quarters of 2016.
- The Eastern District of Texas continues to lead the nation by number of new cases filed in 2016 - 1,662 cases were filed there in 2016, representing a 34% decrease over the district's 2015 total (2,541 cases).
- The Eastern District of Texas saw 36.7% of the cases filed in 2016, and that percentage increased each quarter.
- New case filings in the District of Delaware, historically the second top district, continued to decline further in 2016 by 16.5% over 2015 (itself a 42.4% decrease over 2014).
- High volume plaintiffs file the majority of cases in the Eastern District of Texas.

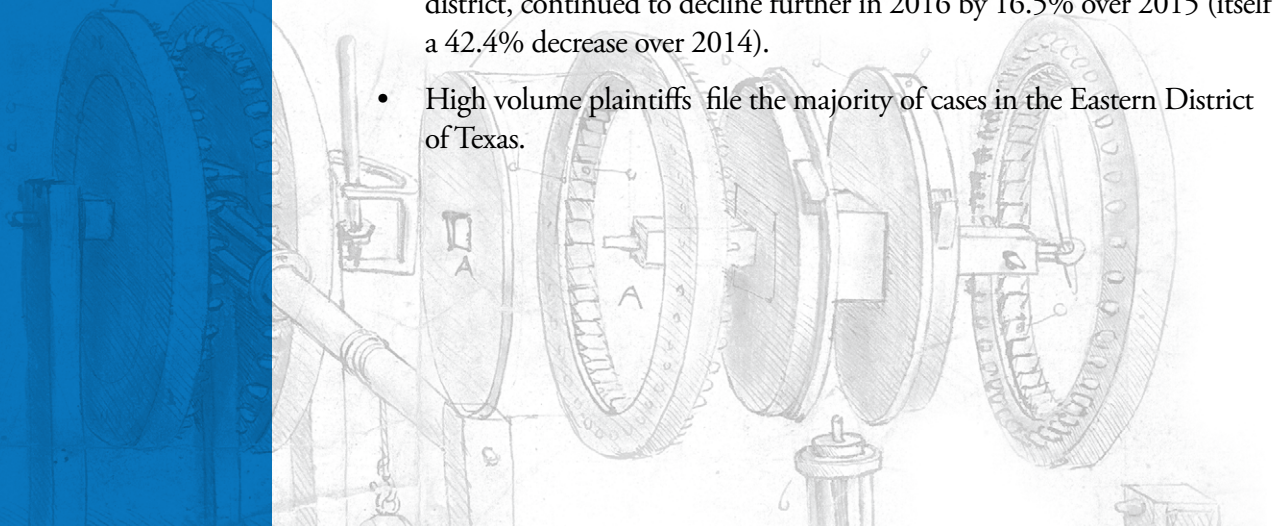


Figure 42: Patents invalidated, 2013-2016, under 35 U.S.C. § 101 for lack of patentable subject matter, by quarter

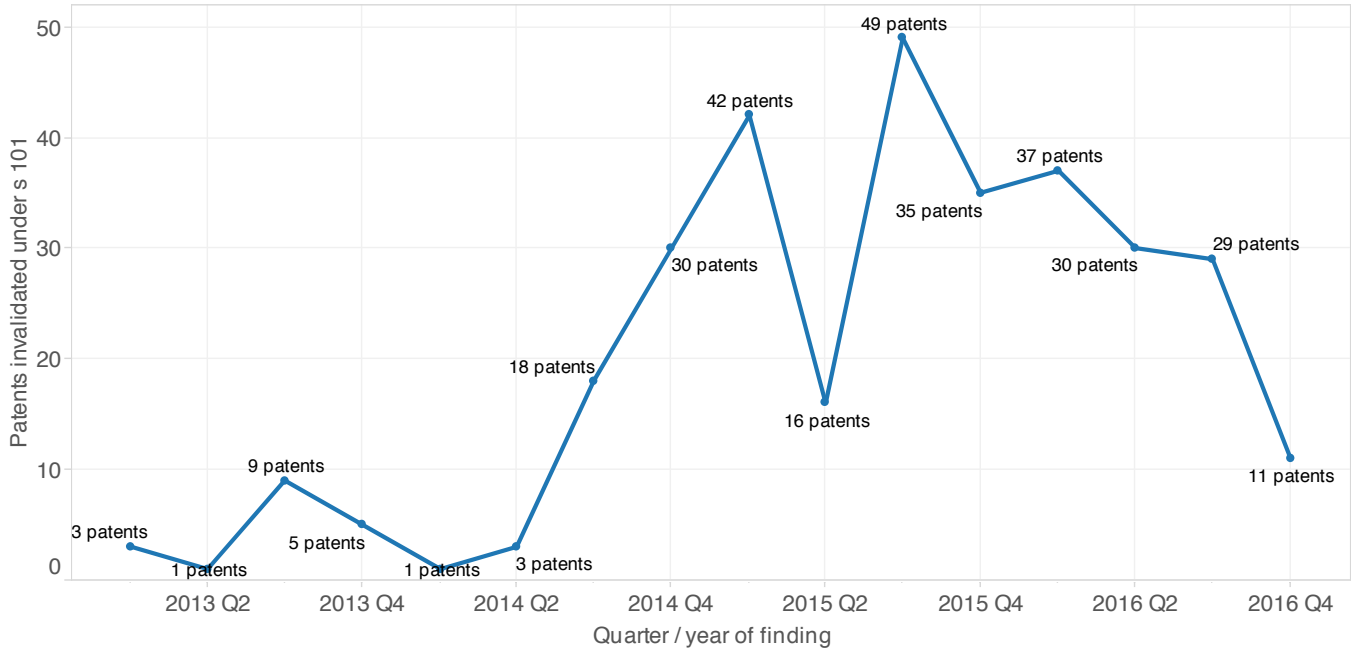
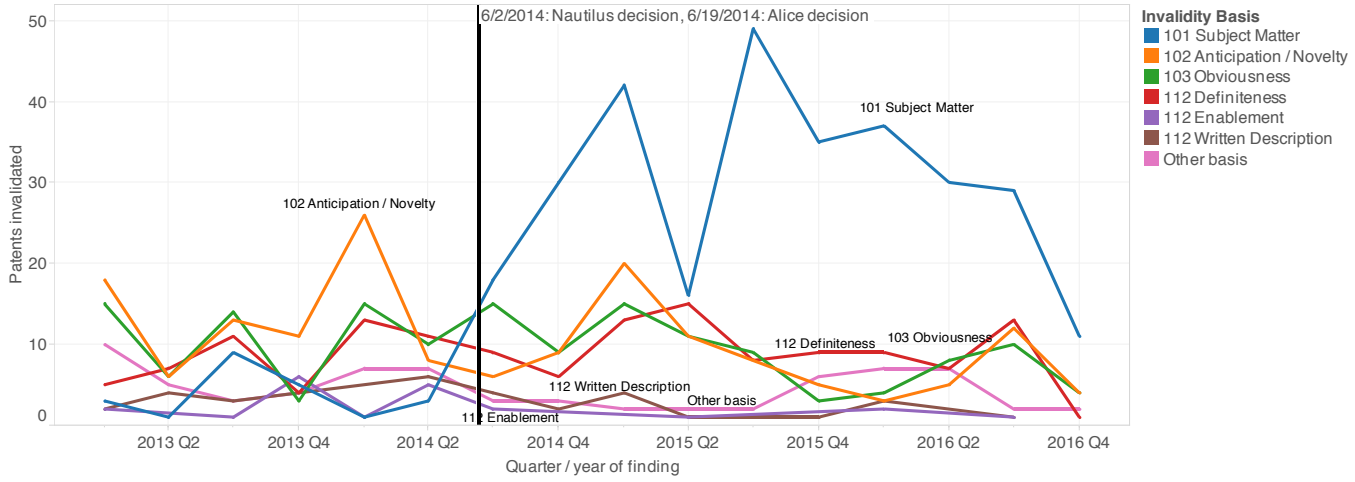


Figure 43: Patents invalidated, 2013-2016, by basis



File a Court document:

17-50478-CSS Searchmetrics Inc. et al v. BrightEdge Technologies, Inc.

Type: ap Office: 1 (Delaware) Judge: CSS

Lead Case: 1-17-bk-11032

U.S. Bankruptcy Court

District of Delaware

Notice of Electronic Filing

The following transaction was received from William E. Chipman entered on 5/24/2017 at 11:28 AM EDT and filed on 5/24/2017

Case Name: Searchmetrics Inc. et al v. BrightEdge Technologies, Inc.
Case Number: 17-50478-CSS
Document Number: 9

Docket Text:
Declaration in Support *of Memorandum of Law in Support of Motion for Judgment on the Pleadings that U.S. Patent Nos. 8,135,706; 8,478,700; 8,478,746; 8,577,863; and 8,671,089 Do Not Claim Patentable Subject Matter* (related document(s)[7], [8]) Filed by Searchmetrics GmbH, Searchmetrics Inc.. (Attachments: # (1) Exhibit A - Second Amended Complaint (4:14cv1009) # (2) Exhibit B - June 5, 2014 Answer to Second Amended Complaint # (3) Exhibit C - U.S. Patent No. 8,135,706 # (4) Exhibit D - U.S. Patent No. 8,478,746 # (5) Exhibit E - U.S. Patent No. 8,478,700 # (6) Exhibit F - U.S. Patent No. 8,577,863 # (7) Exhibit G - U.S. Patent No. 8,671,089 # (8) Exhibit H - Blog Post Regarding Alice # (9) Exhibit I - Relevant Portions of 2016 Patent Litigation Year in Review) (Chipman, William)

The following document(s) are associated with this transaction:

Document description: Main Document
Original filename:SM - Declaration ISO Alice MOL [TO FILE].pdf
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[STAMP bkecfStamp_ID=983460418 [Date=5/24/2017] [FileNumber=14514326-0
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Document description: Exhibit A - Second Amended Complaint (4:14cv1009)
Original filename:C:\fakepath\Exhibit A.PDF
Electronic document Stamp:
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Document description: Exhibit B - June 5, 2014 Answer to Second Amended Complaint
Original filename:C:\fakepath\Exhibit B.PDF
Electronic document Stamp:
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Document description: Exhibit C - U.S. Patent No. 8,135,706
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