UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

MICROSOFT CORP.
Petitioner

v.

PARUS HOLDINGS, INC.
Patent Owner

_____

IPR2022-00804
Patent No. 8,185,402

_____

DECLARATION OF DR. PAUL JACOBS

TABLE OF CONTENTS

I. Background and Qualifications 1

II. Legal Framework 9

A. Obviousness 9
B. Secondary Considerations of Non-Obviousness 15
C. Written Description 17
D. Claim Construction 18

III. Opinion Regarding Level of Skill of a Person Having Ordinary Skill in the Art 21

IV. Background of the Technology 23

V. Opinions Regarding the '402 Patent 38

VI. Ground 1: The Combination Of Salam and Loghmani 49

A. Opinions Regarding Salam 49
B. Opinions Regarding Loghmani 55
C. Claim 1 59
1. Claim 1[Preamble]: 59
2. Claim 1.1: 61
3. Claim 1.2: 65
4. Claim 1.3: 66
5. Claim 1.4: 66
6. Claim 1.5: 67
7. Claim 1.6: 70
8. Claim 1.7: 72
D. Claim 2: 72
E. Claim 3: 78
F. Claim 4: 80
G. Claim 5: 81

H. Claim 6: 83
I. Claim 8: 84
J. Claim 9 84
1. Claim 9[Preamble]: 85
2. Claim 9.1: 85
3. Claim 9.2: 85
4. Claim 9.3: 85
5. Claim 9.4: 86
6. Claim 9.5: 86
7. Claim 9.6: 86
8. Claim 9.7: 87
9. Claim 9.8: 87
K. Claim 10: 87
L. Claim 11: 88
M. Claim 12: 88
N. Claim 13: 89
O. Claim 14: 90

VII. Ground 2: The Combination of Salam, Loghmani, and Kumar 91

A. Opinions Regarding Kumar 91
B. Claims 7 and 15 93

VIII. Ground 3: The Combination of Loghmani and Messerly 99

A. Opinions Regarding Loghmani 99
B. Opinions Regarding Messerly 102
C. Claim 1 105
1. Claim 1[Preamble]: 105
2. Claim 1.1: 105

3. Claim 1.2: 106
4. Claim 1.3: 106
5. Claim 1.4: 107
6. Claim 1.5: 107
7. Claim 1.6: 110
8. Claim 1.7: 111

D. Claim 2: 111
E. Claim 3: 113
F. Claim 4: 115
G. Claim 5: 116
H. Claim 6: 117
I. Claim 8: 118
J. Claim 9 119
1. Claim 9[Preamble]: 119
2. Claim 9.1: 120
3. Claim 9.2: 120
4. Claim 9.3: 120
5. Claim 9.4: 121
6. Claim 9.5: 121
7. Claim 9.6: 121
8. Claim 9.7: 122
9. Claim 9.8: 122

K. Claim 10: 122
L. Claim 11: 123
M. Claim 12: 124
N. Claim 13: 124
O. Claim 14: 125

IX. Ground 4: The Combination of Loghmani, Messerly and Culliss 126

A. Opinions Regarding Culliss 126
B. Claims 3 and 4 129
C. Claim 5: 133
D. Claims 9-14 135

X. Ground 5: The Combination of Loghmani, Messerly, Culliss, and Kumar 135

A. Claims 7 and 15 136

XI. Claim Mapping for Cited Prior Art References 139

A. Salam Claim Mapping 140
B. Loghmani Claim Mapping 205
C. Kumar Claim Mapping 242
D. Messerly Claim Mapping 261
E. Culliss Claim Mapping 304

XII. Conclusion 333

I, Dr. Paul Jacobs, hereby declare the following:

I. BACKGROUND AND QUALIFICATIONS

1. My name is Paul Jacobs, and I am over 21 years of age and otherwise competent to make this Declaration. I make this Declaration based on facts and matters within my own knowledge and on information provided to me by others, and, if called as a witness, I could and would competently testify to the matters set forth herein.

2. I have been retained as a technical expert witness in this matter by Counsel for the Petitioner, Microsoft Corp. ("Petitioner") to provide my independent opinions on certain issues requested by Counsel for Petitioner relating to the accompanying Petition for Inter Partes Review of U.S. Patent No. 8,185,402 ("the '402 Patent"). I am being compensated at an hourly rate of $495. My compensation in this matter is not based on the substance of my opinions or on the outcome of this matter. I have been informed that Parus Holdings, Inc. is the purported owner of the '402 Patent. I note that I have no financial interest in Parus Holdings or Petitioner, and I have no other interest in the outcome of this matter.

3. I have summarized in this section my educational background, career history, and other qualifications relevant to this matter. I have also

provided a current version of my curriculum vitae, which I understand Petitioner is filing as Ex. 1003.

4. I received a Bachelor of Science in Applied Mathematics from Harvard University in 1981, a Master of Science in Applied Mathematics from Harvard in 1981, and a Ph.D. in Computer Science from the University of California at Berkeley in 1985.

5. I have authored or co-authored over 50 scientific and technical publications, primarily in the fields of artificial intelligence, natural language processing, and information retrieval. I am listed as an inventor on two U.S. patents directed to computational lexicons, and I have over 40 years of experience in the computer and information industry.

6. I have served in numerous professional and scientific capacities, including one year as a visiting professor of computer science at the University of Pennsylvania and several years as a member of the executive committee of the Association for Computational Linguistics. Currently, I serve on the Technology Policy Committee of the Association for Computing Machinery (USTPC). As an adjunct lecturer, I have taught classes in the College of Information Studies (The "iSchool") at the University of Maryland in College Park since 2007. Most recently I taught "Information Technology

and Organizational Context," a core course in computing, Internet technologies, and applications for students pursuing a Master's degree in Information Management (MIM).

7. In 2012, I was appointed by the Secretary of Commerce to the Patent Public Advisory Committee (PPAC), which advises the Under Secretary and Director of the United States Patent and Trademark Office (USPTO) on management of the patent operations of the Office, including policies, goals, budget, fees, and other office operations. My term with PPAC ended in December 2015.

8. Between 1985 and 1994, after completing my doctorate, I was employed as a computer scientist with General Electric ("GE") Corporate Research and Development. I also consulted for Infonautics, an early Internet information services and advanced search company. I was the editor of a book, entitled "Text-Based Intelligent Systems." The book was a collection of papers based on a symposium I chaired in 1990, which brought together leaders of the field of Information Retrieval to address issues related to large-scale advanced text processing.

9. During my years at GE, I was principal investigator for the GE team in the Tipster program, sponsored by the Advanced Research Projects

Agency (ARPA) of the United States Department of Defense and other government agencies. The technology developed in Tipster formed the foundation of the first web search engines, and my work as an ARPA principal investor in natural language kept me in close contact with research in related fields, particularly spoken language recognition.

10. I joined SRA International ("SRA") in the latter part of 1994 and became director of media information technologies. My responsibilities included new ventures and technology activities related to the Internet and the World Wide Web. From 1994 until 2002, as the Web came of age, I held a series of technology and business management jobs in organizations focused on networked information management applications. I was CEO of IsoQuest, an SRA subsidiary, managing vice president for electronic commerce at SRA, president and CTO of AnswerLogic, and CTO of Primus Knowledge Solutions. My activities during this period included business and technical roles for a range of products and technologies focused on leveraging information on the Web. From late 1999 through the end of 2000, I was president and then CTO of AnswerLogic, one of the first companies directed toward answering naturally-expressed user questions on the Web.

During this time we also experimentally developed spoken-language versions of our technology

11. During the entire period from when the Web as we know it began to take form (1993 - 1994) until after the publication of the ’402 Patent, I was actively involved in developing and managing technologies for web-based products and services, and was intimately acquainted with web-based technologies, including search engines, natural language question answering, and spoken language systems. Based on my experiences described above, and as indicated in my Curriculum Vitae, I am qualified to provide the following opinions with respect to the patents in this case. I am not one of ordinary skill, because my extensive background in these areas is well beyond the capabilities of one of ordinary skill; however, I am qualified to opine on what one of ordinary skill would have known and understood as of the priority date of the ’402 Patent.

12. A more complete recitation of my professional experience including a list of my journal publications, patents, conference proceedings, book authorship, and committee memberships may be found in my Curriculum Vitae, which I understand Petitioner is filing as EX1003.

13. The opinions provided in this report are my own and my compensation does not depend in any way on the substance of my opinions.

14. As part of my work and in forming my opinions in connection with this proceeding, I have reviewed the following materials and any other materials referenced elsewhere in my declaration. For any prior art listed below, it is my opinion persons of ordinary skill in my field would reasonably rely upon such prior art in forming opinions regarding the subject matter of this proceeding:

- Petition for Inter Partes Review of U.S. Patent No. 8,185,402 ("the Petition");
- U.S. Patent No. 8,185,402 (EX. 1001, "'402 Patent");
- File Histories for U.S. Patent No. 8,185,402 (Ex. 1004) and its related family members including U.S. Patent Nos. 6,721,705; 7,076,431; 7,386,455; 7,881,941; 9,451,084; 10,096,320; and 10,629,206;
- Provisional Patent Application No. 60/180,344 (Ex. 1005, "the '344 Application");
- Parus's Infringement Contentions for U.S. Patent No. 8,185,402 Patent, dated November 29, 2021 (Excerpts filed as Ex. 1006)

- U.S. Patent No. 6,594,654 to Salam et al. (Ex. 1010, "Salam");
- U.S. Patent No. 6,941,273 to Loghmani et al. (Ex. 1011, "Loghmani");
- U.S. Patent No. 5,941,944 to Messerly et al. (Ex. 1012, "Messerly");
- U.S. Patent No. 6,078,916 to Culliss et al. (Ex. 1013, "Culliss");
- U.S. Patent No. 6,795,434 to Kumar et al. (Ex. 1014, "Kumar");
- Zue, Victor and Lynette Hirschman. "Spoken Language Recognition and Understanding." (Ex. 1018, "Zue")
- Pallett, David, Johathan G. Fiscus, William M. Fisher, and John S. Garofolo. "Benchmark Tests for the DARPA Spoken Language Program." (Ex. 1019, "Pallett")
- Roberts, Bill. "A Change of Interface: Speech recognition fosters better customer service through self-service." Emerging Technology, *CIO*, May 15, 1999. (Ex. 1020, "Roberts")
- Jacobs, Paul S. and Lisa F. Rau. "SCISOR: Extracting Information from On-line News." *Communications of the ACM* 33, no. 11 (November 1990): 88-97. (Ex. 1021, "Jacobs SCISOR")
- Jacobs, Paul S., George Krupka, and Lisa Rau. "GE-CMU: Description of the Shogun System Used for MUC-5." Information

Technology Laboratory, GE Research and Development (Ex. 1022, "Jacobs GE-CMU")

- Voorhees, Ellen M. and Donna Harman. "Overview of the Eighth Text Retrieval Conference (TREC-8)." National Institute of Standards and Technology, (1999). (Ex. 1023, "Vorhees TREC8")
- Lam, Sunny. "The Overview of Web Search Engines." University of Waterloo, Department of Computer Science, (2001). (Ex. 1024, "Lam")
- Clark, John and Colin Yallop. "Units of Speech," "The Phonemic Organization of Speech," and "Appendix 1: Phonetic Symbols." In *An Introduction to Phonetics & Phonology*. Cambridge: Basil Blackwell, Inc., 1990. (Excerpt) (Ex. 1025, "Clark & Yallop")
- "ping." *Microsoft Press Computer Dictionary*, Third Ed., 1997. (Ex. 1026, "Ping Definition")
- Salton, Gerard and Michael J. McGill. *Introduction to Modern Information Retrieval*. New York: McGraw-Hill Book Company, 1983. (Excerpt) (Ex. 1027, "Salton")
- "Ch.1 Getting Started" and "Ch.19 Accessing Transaction Systems Using MQSeries." In *Lotus Notes Release 4.5: A Developer's*

Handbook. IBM Corporation, 1996. (Excerpt) (Ex. 1028, "Lotus Notes 4.5")

II. LEGAL FRAMEWORK

15. I am a technical expert and do not offer any legal opinions. However, I have been informed about certain legal principles regarding patentability and related matters under United States patent law, which I have applied in performing my analysis and arriving at my technical opinions in this matter.

A. Obviousness

16. I have been informed that a person cannot obtain a patent on an invention if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. I have been informed that a conclusion of obviousness may be founded upon more than a single item of prior art. I have been further informed that obviousness is determined by evaluating the following factors: (1) the scope and content of the prior art, (2) the differences between the prior art and the claim at issue, (3) the level of ordinary skill in the pertinent art, and (4) secondary considerations of non-obviousness. In addition, the obviousness inquiry

should not be done in hindsight. Instead, the obviousness inquiry should be done through the eyes of a person having ordinary skill in the art at the time of the alleged invention.

17. In considering whether certain prior art renders a particular patent claim obvious, I have been informed that I can consider the scope and content of the prior art, including the fact that one of skill in the art would regularly look to the disclosures in patents, trade publications, journal articles, conference papers, industry standards, product literature and documentation, texts describing competitive technologies, requests for comment published by standard setting organizations, and materials from industry conferences, as examples. I have been informed that for a prior art reference to be proper for use in an obviousness analysis, the reference must be “analogous art” to the claimed invention. I have been informed that a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). For a reference to be “reasonably pertinent” to the problem, it must logically have commended itself to an inventor's attention in

considering his problem. In determining whether a reference is reasonably pertinent, one should consider the problem faced by the inventor, as reflected either explicitly or implicitly, in the specification. I believe that all of the references I considered in forming my opinions in this IPR are well within the range of references a person having ordinary skill in the art would have consulted to address the type of problems described in the ’402 Patent.

18. I have been informed that to establish that a claimed invention was obvious based on a combination of prior art elements, a clear articulation of the reason(s) why a claimed invention would have been obvious must be provided. Specifically, I am informed that, under the U.S. Supreme Court’s KSR decision, a combination of multiple items of prior art renders a patent claim obvious when there was an apparent reason for one of ordinary skill in the art, at the time of the invention, to combine the prior art, which can include, but is not limited to, any of the following rationales: (A) combining prior art methods according to known methods to yield predictable results; (B) substituting one known element for another to obtain predictable results; (C) using a known technique to improve a similar device in the same way; (D) applying a known technique to a known device ready for improvement to yield predictable results; (E) trying a finite number of identified, predictable

potential solutions, with a reasonable expectation of success; (F) identifying that known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; or (G) identifying an explicit teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine the prior art references to arrive at the claimed invention. I am also informed that where there is a motivation to combine, claims may be rejected as prima facie obvious provided a person having ordinary skill in the art would have had a reasonable expectation of success regarding the proposed combination.

19. I am informed that the existence of an explicit teaching, suggestion, or motivation to combine known elements of the prior art is a sufficient, but not a necessary, condition to a finding of obviousness. This so-called “teaching-suggestion-motivation” test is not the exclusive test and is not to be applied rigidly in an obviousness analysis. In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. Instead, the important consideration is the objective reach of the claim. In other words, if

the claim extends to what is obvious, then the claim is invalid. I am further informed that the obviousness analysis often necessitates consideration of the interrelated teachings of multiple patents, the effects of demands known to the technological community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. All of these issues may be considered to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent.

20. I also am informed that in conducting an obviousness analysis, a precise teaching directed to the specific subject matter of the challenged claim need not be sought out because it is appropriate to take account of the inferences and creative steps that a person having ordinary skill in the art would employ. The prior art considered can be directed to any need or problem known in the field of endeavor at the time of invention and can provide a reason for combining the elements of the prior art in the manner claimed. In other words, the prior art need not be directed towards solving the same specific problem as the problem addressed by the patent. Further, the individual prior art references themselves need not all be directed towards solving the same problem. I am informed that, under the KSR

obviousness standard, common sense is important and should be considered. Common sense teaches that familiar items may have obvious uses beyond their primary purposes.

21. I also am informed that the fact that a particular combination of prior art elements was "obvious to try" may indicate that the combination was obvious even if no one attempted the combination. If the combination was obvious to try (regardless of whether it was actually tried) or leads to anticipated success, then it is likely the result of ordinary skill and common sense rather than innovation. I am further informed that in many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature or knowledge, will drive the design of an invention. I am informed that an invention that is a combination of prior art must do more than yield predictable results to be non-obvious.

22. I am informed that for a patent claim to be obvious, the claim must be obvious to a person having ordinary skill in the art at the time of the alleged invention. I am informed that the factors to consider in determining the level of ordinary skill in the art include (1) the educational level and experience of people working in the field at the time the invention was made,

(2) the types of problems faced in the art and the solutions found to those problems, and (3) the sophistication of the technology in the field.

23. I am informed that it is improper to combine references where the references teach away from their combination. I am informed that a reference may be said to teach away when a person having ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the patent applicant. In general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the patentee. I am informed that a reference teaches away, for example, if (1) the combination would produce a seemingly inoperative device, or (2) the references leave the impression that the product would not have the property sought by the patentee. I also am informed, however, that a reference does not teach away if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed.

B. Secondary Considerations of Non-Obviousness

24. I am informed that even if a prima facie case of obviousness is

established, the final determination of obviousness must also consider "secondary considerations" if presented. In most instances, the patentee raises these secondary considerations of non-obviousness. In that context, the patentee argues an invention would not have been obvious in view of these considerations, which include: (a) commercial success of a product due to the merits of the claimed invention; (b) a long-felt, but unsatisfied need for the invention; (c) failure of others to find the solution provided by the claimed invention; (d) deliberate copying of the invention by others; (e) unexpected results achieved by the invention; (f) praise of the invention by others skilled in the art; (g) lack of independent simultaneous invention within a comparatively short space of time; (h) teaching away from the invention in the prior art.

25. I am further informed that secondary-considerations evidence is only relevant if the offering party establishes a connection, or nexus, between the evidence and the claimed invention. The nexus cannot be based on prior art features. The establishment of a nexus is a question of fact. While I understand that the Patent Owner here has not offered any secondary considerations at this time, I will supplement my opinions in the event that the Patent Owner raises secondary considerations during the course of this

proceeding.

C. Written Description

26. I am informed that the specification of a patent application must include a written description of the invention in such full, clear, concise, and exact terms as to enable any one of ordinary skill in the art to which it pertains to make and use the same and that conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, the inventor was in possession of the claimed invention. I am further informed that the hallmark of written description is the disclosure, and the test requires an objective inquiry into the four corners of the specification from the perspective of one of ordinary skill in the art. Therefore, actual possession or reduction to practice outside of the specification is not enough, but rather, the specification itself must demonstrate possession. I understand that one of should look to the words, structures, figures, diagrams, formulas, etc. used in the specification to determine whether the applicant has demonstrated possession of the invention. I am further informed that a description that merely renders the invention obvious does not satisfy the written description requirement.

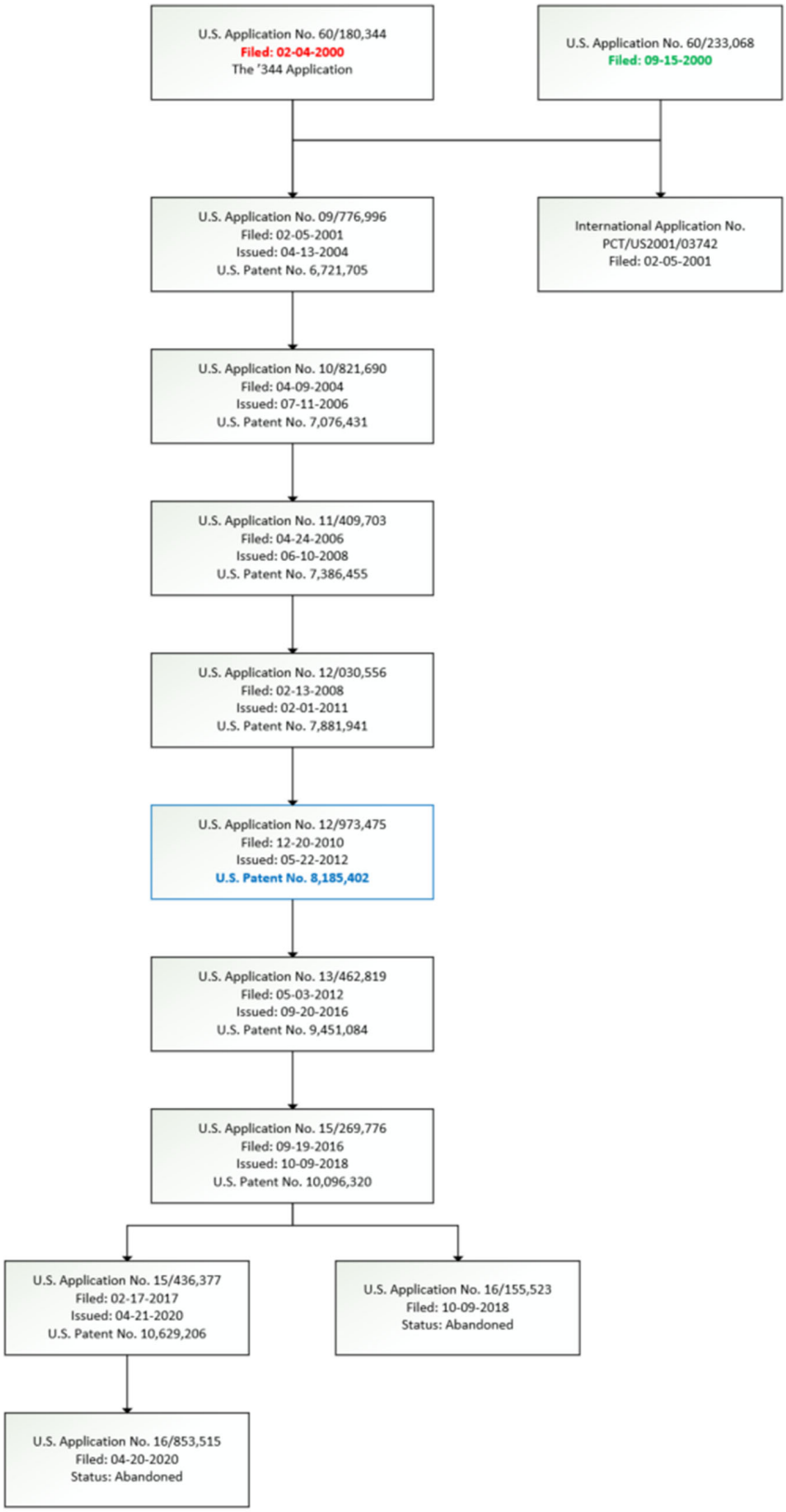
D. Claim Construction

27. I have been informed by counsel that the first step in an unpatentability analysis involves construing the claims, as necessary, to determine their scope. Second, the construed claim language is then compared to the disclosures of the prior art. I am informed that claims are generally given their ordinary and custom meaning as understood by one of ordinary skill in the art at the time of the invention, in light of the patent specification.

28. For purposes of this proceeding, I have applied the meaning of the claim terms of the ’402 Patent that are generally consistent with the terms’ ordinary and customary meaning, as a person of ordinary skill in the art would have understood them at the time of the invention. I have been instructed to assume for purposes of this proceeding that the time of the invention may be February 4, 2000 (the priority date of the first provisional application in the family chain for the ’402 Patent) or September 15, 2000 (the priority date of the second provisional application in the family chain for the ’402 Patent). As discussed below, I understand that the ’402 Patent claims priority to a February 4, 2000 application but my client is arguing that the ’402 Patent’s proper priority date (and the “time of invention”) is no earlier

than September 15, 2000. My opinions would not change if the time of the invention were February 4, 2000 rather than September 15, 2000, though I understand that what materials legally qualify as "prior art" may differ based on the priority date.

29. A diagram illustrating the chain of claimed priority for the patents and applications related to the '402 Patent is included below for ease of reference:


U.S. Application No. 60/180,344
Filed: 02-04-2000
The '344 Application
U.S. Application No. 60/233,068
Filed: 09-15-2000
U.S. Application No. 09/776,996
Filed: 02-05-2001
Issued: 04-13-2004
U.S. Patent No. 6,721,705
International Application No.
PCT/US2001/03742
Filed: 02-05-2001
U.S. Application No. 10/821,690
Filed: 04-09-2004
Issued: 07-11-2006
U.S. Patent No. 7,076,431
U.S. Application No. 11/409,703
Filed: 04-24-2006
Issued: 06-10-2008
U.S. Patent No. 7,386,455
U.S. Application No. 12/030,556
Filed: 02-13-2008
Issued: 02-01-2011
U.S. Patent No. 7,881,941
U.S. Application No. 12/973,475
Filed: 12-20-2010
Issued: 05-22-2012
U.S. Patent No. 8,185,402
U.S. Application No. 13/462,819
Filed: 05-03-2012
Issued: 09-20-2016
U.S. Patent No. 9,451,084
U.S. Application No. 15/269,776
Filed: 09-19-2016
Issued: 10-09-2018
U.S. Patent No. 10,096,320
U.S. Application No. 15/436,377
Filed: 02-17-2017
Issued: 04-21-2020
U.S. Patent No. 10,629,206
U.S. Application No. 16/155,523
Filed: 10-09-2018
Status: Abandoned
U.S. Application No. 16/853,515
Filed: 04-20-2020
Status: Abandoned

III. OPINION REGARDING LEVEL OF SKILL OF A PERSON HAVING ORDINARY SKILL IN THE ART

30. I was asked to provide my opinion as to the level of skill of a person having ordinary skill in the art of the ’402 Patent at the time of the claimed invention, which I have been instructed to assume is February 4, 2000 for Grounds 2-5 and September 15, 2000 for Ground 1. In determining the characteristics of a hypothetical person of ordinary skill in the art of the ’402 Patent at the time of the claimed invention, I was told to consider several factors, including the type of problems encountered in the art, the solutions to those problems, the rapidity with which innovations are made in the field, the sophistication of the technology, and the education level of active workers in the field. I also placed myself back in the time frame of the claimed invention and considered the colleagues with whom I had worked at that time.

31. In my opinion, a person having ordinary skill in the art of the ’402 Patent, as of both February 4, 2000, and September 15, 2000, would have been a person having a bachelor’s degree in Electrical Engineering, Computer Engineering, Computer Science, or an equivalent degree, with at least two years of experience in interactive voice response systems, automated information retrieval systems, or related technologies, such as

web-based information retrieval systems. Additional education may substitute for lesser work experience and vice-versa. Such a person of ordinary skill in the art would have been capable of understanding the ’402 Patent and the prior art references discussed herein.

32. Based on my education, training, and professional experience in the field of the claimed invention, I am familiar with the level and abilities of a person of ordinary skill in the art at the time of the claimed invention. Additionally, I met at least these minimum qualifications to be a person having ordinary skill in the art at least as of February 4, 2000. Further, although my qualifications may exceed those of the hypothetical person having ordinary skill in the art defined above, my analysis and opinions regarding the ’402 Patent have been rendered from the perspective of a person having ordinary skill in the art at the time of the invention.

33. My opinions provided in this Declaration are made as of the priority date of the ’402 Patent (which counsel has informed me is claimed to be February 4, 2000 by Patent Owner), unless expressly stated otherwise. My opinions would not change, however, if the ’402 Patent’s proper priority date instead were September 15, 2000. To the extent that any verb tense used in this Declaration or any deposition or testimony provided in this matter

is a present tense, e.g., “would reasonably understand,” such verb tense should be understood to be my opinion as of the ’402 Patent’s priority date (again, unless expressly stated otherwise). I merely use the present verb tense for ease of reading.

IV. BACKGROUND OF THE TECHNOLOGY

34. I was asked to briefly summarize the background of the prior art from the standpoint of a person having ordinary skill in the art prior to February 4, 2000.

35. February 4, 2000 was my 40th birthday. At that time, I was president of AnswerLogic, a small company devoted to providing direct answers to natural language questions on the Web. The company had been founded in 1999, during a year that showed by far the greatest growth and activity in technology of any in my lifetime.

36. My birth date is not directly relevant to this case, but it punctuates the abnormal acuteness of the times and my memory of them. In those days, we called years of Internet progress “dog years” because, just as a human life year translates into multiple dog years, so much had already happened that every year brought many years of progress and change. Such was the case with speech, language, and search technology from the earliest years

of the Web (around 1993-94) until 2000, when the “bubble” burst. I was intimately acquainted with the rapid development of technologies in those years prior to 2000 and am familiar with what would have been known by one of ordinary skill in the art at that time.

37. The claims of the ’402 Patent describe systems and methods for retrieving information from web sites in response to voice commands from a user. The voice commands are processed by a speech-recognition engine, and the web results are converted to an audio message by a speech-synthesis engine. The information is retrieved from web sites by sequentially accessing one or more web sites and by using content description files associated with the web sites to locate and retrieve the responsive information.

38. In the example given in the ’402 Patent specification, the user asks: “What is the weather in Chicago?” The speech-recognition component of the described invention identifies the keywords “weather” and “Chicago” from this request; a database containing a list of ranked records for web sites in a “weather” category is consulted and the web site record with the highest ranking in the weather category is selected and sent to a server, which uses the URL from the web site record to access this web site to retrieve

responsive information; an extraction component, using a content descriptor file, locates the responsive material from the accessed web site, the system passes along the extracted result from the accessed site, and this presumably responsive result is passed to a speech-synthesis engine for generation of an audio message that can be transmitted to the user. If responsive information cannot be found at the first accessed web site, then the server will sequentially access each web site from the list of web sites in the weather category of the database in order of their ranking until the requested information is retrieved or there are no more web sites left to check.

39. The discussion that follows will consider the state of some of the technologies related the claims of the ’402 Patent. This set of background technologies includes: (1) spoken language technologies, including speech recognition and synthesis, and, specifically, their use in systems that allow users to access information remotely using voice-enabled devices such as telephones, (2) information extraction systems, which were broadly used to analyze unstructured text and identify and/or structure information, such as the information that would be included in a relational database, and (3) information retrieval technologies, including both “search engines” for the

Web as well as other directly related techniques such as Web-based question answering systems.

40. Systems using "speaker-independent speech recognition" were commonplace prior to the '402 Patent. In the 1990s, and even the 1980s, it was rare to find a paper that defined "speaker independent" because the term was so widely used in describing spoken language systems. An overview paper from the early 1990s describes a system that performs speech recognition "without explicit speaker enrollment." See Zue. This type of speech-recognition system is what a person of ordinary skill at the time would have understood to be a "speaker-independent" speech-recognition system. This definition is consistent with the '402 Patent's description of a "speaker-independent" speech-recognition system. E.g., Salam, 4:39-41 ("[I]t does not have to be trained to recognize the voice patterns of each individual user.").

41. "Enrollment" was a term of art, used throughout this period, to mean that prior to testing or applying a speech recognition system, a user would "enroll" with the system usually by speaking a set of prescribed words or sentences, to train the system to a particular acoustic or vocal pattern for that user that would narrow the possibilities when the system subsequently

analyzed that user's speech inputs. A system so trained would perform better on recognizing the speech of the enrolled user, while also potentially performing worse when tested against a different speaker with a different vocal pattern (e.g., a user with a different accent, intonation, or even gender). It was generally understood during this period (i.e., from prior to 1990) that systems with enrollment could have higher accuracy, especially for connected speech (multiple words spoken without pause) but would have fewer practical applications. For example, an everyday customer requiring service over the telephone could not be expected to "train" the system before receiving the service being sought, rendering impractical any system requiring such enrollment. On the other hand, for a certain class of applications, such as medical dictation, other types of transcription, and voice-driven interfaces for the handicapped, the higher accuracy that could be provided by speaker-dependent enrollment was worth the extra trouble that the user would have had to undertake prior to being able to use the service. See, e.g., Pallett.

42. One of ordinary skill would have understood that speaker-independent speech recognizers were widely available, that they had been competitively tested for many years, and that the key problem for a speaker-

independent recognition system would be that it might sacrifice accuracy to avoid extra work for the user. There had been no doubt for many years that service applications using a telephone might have to make this sacrifice due to the constraints of the application. Most telephone-based applications (which were numerous in the prior art) would have required speaker-independence. See, e.g., Roberts.

43. Research in spoken language technology in the 1990s, at least in the U.S., was largely driven by DARPA (also known as ARPA – the Advanced Projects Agency of the Department of Defense), with the support of other government programs and the intelligence community. DARPA hosted annual "Speech and Language" Workshops, which I periodically attended, in which researchers shared the results of their efforts, as well as more specific meetings centered around specific technological benchmarks. In spoken language, these benchmarks included the Air Travel Information Service (ATIS), a test of (mostly speaker-independent) systems in the domain of responding to user questions about airline schedules and the like; the WSJ (and a later variant known as CSR) task, i.e., recognizing and transcribing the words of speakers reading the Wall Street Journal, and the very difficult "Switchboard" task, where systems tried to recognize the

spoken words from a very noisy set of telephone recordings. In the earlier years, it was difficult to assemble and distribute a consistent, large corpus of officially-licensed data for teams to work on, so DARPA used an organization known as the Linguistic Data Consortium (LDC) to accumulate the test data and then strongly encouraged teams to test their systems using prescribed rules. That is, it was understood in the research community that if you wanted government funding, you should test on the supplied tasks and show up at the DARPA workshops with your results.

44. By 1999, commercial, speaker-independent spoken language recognizers were broadly available and well known, at least in part as a result of the government sponsored research (e.g., by DARPA/ARPA) starting in the 1980s and even earlier. I was very familiar with this progression at the time because I led a group participating in DARPA-sponsored artificial intelligence benchmarks from the late 1980s through the early 1990s. My group participated in combined workshops (e.g., the DARPA Speech and Language Workshop) that covered technology and benchmarks in spoken language, information retrieval, and text interpretation and information extraction.

45. In the 1990s, speech technology, which had previously only very limited applications, saw significant advancements based on a combination of factors. Some advancement came as a result of the use of Hidden Markov Models (HMMs), which made it easier to apply statistical models of language to the speech-analysis task. Other advancements were the result of the tremendous improvement in storage and compute power that continues, to this day, to drive advances in artificial intelligence technologies. By the early 1990s, the use of HMMs and broad language models seemed to be bearing fruit, as word error was declining in speaker-independent continuous speech. Indeed, with the technology boom and commensurate availability of venture financing, by the mid-1990s it had become a race to reach the commercial market. See, e.g., Roberts.

46. By 1999, I—and many others—could call Fidelity Investments, even without authenticating myself, ask for stock quotes using a voice command, and then speak the name of a company or mutual fund and get a recent quote. See Roberts. Because I was always interested in testing technology, I used to do this, nearly every day, mostly to track how well the technology was working. I would put my flip phone in my pocket, stick a mic/earpiece in my ear, and ride my bike. Remarkably, even with the wind

blowing and with the relative unreliability of 1999s cell phone networks, I could get a quote or two. Although my earliest personal experiences as a customer were using these technologies for financial applications, using such systems in other applications (e.g., recognizing "weather" and "Chicago") was well within the capabilities of widely-available commercial systems in 1999.

47. Additionally, information extraction/retrieval systems were well-known before the priority date of the '402 Patent.

48. My own research in information extraction began in the mid-1980s at General Electric (GE)'s corporate lab in Schenectady, NY. My wife Lisa, who was also my research partner, had the idea that we could program our software to read news articles as they came off the wires, and answer simple questions, for example, about what company was trying to acquire another, and for how much. It was a hot time for mergers, and GE was getting increasingly into finance, so it made sense for our lab. It also attracted some attention, not only in the research community, but from magazines such as *Popular Science* and even a couple of TV shows. See Jacobs SCISOR. Our approach, devised and publicized in the 1980s, used a two-step process to retrieve answers to natural language questions. Jacobs SCISOR, p. 8. This

approach “ranks and compares the representation of the question to representations of stories…. The first step is a rough, efficient comparison of features of the question with features of stored representations of texts; the second pass is a more careful match of relationships that are asked for or implicit in the question.” Ibid.

49. We were by no means the only ones working in this area; in fact, our group was small compared to the big universities and government-sponsored labs. So, to be recognized by our peers (and secure government funding), we had to participate in the DARPA benchmarks, which not only exposed us to the technologies that would drive search engines and spoken-language advances in the Internet years, but also gave us a series of tests (that is, tests of our software) ranging from reading naval operations reports to CIA-sponsored translations of foreign broadcasts. By the mid-1990s, most of the R&D in our field had converged on a set of variations of finite-state pattern-matching, a sort of compromise between the high-powered grammars you’d need to diagram sentences and the quick keyword spotting that simpler engines used. As with the spoken language systems, some of the government-sponsored techniques in information extraction also went commercial during the 1990s, and this resulted in my leading some

companies in this area. Of course, once the Web became available in the mid-1990s, we were all trying to parse Web-based content.

50. PERL is a programming language widely used for scripting web sites, a language that is well suited to pattern matching. In information extraction R&D, it was quite common to use a Perl script as a first pass at broadly identifying and structuring information from free text. Indeed, in one of the benchmarks my team did for the government in 1993, we partnered with Carnegie Mellon University (CMU) to analyze news articles in Japanese and English. No one in our lab knew Japanese, so we ended up benchmarking a set of Awk scripts (Awk being a sort of primitive subset of PERL) for the pattern matching that were written by a CMU Japanese speaker. Jacobs GE-CMU.

51. Once the Web became popular, the Common Gateway Interface (CGI) became the standard way of calling scripts from a web server and Perl scripts were generally enabled at most web servers through the CGI. Writing Perl scripts to “scrape” Web content became a common way to try to get specific data from a page. For example, I remember at my company in 1996-97 we were pulling company names from breaking news, and we thought it would be cool to display the ticker symbol and a quote for each company

that appeared. The programmer who did this used a Perl script. Our technology (known as NetOwl) was commercially available.

52. Systems for answering user queries with web results were also commonplace prior to the priority date of the ’402 Patent.

53. Much like the spoken language systems described above, web-based search engines were spawned from the ARPA/DARPA world. In the world of government-sponsored R&D, the task(s) performed by a search engine was known as Information Retrieval, and the most common benchmark tasks in this field were a part of the Text Retrieval Conference (TREC). I participated in both TREC-1 and TREC-2. TREC-8 was held in 1999 and included “tracks” (i.e., different benchmark tests) to evaluate spoken-language based retrieval and question answering. Vorhees TREC8. Thus, by 1999, it was well understood that information retrieval could be driven by a speaker-independent interface capable of delivering a single answer to a direct question, much as my team had started doing a decade earlier. After all, the common benchmark evaluations for information retrieval in 1999 included question answering as well as spoken language retrieval. As I have noted above, speaker-independent speech recognizers were used in this sort of task.

54. There were several search engines prior to 1996, but by that year Lycos, Infoseek, and Yahoo were the main players. Lycos was a spinoff originally started by a teammate of mine from CMU during the DARPA benchmark days; Infoseek started with UMass technology from the DARPA world, and Yahoo started from a completely different approach, initially hiring editors instead of software engineers until, much later, they decided to build an engine. Altavista began to wedge in during the late 1990s and several others, including Hotbot and Inktomi, were in widespread commercial use at the time. At the time of my 40th birthday, every one of these engines provided a ranked list of page or site "hit" summaries in response to a free-text query. See, e.g., Lam (discussing pre-2000 search engine technology).

55. Just as my wife had noticed in 1987, it was possible to answer a direct question based on free text content by using a natural language-based information extractor, often applied in conjunction with a ranking engine of some kind. The problem was that the Web was too big, so there wasn't enough compute power to process every single site to try to answer every possible question. But by 1999 there were a lot of people noticing that even searching for frequently asked questions (e.g., a company's phone number

or address) on the web could result in a lot of irrelevant hits and a lot of extra reading.

56. Among the companies that set out to solve this problem of inefficient responses to frequently asked questions was Ask Jeeves, which launched in 1997 and had a market capitalization of well over $1 billion before 2000. Ask Jeeves had a web search engine that could answer questions posed in natural language using information directly from Web sites. A 1999 TV ad for Ask Jeeves (aka "The Internet Butler") shows Jeeves directly answering questions including "What's the best fly to catch a rainbow trout?" and "What are the symptoms of hypothermia?" E.g., https://www.youtube.com/watch?v=xcJ-xmQqmrA.

57. Ask Jeeves also marketed a commercial version to corporations for Web-based self service, which would allow a user to access a company's web site and, once there, get direct answers to their questions.

58. Ask Jeeves relied on human editors to compile FAQs and identify answers on the web, and then used natural language parsing to match against the questions. In 1999, I was recruited by a man named Jamie Hamilton to help run a company, called AnswerLogic, that was attempting to eliminate the need for human editors by automatically extracting and

conceptually organizing answers found on the Web. We were not the only ones in the space. We competed not only against Ask Jeeves but also against some other startups using various combinations of FAQs, web searches, advice avatars, and other features. But we all carried forward with a similar goal: a direct answer to a direct question, using Web-based content.

59. The techniques and technologies discussed above, particularly spoken language systems, information extraction, information retrieval and question answering, address the base claims of the ’402 Patent. Additionally, certain dependent claims relate to ranking, specifically determining an order in which web sites are accessed and periodically adjusting such rankings, for example, so that the first site accessed is that with the highest ranking. The patent also claims “polling”, which, for example, periodically adjusts those rankings using a variety of factors, including the presence of information to be retrieved, changes to the location of information to be retrieved, availability of a site, and response time. One of ordinary skill would have understood that ranking documents (and web sites) was a widespread component of information retrieval systems, as discussed above. Such systems often had to re-rank or re-order content based on changes to sites or new information that would become available. Additionally, as the Web

became a more complex, distributed network, search engines and other web-based response systems increasingly adopted various failover or fault-tolerance methods, such as relying on a backup or similar page or site when a requested page or site was too slow, unavailable, or produced some other kind of error.

60. As I have noted, the ’402 Patent claims technology relating to spoken language systems (i.e., recognizing speaker-independent voice inputs), information extraction (identifying responsive content from a web site), and information retrieval (delivering an answer to a user’s question). This section has described how these technologies evolved in the research and commercial realms during the 1990s. One of ordinary skill in the art would have been well aware of the above-described state of the art as of February 2000.

V. OPINIONS REGARDING THE ’402 PATENT

61. I have reviewed the ’402 Patent. Descriptions of the ’402 Patent that may be pertinent to my analysis are provided herein, and my descriptions of the ’402 Patent are intended only as a summary of the ’402 Patent and/or intended as being pertinent to the Challenged Claims of the ’402 Patent. My opinions provided herein are not intended as a discussion

of my entire understanding of the ’402 Patent or any other claims in any related patent to the ’402 Patent.

62. The ’402 Patent describes a system for acquiring desired information from sources on a network, where the system is a “voice browsing system” that “maintains a database containing a list of information sources, such as web sites” and is “connected to a network.” ’402 Patent, Abstract. The system maintains a list of information sources in a database, such as a list of web sites containing weather information. Each information source is ranked; the rank number of a weather site, for example, can be stored in the database listing of weather sites, and the information source with the highest/best ranking is accessed to retrieve the requested information. Id. 5:3-18.

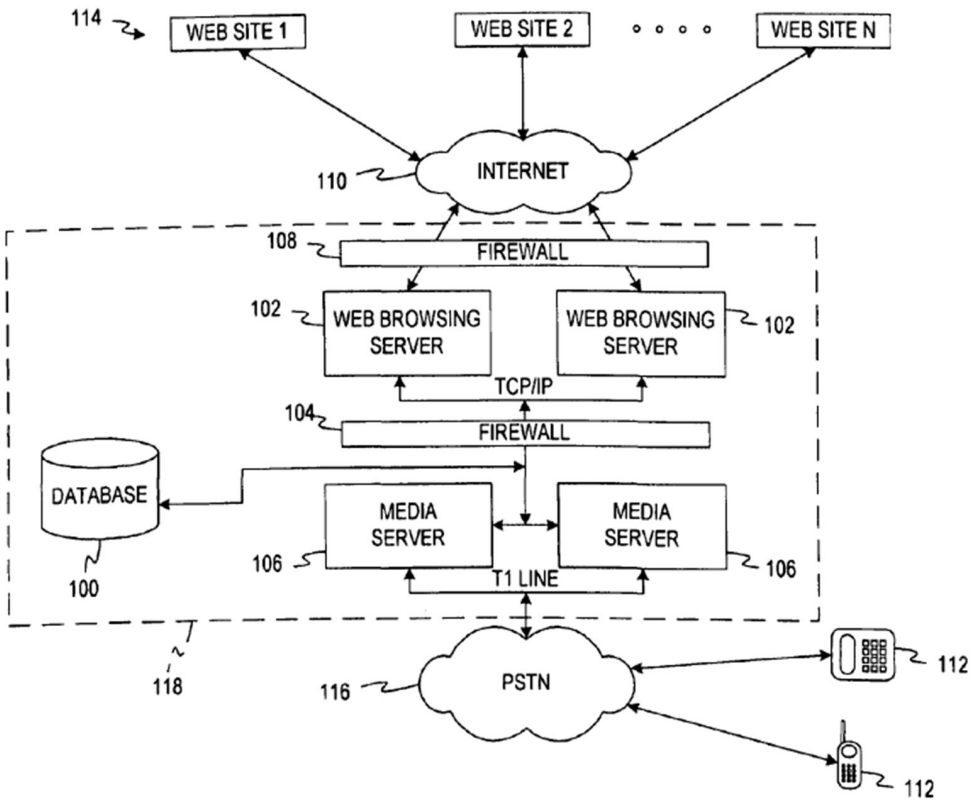


FIG. 1

'402 Patent, Fig. 1. The goal of the invention is to "allow[] users to browse information sources, such as web sites, by using . . . voice commands spoken into a voice enabled device." Id. 4:30-33.

63. The '402 Patent discloses a user interface system referred to as a "media server." Id. 4:46-48. "The media server contains a speech recognition software engine" used to recognize speech commands that may be input via a phone connected to the Public Switched Telephone Network ("PSTN") in response to an audio prompt from an interactive voice response ("IVR") application, which provides the user a list of options. Id. 4:49-53. The

speech recognition is speaker-independent in that "it does not have to be trained to recognize the voice patterns of each individual user" and instead uses phonemes to recognize spoken words. The speech commands are then converted into a data message and sent to a "web browsing server" which accesses the appropriate web site. Id. 4:46-58.

64. The list of web sites is stored in a "database 100" which includes a rank number for each website, the Uniform Resource Locator ("URL"), and a command that "enables the appropriate 'extraction agent' 206 that is required to generate proper requests sent to and to format data received from the web site." Id. 5:3-10. The list of web sites is also categorized based on the information the web sites provide, for example "weather" or "stock" information. Id. 5:13-20. A "content extraction agent 400" is used to properly format the request to the website based on a "content descriptor file" associated with the web site's URL, which specifies where to extract data from the web site and how to format a response based on that data. Id. 7:7-24. Next, a "content fetcher 402" retrieves the information from the web site. Id. 10:19-21. Responses from the web site are then transferred back to the media server "where speech synthesis engine converts the responses into audio messages that are transmitted to the user." Id. 4:59-62.

65. The rank number for each website is used to determine the order in which the system accesses the web sites to extract the desired information. For example, "[t]he site with the highest rank … will be the first web site accessed" and "[i]f the information requested by the user cannot be found at this first web site, then the web browsing server 102 will search the second ranked web site and so forth down the line until the requested information is retrieved or no more web sites left to check." '402 Patent, 19:63-20:2.

66. Additionally, a polling mechanism is used to "ping" each web site in the database by sending a "brief data request" to the sites. Id. 20:15-21. The system determines whether the responses received from the web sites are complete and in the expected format, as well as the response time of the sites. Id. 20:21-28. The ranking of the web sites stored in the database will be affected by whether the web sites produce complete and properly formatted responses and, if so, the time it takes for them to produce such a response. Id. 20:30-33. If a site does not produce a complete or properly formatted response, its rank is lowered. '402 Patent, 20:30-33.

67. The '402 Patent contains 15 claims. The language of these claims is set forth in the chart below as well as in the following sections,

together with identifiers for subparts that I sometimes use to refer to specific claim elements. Claim 1 and claim 9 are the only independent claims and, as shown below, the elements of claim 9 are substantially similar to elements found in claims 1-5. The different colored font indicates the differences in the claim language.

Claims 1-5	Claim 9
[1.pre] A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	*[9.pre]* A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine; *[1.2]* providing a voice enabled device operatively connected to said computer,	*[9.1]* a computer, said computer operatively connected to the internet and to at least one phone; at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer; at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;
	[9.2] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;

Claims 1-5	Claim 9
[2] The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	*[9.3]* a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;
[3] The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed.	*[9.4]* a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;
[1.2] said voice enabled device configured to receive speech commands from users; *[1.3]* providing a speech command to said speaker-independent speech recognition engine,	*[9.5]* said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved, *[1.5]* said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web	*[9.6]* said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or

Claims 1-5	Claim 9
sites has been accessed; *[4]* The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking.	until said plurality of web sites has been accessed;
[5] The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	*[9.7]* said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and *[1.7]* said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	*[9.8]* said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and said speech synthesis engine further configured to transmit said audio message to said users via said phone.

68. I understand that the ’402 Patent claims priority to the ’344 Application, filed February 4, 2000.

69. As discussed in more detail above, I understand that my client is presenting arguments that the ’402 Patent is not entitled to the priority date of the ’344 Application because the ’344 Application does not provide

adequate written description for claims 1-15 of the ’402 Patent. I have been informed that to satisfy the written description requirement, an applicant must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought, and that one does that by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention.

70. I was asked to provide my opinion as to whether, from the perspective of one of ordinary skill in the art, the ’344 Application describes, using words, structures, figures, diagrams, formulas, etc., the following features included in claims of the ’402 Patent in sufficient detail that one of ordinary skill in the art would conclude that the claimed feature was fully set forth and in the inventor's possession:

Claim	**Feature**
1-15	a “*speaker-independent* speech recognition engine”
1-15	“first accessing a first web site … *and, if said information to be retrieved is not found at said*

	first web site, sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed"
3-5, 9-14	"*ranking from highest to lowest associated with each said web site*"

71. After reviewing the '344 Application, I have concluded that one of ordinary skill in the art would not have understood the text and figures of the '344 Application to describe, or the inventor to have possessed an invention with, a "speaker-independent speech recognition engine," sequentially accessing websites "until said information to be retrieved is found or until said plurality of web sites has been accessed," or the ranking limitations.

72. Regarding speech recognition, the '344 Application says only: "The voice server processes the request using a speech recognition program. The output of the speech recognition program is a computer-readable request that is sent to an information retrieval computer." '344

Application, p. 7. The ’344 Application’s general reference to “a speech recognition program” does not clearly describe to one of ordinary skill in the art a particular type of speech recognition system and as discussed above, there were both speaker-*dependent* speech recognition systems and speaker-*independent* speech recognition systems at the time of the invention.

73. Regarding sequentially accessing websites, the ’344 Application does not discuss sequentially accessing websites “until said information to be retrieved is found or until said plurality of web sites has been accessed.” The ’344 Application says only: “Multiple information sources may be prioritized by the information retrieval computer so that if any one source is unavailable, other sources can be quickly contacted.” ’344 Application, p. 7. This would not convey to one of ordinary skill in the art that websites should be sequentially accessed until the information to be retrieved is found or all websites have been accessed.

74. Finally, the ’344 Application does not discuss or illustrate any ranking, so one of ordinary skill in the art would not understand it to describe “ranking from highest to lowest associated with each said web site.”

75. Thus, in my opinion the ’344 Application does provide adequate written description for the Challenged Claims of the ’402 Patent.

VI. GROUND 1: THE COMBINATION OF SALAM AND LOGHMANI

A. Opinions Regarding Salam

76. I have been informed by counsel that Salam (Ex. 1010) is prior art to the ’402 Patent assuming the priority date is September 15, 2000. I have reviewed Salam and provide herein my opinions on the teachings of Salam. The opinions provided herein do not necessarily represent my entire understanding of Salam.

77. In my opinion, as will be detailed below, Salam teaches each and every element of every claim of the ’402 Patent, with the exception of the “speaker-independent” restriction on the speech recognition engine and certain recited details of the “polling” elements, both of which would have been obvious to one of ordinary skill given the teachings of Salam.

78. Salam is directed to providing “a system and methods for accumulating and displaying information items obtained via a computer network such as the Internet and World Wide Web (WWW).” Salam 4:6-9.

79. Salam describes several ways for retrieving information from web sites in response to a user's search command, including the highlighted process shown in Fig. 2 below:

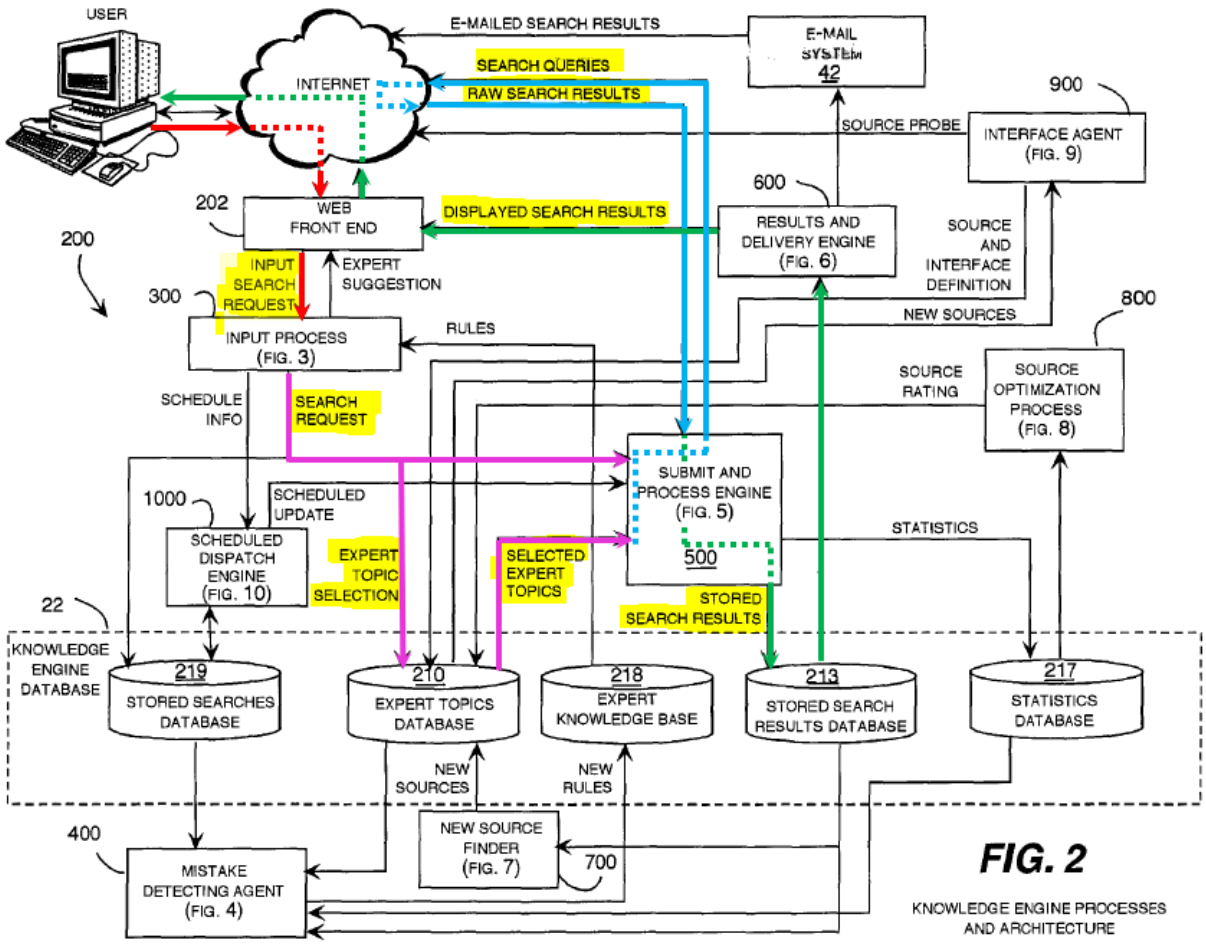


FIG. 2

KNOWLEDGE ENGINE PROCESSES AND ARCHITECTURE

First, a user enters a search request via a web front end 202 as an INPUT SEARCH REQUEST (highlighted) to an input process 300 that analyzes the request as shown by the red arrows. Id. 13:52-53. The user input device could be a voice-enabled device, such as a wireless telephone. Id. 8:48-54,

12:49-60. The SEARCH REQUEST (highlighted) is routed to the submit and process engine 500 and may also be used for EXPERT TOPIC SELECTION (highlighted) to select an expert topic from database 210, which provides SELECTED EXPERT TOPICS (highlighted) to a submit and process engine 500 as shown by the pink arrows. Id. 14:23-26, 33-37. The expert topic database 210 contains a list of sources organized by expert topic, and a ranking and address for each source within each topic. Id. 25:1-13. Next, the submit and process engine 500 selects one or more source(s) from the "selected expert topic," submits one or more SEARCH QUERIES (highlighted) to selected source(s) on the Internet and receives RAW SEARCH RESULTS (highlighted) back (e.g., retrieved information) as shown by the blue arrows. Id. 14:53-56. The retrieved information is processed by the submit and process engine 500 and stored as STORED SEARCH RESULTS (highlighted) in a stored search results database 213. Id. 14:62-64. A results and delivery engine 600 receives these results (i.e., retrieved information) and delivers them to the user as DISPLAYED SEARCH RESULTS (highlighted) as shown by the green arrows. Id. 14:26-37, 22:47-51. Additionally, the retrieved information can be presented to the user in other formats, such as a voice response. Id. 22:59-67. Further, results

presented to a user can also include a "context sensitive summary" in which the system "extracts and annotates (i.e., highlights)" portions of a site that are responsive to a user information need. Id. 21:28-35.

80. Responsive to a user request, the described system and methods periodically locate, rank, and re-evaluate information sources; the rankings for each source are stored in the knowledge engine database 22 and used to determine, among other things, the order in which the information sources are accessed to retrieve information by the submit and process engine 500. Id. 6:56-62; 9:35-40; 20:1-4; 24:37-56; 25:1-13; 25:21-27; 15:61-16:7 ("[T]he rating developed for each source is then ultimately used in prioritizing that source as used within any and all expert topics it is used in."). Updates are run periodically and can be based on a user schedule or "under certain conditions, e.g. when traffic or usage of the system is slow." Id. 19:5-7. Results presented to a user include a "context sensitive summary" in which the system "extracts and annotates (i.e., highlights)" portions of a site that are responsive to a user information need. Id. 21:28-35.

81. As noted above, Salam teaches periodically updating and re-ranking search results without user instruction (e.g., based on system usage). Salam teaches that "[r]e-evaluation helps determine if any pages or

information found in a prior search have changed or become dead links." Id. 20:8-10. Salam also teaches that this periodic update considers availability, specifically "dead links". Ibid. Given these teachings, the ranking methods disclosed in Salam, and the explicit goal of the work to reduce the amount of irrelevant information displayed to the user, it would have at least been obvious to one of ordinary skill in the art to practice the recited "establish or adjust said rankings" and "create rankings" limitations based on at least a combination of site availability and changes to the location of information. Salam specifically teaches that searching of "lower quality" sources can be delayed until it is determined whether the higher quality searches have produced adequate search results. Id. 20:25-27. This matches the teachings of the '402 Patent, where the ranking of sites determines which site is first accessed to retrieve information for the user, and the order of accessing sites (i.e., ranking) is based at least in part on availability or format changes. '402 Patent, 20:15-53.

82. With respect to the "speaker-independent speech recognition engine" and "speech synthesis engine" features, Salam mentions "alternative user input devices such as voice recognition of commands and text" and "voice response delivery" of results. Salam, 12:55-56, 22:62-67.

Salam points out that interactions with users can be via cellular phone. Ibid. Given these disclosures, one of ordinary skill in the art would have understood that the delivery of results via voice would be done using speech synthesis (which was widely available at the time), that a voice recognition system was required to practice the teachings of Salam, and that a desirable choice of "voice recognition" engine would have been a publicly available speaker-independent system. As I have explained above at ¶¶34-60, such systems were commercially available in 2000 and widely used for telephone-based applications. At a minimum, these teachings of Salam provide a suggestion to combine it with other publicly available speaker-independent speech recognition and speech synthesis engines.

83. Because Salam, like the '402 Patent, discloses a system receiving user-inputted commands requesting information and producing a response back to the user containing the requested information, Salam is in the same field of endeavor as the '402 Patent. Compare Salam, 4:6-9 ("a system and methods for accumulating and displaying information items obtained via a computer network such as the Internet and World Wide Web (WWW)"), with '402 Patent, Abstract ("The present invention relates to a system for acquiring information from sources on a network, such as the

Internet. A voice browsing system maintains a database containing a list of information sources, such as websites, connected to a network.").

84. A more complete mapping of the teachings of Salam against the '402 Patent claims can be found in the discussions below regarding each ground and in the summary included in Section XI below.

B. Opinions Regarding Loghmani

85. I have been informed by counsel that Loghmani (Ex. 1011) is prior art to the '402 Patent using either the February 4, 2000 or the September 15, 2000 priority date. I have reviewed Loghmani and provide herein my opinions on the teachings of Loghmani. The opinions provided herein do not necessarily represent my entire understanding of Loghmani.

86. Loghmani is titled, "TELEPHONY-DATA APPLICATION INTERFACE APPARATUS AND METHOD FOR MULTI-MODAL ACCESS TO DATA APPLICATIONS". "The system allows customers to access an online shop, search for desired database items, select items, and finally pay for selected items using a credit card, over a phone line or the Internet. A telephony-Internet interface converts spoken queries into electronic commands for transmission to an online shop or database. Markup language-type pages transmitted to callers from the online-shop or database

are parsed to extract selected information. The selected information is then reported to the callers via audio messaging". Loghmani, Abstract.

87. As I have stated above at ¶82, Salam provides a suggestion to combine its knowledge engine with speaker-independent spoken language recognition and text-to-speech synthesis as claimed given the disclosures of voice-driven commands and output in references such as Salam.

88. However, counsel has informed me that in a prior district court litigation in the Western District of Texas involving Patent Owner and Apple, Inc., the court issued a claim construction in claims of U.S. Patent No. 7,076,431 ("the '431 Patent"), which is related to the '402 Patent and has the same specification. In that construction, the court held that that "speaker-independent speech recognition device" had the following specialized meaning: "speech recognition device that recognizes spoken words without adapting to individual speakers or using predefined voice patterns." Ex. 1007 at 9-10. I understand that in a related challenge to the '431 Patent before the Board, Patent Owner and Apple disagreed as to whether "speaker independent" should require a device that recognizes spoken words "without adapting to individual speakers," but agreed that the term should require speech recognition "without . . . using predefined voice patterns." Id. I am

further informed that the Board adopted this position for purposes of resolving Apple's challenge and applied language from the '431 patent specification – "such speech recognition systems use phonemes to recognize spoken words and not predefined voice patterns"— as narrowing the '431 claims. Ex. 1007, 10, 30.

89. Loghmani teaches matching requests to web content using phonemes (see Figs. 5, 6, 7, 4:54-5:4), which are the units of sound that make up words and phrases (for example, consonants such as "hard p" or a "soft d" and vowels such as a "long o" can be phonemes). See, e.g., Clark and Yallop. Loghmani further states "[l]inguistic rules are used to select different pronunications (sic) of a requested item. The phonemes are converted to text." Loghmani, 9:3-5. Storing and matching using different pronunciations is an indication that speaker-specific voice patterns are not used – it is the opposite of a speaker-dependent voice pattern because the model is designed for the general recognition of spoken words regardless of the phonemes a speaker might use in voicing those words. Loghmani gives the example of "Gone With the Wind", which could sound like "Gone Wid Da Wind" or "Gone Vid Da Vind" (and so on). Id. 8-67-9:3. Of course, this example meets the Board's earlier restriction, read from the '402 Patent

description, of speaker-independence because a system that enrolls speakers and records their pronunciation patterns would rely on speaker-specific voice patterns rather than pre-storing alternative pronunciations–the different pronunciations stored are clearly meant to predict the potentially different phonemes used by different, arbitrary speakers. That is, it's not an (enrolled) American English speaker who suddenly decides to adopt a Slavic or German phoneme pattern—there would simply have been no need to store such phonetic variants if a speaker-specific audio pattern were being used.

90. Loghmani also expressly teaches text-to-speech synthesis. "TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software." Id. 8:4-7.

91. Loghmani teaches the features of the '402 base claims; like the '402 Patent, Loghmani is directed to retrieving specific information from one of a plurality of web sites responsive to a user request and to extracting particular information from a web site that contains the responsive information. See, for example, "[i]n accordance with another aspect of the present invention, data extracted from a markup language-type page via

parsing is used to generate an audio message using text-to-speech conversion . . . .” Id. 3:27-30.

92. A more complete mapping of the teachings of Loghmani against the ‘402 Patent claims can be found in the discussions below regarding each ground and in the summary included in Section XI below.

93. Since Loghmani and the ’402 Patent are each directed to systems that search web sites to locate specific information requested by users through a voice/telephony interface, Loghmani is pertinent to a problem addressed by the claimed invention in the ’402 Patent. Further, since Loghmani and Salam both address this problem, and one of ordinary skill in the art would have understood that Loghmani simply adds “meat to the bones” of certain features such as phoneme-based spoken language recognition, text-to-speech, and information extraction that are taught or suggested by Salam, it would have been obvious to one of ordinary skill in the art to combine these references in the manner discussed infra at ¶¶98-102 and there would have been a reasonable expectation of success in doing so.

C. Claim 1

1. Claim 1[Preamble]:

"A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:"

94. Salam teaches a knowledge engine that receives user queries from an end-user device and consults a database to identify a plurality of web sites relating to the topic of the received query and then retrieves responsive information from one or more of the plurality of web sites. Salam, Abstract, Fig. 1, 10:31-35, 9:22-29 ("a 'source' is typically an Internet connected and accessible computer system that retrievably stores information, which information can be retrieved upon provision of an appropriate inquiry or 'query' in a standard HTML form request format, using the parameters usually demonstrated by the site's own 'search box.' For example, a source could be a web site of a dynamic information source such as CNN.COM"). If a first source does not produce sufficient results for a request, additional sources are accessed until sufficient results are received. Salam, 9:7-34, 10:48-54. Salam discloses speech commands as input and audio output, specifically "alternative user input devices such as voice recognition of commands and text" and "voice response delivery" of results. Id. 12:49-60, 22:67.

2. Claim 1.1:

"providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;"

95. Salam teaches a knowledge engine server that is a computer and is directly connected to the Internet. Id. 9:10-12; Fig. 1.

96. Salam does not expressly teach that the knowledge engine server is connected to a speaker-independent speech recognition system or a speech synthesis engine. However, Salam discloses speech commands as input and audio output, specifically "alternative user input devices such as voice recognition of commands and text" and "voice response delivery" of results. Id. 12:49-60, 22:67. Salam points out that interactions with users can be via cellular/wireless phones. Id.

97. Given these disclosures, it would have been obvious to one of ordinary skill in the art to use a publicly-available spoken language recognition system. Given that Salam teaches interacting with users via cellular phone, it would have been obvious to configure such a system for "voice recognition of commands and text" in speaker-independent mode, as that would have been the typical way of interacting with telephony-based

voice applications at the time (See discussion supra ¶¶40-46). Therefore, it is my opinion that it would have been obvious to connect Salam's engine "to at least one speaker-independent speech recognition engine" as claimed.

98. One of ordinary skill would also have understood that "voice response delivery" of results would be done using speech synthesis (which was widely commercially available at the time). Salam, 22:62-67. Referring to Salam's Fig. 6, described in the aforementioned citation, Salam teaches at step 605 "determine selected delivery method" for the information retrieved from the source(s) accessed in response to the user's command as described above in connection with highlighted Fig. 2, then at step 615 "transmit report/view to user", which leads to alternative delivery methods, including "voice response". Because Fig. 6 shows that the same search results can be formatted and delivered via e-mail, HTML, or "voice response", it is my opinion that Salam inherently discloses a speech synthesis engine as claimed. I know of no way that a database result in text form could be presented to a user via voice response without a speech synthesis engine. Should the Board decide that Salam does not inherently disclose this feature, it would have at least been obvious to connect a publicly-available speech synthesis engine as claimed to deliver the textual

results shown in Salam Fig. 6 via voice response.

99. Loghmani discloses a computer operatively connected to the Internet, to a speaker-independent speech recognition engine, and to a speech synthesis engine. Loghmani describes a voice-enabled system for online shopping, which allows users to access an online shop/database using a telephone, submit queries to the online shop/database, and receive information responsive to the query via audio messaging. Loghmani, Abstract. The voice-enabled system includes a telephony-Internet interface (TII) configured as a telephony server and includes hardware and software for connecting to the Internet. Id. 4:15-28. Loghmani, therefore, discloses a computer operatively connected to the Internet.

100. Loghmani teaches matching requests to web content using phonemes (see Figs. 5, 6, 7, 4:54-5:4). Loghmani further states "[l]inguistic rules are used to select different pronunications (sic) of a requested item. The phonemes are converted to text." Loghmani 9:3-5. The text is then used to generate an HTTP request to a website for information, such as a book title. Loghmani, 8:9-20. As discussed infra at ¶89, Loghmani gives the example of "Gone With the Wind", which could sound like "Gone Wid Da Wind" or "Gone Vid Da Vind" (and so on). Loghmani 8-67-9:3. Because such

alternative and phonetically-distinct pronunciations are directly accounted for in Loghmani's language model, Loghmani's phonetic speech recognizer expressly meets even the Board's earlier, restrictive definition of "speaker-independent."

101. Loghmani also expressly teaches a system operatively connected to a speech synthesizer: "TIM [Telephone Interface Module] 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary." Id. 8:4-5. Thus, Loghmani teaches Claim 1.1.

102. Given Salam's teachings that the knowledge engine can be contacted by telephone, can perform voice recognition of commands and text, and can deliver search results to a user as a voice response, it would have been obvious to one of ordinary skill in the art to operatively connect Salam's knowledge engine to Loghmani's speaker-independent speech recognition engine (e.g., to perform speech recognition of the user's search requests) and speech synthesis engine (e.g., to perform text-to-speech conversion of search results for delivery as a voice response). For one, it would have improved the usability of Salam's system to implement a voice recognition system that could be accessed over the phone and would not

require enrollment prior to using the system. Moreover, adding the speech-recognition of Loghmani to the system of Salam would be nothing more than adding a commonly known feature and using it in a common way. As such, this claim element would have been obvious given Loghmani and Salam.

3. Claim 1.2:

"providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;"

103. Salam discloses an "end user device" operatively connected to the knowledge engine (i.e., computer). Salam discloses speech commands as input and audio output, specifically "alternative user input devices such as voice recognition of commands and text" and "voice response delivery" of results. Salam, 12:49-60, 22:67. Salam points out that interactions with users of the computer system can be via cellular phone. Id.

104. Loghmani also expressly teaches a voice-enabled device connected to a computer, configured to receive speech commands: "TIM [Telephone Interface Module] 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary". Loghmani, 8:4-5 see also id. 14:19. The results of the TIM (e.g., the output of the speech-to-text conversion operation) is provided to a Data

Presentations Module (DPM), which converts the commands into "electronic commands such as HTTP requests" to retrieve the information sought by the user. Loghmani, 8:9-11.

4. Claim 1.3:

"providing a speech command to said speaker-independent speech recognition engine, . . ."

105. Salam teaches receiving a speech command from a user and providing that speech command to the knowledge engine (i.e., the computer) to retrieve information from web sites and Loghmani teaches "convert[ing] said spoken queries to commands . . . ." Salam, 12:55-56 ("alternative user input devices such as voice recognition of commands and text"); Loghmani, 14:19. For the reasons discussed above, it would have been obvious to add Loghmani's speaker-independent speech recognition engine to Salam's knowledge engine.

5. Claim 1.4:

"said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,"

106. Salam teaches that the knowledge engine server accesses at least one of a plurality of web sites by submitting information requests to the one or more web sites based on a user's request for information. Salam's

knowledge engine includes a knowledge engine database, which stores identifying information (e.g., URLs) for Internet sources, such as CNN.COM or ESPN.COM, that are selected based on the terms in the user's request for information. Salam 14:30-40, 19:65-20:1. Information can be extracted directly from these sources by submitting an information request to the source's URL, such as an HTML query. See discussion supra ¶¶48-60, 94. "[T]he knowledge engine not only dynamically searches the Internet to collect the sites where information may be found, it also examines the content of those sites to determine the information's relevancy and accessibility." Id. 6:13-18.

107. Salam teaches the entirety of this claim element: a spoken command (e.g., "converts spoken queries to commands"), processing a query and matching against sources from a plurality of web sites like cnn.com (e.g., Salam, 9:21-40) that are selected based on the terms in the command (Salam 14:30-40), and retrieving results from the site(s) in response to the spoken query (e.g., Salam, Fig. 5B at steps 536 and/or 541).

6. Claim 1.5:

"said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web

sites until said information to be retrieved is found or until said plurality of web sites has been accessed;"

108. Salam teaches this claim element in its entirety. Referring to Salam Fig. 5 and Salam 20:10-27, a request is submitted "to one or more specified sources, 1, 2, . . . N as will be described." As detailed in the discussion of the previous element 1.4, Salam teaches that these sources are web sites like cnn.com. The request stems from a user command or query, which Salam teaches may be from a voice input device. Salam also teaches:

- "the system loops in waiting for all N sources to respond (or time out)." Salam, 20:17-18.
- "not all possible sources associated with a selected expert topic are searched at the same time. Certain sources, typically lesser quality sources, can be delayed in searching to see if the higher quality searches have produced adequate search results." Id. 20:23-27.
- "Insufficient usable results but not all sources contacted?" Id. Fig. 5a and step 515.

109. Focusing on the "if said information is not found…sequentially accessing" limitation, Salam teaches (a) continuing to loop through a list of web sites if a site fails to respond (i.e., times out) (id. 20:17-18) and (b) accessing additional site(s) on a sequential list of sites 1, 2, . . . N if results in response to a query are "insufficient" (id. 20:28-30).

110. Focusing on the "until said information is found" limitation, Salam teaches delaying contacting additional sources (i.e., sites) until the system has determined that the current results are not adequate. Id. 20:20-22. Thus, if results are "sufficient", the system does not have to contact additional source(s).

111. Focusing on the "…or until said plurality of web sites has been accessed" limitation, a "plurality" in Salam could be either a subset of all sites (e.g., sites listed for a particular expert topic) or the entire set of sites contacted. In either case, Salam teaches looping through a list of sites and accessing each site to determine whether that site is available and whether results are sufficient. Id. 20:10-39. From this description it is clear that the system could contact and access all of the sites on this expanded list in the event that results are insufficient (i.e., "said information is not found" at any site).

112. Salam thus teaches a sequential ordering (1, 2, … N) of a plurality of web sites; not all the sites are searched at the same time but some of those sites are searched only if adequate search results have not yet been produced (compare "if said item to be retrieved is not found" in the claim to "delayed in searching to see if the higher quality searches have produced adequate search results" in Salam). Salam teaches that the entire ordering through source N can be accessed in a loop (a sequential access) until sufficient information is found or all sources have been searched. Thus Salam teaches every possible path through this claim element.

7. Claim 1.6:

"said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and"

113. Salam teaches that the information retrieved from the web site(s) (steps 536 and/or 541 of Fig. 5B) in response to a search query is stored in a database (step 549 of Fig. 5B) before being transmitted (step 520 of Fig. 5A) to the results and delivery engine 600 for delivery to the user. Salam, 20:59-64, 22:47-58. Referring to Fig. 6, described in the aforementioned citation, a results and delivery engine 600 at step 602 "retrieve[s] results from database" (which were stored after being retrieved directly from web site(s)

in response to the user's command as shown and described above in connection with Fig. 2), then at step 605 "determine[s] selected delivery method", then at step 615 "transmit[s] report/view to user", which leads to alternative delivery methods, including "voice response". Since Fig. 6 shows that the same search results can be formatted and delivered via e-mail, HTML, or "voice response", Salam teaches that the retrieved results from web sites are delivered via audio message. As discussed supra ¶98, because the results delivered via voice response must necessarily be converted from text to speech, Salam inherently teaches speech synthesis.

114. Further, it would have been obvious to one of ordinary skill in the art to combine Loghmani's speech synthesis engine with Salam's results and delivery engine 600 to convert the retrieved results from text to speech to deliver a voice response as taught by Salam. Salam teaches that the results and delivery engine alternatively displays results, for example, as HTML in a web browser or "via voice response delivery". Id. 22:59-67. Because this teaching shows that the *same* result can be *either* displayed in a browser (i.e., as text) or delivered via voice, it would have been obvious to one of ordinary skill to use speech synthesis to convert the text result to speech, particularly given that the same function in Loghmani is implemented by a

text-to-speech engine and such software was in widespread use for this type of functionality at the time. See supra ¶¶40-46, 98.

8. Claim 1.7:

"said speech synthesis engine transmitting said audio message to said users via said voice enabled device."

115. See supra ¶¶98, 113-114, and note that "voice response delivery" could only have been through a "voice enabled device", but Salam also teaches that a "cellular telephone" (which is voice enabled) can be an end user device. Salam, 8:48-54.

116. Therefore, it is my opinion that Salam teaches '402 Patent Claim 1 in its entirety as arranged and recited, with the exception of the "speaker-independent" limitation, which would have been obvious to one of ordinary skill in the art. Should the Board require additional detail to teach explicitly a narrower, phoneme-based meaning of speaker-independent, this reading is explicitly taught in Loghmani, and it would have been obvious to combine Salam with Loghmani for the reasons discussed in at least ¶102.

D. Claim 2:

"The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor

pre-defining a portion of said web site containing said information to be retrieved."

117. The '402 Patent specification includes, in the preferred embodiments, a content descriptor file, which works with a content extraction agent and "allows the web browsing server 102 to properly format requests and read responses provided by the web site 114 identified in the URL field 204 of the web site record 200." '402 Patent, 7:12-18. The content descriptor file "directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data." Id. 7:21-24.

118. Salam's description of the "submit and process engine 500" fully discloses or would have rendered obvious the content descriptor as claimed. Salam teaches that the submit and process engine "parses" each listing and further explains that parsing includes that "the text in the item or listing is examined to locate the search terms . . . ." Id. 15:7-14. Salam further teaches that in producing the "context sensitive summary" the process engine "extracts and annotates" the relevant portions of the sites. Id. 21:31-35. "Extracts" in Salam aligns with "extract data from the accessed web page" in

the ’402 Patent specification and “annotates” aligns with “how to format a response to the user utilizing that data” from the ’402 Patent specification.

119. Note that the ’402 Patent specification (e.g., Tables 5 and 6, showing the “content description file” for cnn.com and lycos.com) states that these files are “source code”. ’402 Patent, 17:1-4 and 18:1-4. These are programs or scripts that instruct the extraction agent where to find information on a page and how to format results, just as Salam’s “process engine” parses pages to extract and annotate information in producing a context sensitive summary.

120. Focusing on the claim language “pre-defining a portion of said web site containing said information to be retrieved”, Salam’s teaching of the context sensitive summary discloses extracting and annotating a portion of each web site containing said information. This portion is “pre-defined” in the same manner that the source code shown in the ’402 Patent specification for the “content description” is pre-defined; that is, the code (i.e., the “process engine” in the case of Salam) pre-defines a portion to be extracted from each page, even though that portion may be extracted dynamically in response to a query.

121. The claim language recites that a content descriptor is "associated with each said web site address". Salam teaches that the process engine extracts and annotates results from each "item or listing". *See* discussion *supra*, Salam 15:7-14. Salam does not explicitly state, as far as I can tell, whether the process engine uses the same code to extract and annotate results from different sites, or whether, for example, some code is specific to a given site, for example, in the way the '402 Patent specification uses code specific to cnn.com and different code specific to lycos.com as the content descriptor. Salam clearly teaches extracting and annotating results from cnn.com; I just cannot determine from Salam whether the process engine would use a script, or code, that is unique to cnn.com or whether Salam's parser would use the same code, for example, for cnn.com and espn.com.

122. However, as I have noted supra at ¶¶47-54, it would have been impractical at the time of Salam to use the same code to parse and extract information from every different web site, because the Web was large and complex and there might have been quirks specific to a given site, such as cnn.com, that made it preferable to have some code for that site in particular. Therefore, it is my opinion that a site-specific content descriptor would have

been obvious given Salam. Further, as I will discuss below, Loghmani teaches parsing a results page using "site-specific" scripts, so modifying (or, at least, refining) Salam's process engine parser to do some site-specific parsing for a site such as cnn.com would have been an obvious modification of Salam's parser to one of ordinary skill in the art given Loghmani's site-specific parser, as they both had the same function (i.e., parsers to give accurate and helpful results in response to user queries), and such site-specific parsing was in widespread use at the time because of its beneficial precision and accuracy.

123. In Salam, a process engine (540) may receive "hyperlinks or URLs" relating to a given search request. Salam, 21:18-22. Using these URLs, the process engine "parses" the text contained in the web pages (each of which has a website address), determines a portion of a web page containing information relevant to a user's query, and constructs a "context sensitive summary" identifying "the portions of the listings that have the highest statistical relevance" to a user's query. Id. 21:28-35; see also 15:7-14.

124. Similarly, Loghmani discloses a Data Presentations Module (DPM), which converts commands (e.g., "speech that has been converted to

text by the TIM 110") into HTTP requests that can be used to extract information from web sources. Loghmani, 8:9-32. To formulate these requests, the "DPM uses **site-specific** scripts which help to identify . . . **where** important data elements reside." Id. 8:29-32 (emphasis added). "[T]he DPM 112 uses **site-specific** scripts to locate relevant information (e.g., titles of books having AVs [audio vectors] which are close to the spoken query AV) to report to the caller . . . ." Id. 10:39-43 (emphasis added), 4:33-37.

125. Both the parser that produces the context sensitive summary in Salam and the site-specific scripts of Loghmani identify the location of information that is responsive to user queries and, therefore, define the "portion of said web site containing said information to be retrieved." Further, one of ordinary skill in the art, as discussed supra at ¶122, would have been motivated to adapt the parser in Salam's process engine in light of Loghmani's **site-specific** scripts to retrieve desired information from web sites more accurately and reliably, particularly given that many sites had quirks that might have made generic parsing and re-formatting difficult.

126. Accordingly, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 2.

E. Claim 3:

"The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed."

127. Salam's knowledge engine uses a "source optimization process" to "rank the quality of a source," with the source ranking then being stored "in association with the source address in the expert topics database 210." Salam 25:1-5. In one embodiment, this quality ranking is an "indicator representing the number of items retrieved from any given search as well as the cumulative relevance/irrelevance of those items." Salam, 25:4-9. Salam's sources may be grouped according to the expert topic to which the sources relate. Id. 9:41-54 "Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches. For example, for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and so on." Id. 25:22-27.

128. Salam uses these rankings to determine in what order to access sources when performing a user search. Id. 24:37-56; 15:61-16:7. As shown in Salam Fig. 5A and Salam 20:1-27, a request is submitted sequentially "to

one or more specified sources, 1, 2, . . . N as will be described." As detailed in the discussion of Claim 1.4, Salam teaches that these sources are web sites like cnn.com. The request stems from a user command or query, which Salam teaches may be from a voice input device. See, for example, id. 12:55-56.

129. In this manner, the ranking of the sources within the expert database indicates the order in which the submit and process engine submits queries to and receives responses from sources (i.e., the order in which the web sites are accessed). The order in which the first, second, etc. sources are selected is indicated by each source's quality ranking. Salam, 20:28-30 ("If at 515 not all sources have been contacted and there are insufficient results, control passes back to step 502 to contact other (and possibly lower quality rated) sources.")

130. The above disclosure is sufficient to teach Claim 3 because the claim recites only that ranking indicates the order in which web sites are accessed (i.e., 1, 2, . . . N). However, Salam also provides much more detail throughout on the ranking of sources. For example, refer to Salam 25:23-37: "for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second

most relevant items may be ranked number two, and so on. At step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806. The reader should appreciate that, while this process of ranking sources is described using indicators and recalculating rankings based on new statistical indicators, that description is used only as one possible implementation of the present process. Those skilled in the art will appreciate that other well known means of ranking based on the reliability of prior and present search results may be used."

131. Salam teaches each of the limitations of claim 3; therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 3.

F. Claim 4:

"The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking."

132. "Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches. For example, for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and

so on." Salam, 25:22-27 (emphasis added). See the discussion for Claim 3 of accessing web sites numbered 1, 2, . . . N, illustrated in Salam Figs. 5A and 5B.

133. Salam teaches each of the limitations of claim 4; therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 4.

G. Claim 5:

"The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings."

134. Salam's source optimization process "examines recent performance of sources used within each expert topic and as a whole" and "monitor[s] the success of interaction with the sources" Salam, 24:37-39, 48-49. The process collects "statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items." Id. 24:58-61. The system "analyzes these statistics to determine updated rankings," which "allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the

queue, while less successful sources sink toward the bottom." Id. 24:52-56, 61-64. Less successful sources would include sources that produce inaccessible links, irrelevant results, or otherwise unusable or unhelpful responses. The collection of statistics and the re-ranking of sources is illustrated in Salam's Figure 8.

135. Salam further teaches: "for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and so on. At step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806. The reader should appreciate that, while this process of ranking sources is described using indicators and recalculating rankings based on new statistical indicators, that description is used only as one possible implementation of the present process. Those skilled in the art will appreciate that other well known means of ranking based on the reliability of prior and present search results may be used." Id. 25:23-37, see also 25:11-13.

136. Salam teaches each of the limitations of claim 5; therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 5.

H. Claim 6:

"The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved."

137. "Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches." Salam, 25:21-23. "At step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806". Id. 25:28-29. "[A]fter the search results have been provided to the user, the knowledge engine may be configured to periodically reevaluate the sources to determine whether they contain additional information that might be relevant to the user's initial search." Id. 6:40-44. A "scheduled dispatch engine" is "operative for scheduling updated searches in accordance with schedule information stored in the stored searches database 219." Id. 27:6-10. When the scheduled dispatch engine determines that a stored search should be updated, the search request is "retrieved from the stored searches database 219 and submitted to the submit and process engine 500." Id. 27:40-50. The process described above in connection with Figs. 5A and 5B is then repeated for the sources that had previously produced results

relevant to the user's query and, in some cases, for new sources that may produce additional relevant results. Id. 13:23-48 (steps 4, 7-11).

I. Claim 8:

"The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites."

138. Salam teaches this claim in its entirety as recited. See the discussion of Salam's "New Source Finder" (Id. Fig. 7 and 23:24-24:32). Note that, as explained supra ¶¶94, 106, Salam teaches that a source is a web site such as cnn.com. "The new source finder employs statistics stored in the statistics database 217 to identify potential new sources based on analysis of particular Internet sites occurring frequently in results of search requests matching specific keywords, expert topics, or other identifiable patterns." Id. 23:31-35.

139. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 8.

J. Claim 9

140. It is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 9.

1. Claim 9[Preamble]:

"A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:"

141. See Ground 1, Claim 1[Preamble].

2. Claim 9.1:

"a computer, said computer operatively connected to the internet and to at least one phone; at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer; at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;"

142. See Ground 1, Claim 1.1.

3. Claim 9.2:

"a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;"

143. Salam teaches this limitation. See, e.g., "All sources are maintained in a sources database containing source address information (e.g., URL), as well as source quality information and expert topic categories, and expert topic relevance." Salam, 6:56-59.

4. Claim 9.3:

"a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;"

144. See Ground 1, Claim 2.

5. Claim 9.4:

"a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;"

145. See Ground 1, Claim 3.

6. Claim 9.5:

"said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;"

146. See Ground 1, Claim 1.3.

7. Claim 9.6:

"said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;"

147. See Ground 1, Claim 1.4, Claim 1.5, and Claim 4.

8. Claim 9.7:

"said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;"

148. See Ground 1, Claim 5.

9. Claim 9.8:

"said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and said speech synthesis engine further configured to transmit said audio message to said users via said phone."

149. See Ground 1, Claim 1.6 and Claim 1.7.

K. Claim 10:

"The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone."

150. Salam teaches this Claim. For example, Salam discloses that users access the knowledge engine by "employing end user devices 14 such as . . . wireless telephones with computing capability." Salam, 8:48-54.

151. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements

of claim 10.

L. Claim 11:

"The system of claim 9 wherein said internet is a local area network."

152. Salam teaches this claim. Salam teaches that user devices are connected to the knowledge engine over an internet network. In a preferred embodiment, this network is the global Internet. See id. 9:7-10. However, Salam also discloses that the aspects of its disclosure can be implemented in different types of distributed computing environments, explaining that "[e]xamples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." Id. 11:33-40.

153. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 11.

M. Claim 12:

"The system of claim 9 wherein said internet is a wide area network."

154. Salam teaches this claim. Salam discloses that user devices are connected to the knowledge engine over an internet network. In a preferred

embodiment, this network is the global Internet. See Salam, 9:7-10. However, Salam discloses that the aspects of its disclosure can be implemented in different types of distributed computing environments, explaining that "[e]xamples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." Id. 11:33-40.

155. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements of claim 12.

N. Claim 13:

"The system of claim 9 wherein said internet is the Internet."

156. Salam teaches this claim. Salam discloses that user devices are connected to the knowledge engine over an internet network. In a preferred embodiment, this network is the global Internet. See Salam, 9:7-10; "[e]xamples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." Id. 11:33-40.

157. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements

of claim 13.

O. Claim 14:

"The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information."

158. Salam teaches this claim. As discussed supra ¶¶127-131 Salam discloses "establishing" rankings of the websites in response to a user entering a search request to retrieve information from websites. Salam, 13:23-43 (steps 1, 5, 8). Additionally, as discussed above supra ¶¶134-136 relating to Claim 5, Salam teaches "adjusting" rankings in response to an updated search. Statistics indicating the performance of sources (i.e., the quantity/quality of results) are collected each time the system submits search requests to sources, allowing the source rankings to be updated in response to the results of each new search request. Salam,15:20-24, 20:59-67, 21:66-22:4, 24:61-67. Users may instruct the system when to update search results (in one embodiment) and may instruct the system to modify search requests. Id. 5:5-7, 13:51-61, 16:25-37; 17:41-50; 27:23-25.

159. Therefore, it is my opinion that the combination of Salam and Loghmani teaches, discloses, or would have suggested all of the elements

of claim 14.

VII. GROUND 2: THE COMBINATION OF SALAM, LOGHMANI, AND KUMAR

A. Opinions Regarding Kumar

160. I have been informed by counsel that Kumar (Ex. 1014) is prior art to the '402 Patent using either the February 4, 2000 or the September 15, 2000 priority date. I have reviewed Kumar and provide herein my opinions on the teachings of Kumar. The opinions provided herein do not necessarily represent my entire understanding of Kumar.

161. Kumar teaches a system for replicating servers on the Web so that alternative servers can respond to user requests, specifically based on response time. Kumar, 3:18-30. Like the '402 Patent, the point is to service user requests with the best information and with a minimal amount of inconvenience to users.

162. Kumar specifically states that servers and websites are synonymous. Id. 3:12-15. Kumar teaches a plurality of web sites that each are copies of the same site. However, with respect to this proceeding, this distinction does not affect relevance of Kumar in this combination. For one thing, it is not clear to me that a mirrored site does not fit within the claim language, as the mirrors are clearly treated as distinct sites in Kumar.

Indeed, they are different from each other because each has at least a different response time. It is the different response times that are used to rank the sites in Kumar.

163. Kumar teaches polling information servers (i.e., sites) to rank them according to the response times and types of data involved in transactions with the servers. Id. 2:22-34, 3:8-30, 3:50-65, 4:29-45. Specifically, Kumar discloses network tests such as “ping” to poll the web sites. Id. 5:58-65. “Ping” is a term of art, as well as a common Internet function, which was widely used at the time to determine whether a given site was available and measure the time of getting a response. See, e.g., Ping Definition.

164. The ping responses from the servers are recorded and a list of all the servers is sorted based on ping response time such that the server on the top of the list is the most preferred server. Kumar, 6:11-19. This list is “updated” and re-sorted regularly. Id. 6:21-23; 9:15-23. One of ordinary skill in the art would have understood that “regularly” implies “periodically”. One of ordinary skill in the art would also have understood that such replication and optimization functions would have been repeated periodically to keep the optimized list of replicas current.

165. Because Kumar, like the ’402 Patent, is directed to searching the Web and providing timely responses to users, Kumar is pertinent to a problem to be solved by the claimed invention in the ’402 Patent.

166. A more complete mapping of the teachings of Kumar against the ’402 Patent claims can be found in the discussions below regarding each ground and in the summary included in Section XI below.

B. Claims 7 and 15

[7] The method of claim 6 wherein the computer periodically polls each said web site without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.

[15] The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site.

167. As discussed for Claim 6 in Ground 1, Salam explicitly teaches that the ranking and re-ranking of sources (i.e., web sites) is done “periodically”. Although Salam teaches that the user can configure the

system to do these updates, Salam also teaches that updating can be based on a "clock interrupt". See Salam 27:38-40. A "clock interrupt" is a system function that allows certain scheduled programs to run without user interaction. While the Patent Owner might argue that a user could have set the schedule, there is no indication that this must be "said user" (i.e., the same user who has issued a previous or future query). Further, Salam explicitly teaches that the agent that detects query errors, and therefore "polls" web sites to expand results, can run "periodically or under certain conditions, e.g. when traffic or usage of the system is slow." Id. 19:5-7. Therefore, it would have been at least obvious to one of ordinary skill in the art that any of the various update and re-ranking processes described in Salam could or would have been done periodically without instruction of "said user."

168. The above paragraph pertains to the periodic polling and ranking (or re-ranking) of web sites. Claim 7 additionally recites that the polling must include checking the availability of sites, their duration of time to respond, and changes to the location of said information on the site. For instance, Salam notes that the knowledge engine "alerts the searcher to new and changed items" and that sources "are reevaluated to determine if the source

site setup has changed." Salam 5:11-24, 7:14-18. Referring to Fig. 5A, Salam teaches "[r]e-evaluation helps determine if any pages or information found in a prior search have changed or become dead links." Id. 20:8-10. Salam expressly teaches that this detection of "dead links" causing 404 errors can be done "from time to time" and that this is part of re-ranking. Id. 11:6-10, Figs. 10-12.

169. Claim 7 recites that the periodic "polling" must determine those three characteristics of a site – i.e., availability, duration of time to respond, and changes to the location of said information – and that ranking must be done based on said "polling". Salam expressly teaches re-ranking based on two of the factors (i.e., availability and location changes), and states that "those skilled in the art will appreciate that other well known means of ranking based on the reliability of prior and present search results may be used." Therefore, in my opinion, it would have been obvious to one skilled in the art to combine availability and changes to a site (all of which comprise the reliability of prior and present search results) as recited in Claim 7.

170. Salam does not expressly disclose "periodically polling" to determine "the duration of time for each said web site to respond to a request." This limitation, however, is disclosed by Kumar, and it would have

been obvious to one of ordinary skill in the art to combine this aspect of Kumar with the polling and ranking taught in Salam and there would have been a reasonable expectation of success in doing so.

171. Kumar teaches polling information servers (e.g., websites) to rank them according to the responses and types of data involved in transactions with the servers. Kumar, 2:22-34, 3:8-30, 3:50-65, 4:29-45; Specifically, Kumar discloses network tests such as "ping" to poll the websites. Id. 5:58-65 ("Ping is a common network testing method to determine response time."). The ping responses from the servers/ websites are recorded, and the servers/websites are sorted based on response time, making the top-ranked server/website the most preferred server. Id. 6:11-19. This list is "updated" and re-sorted regularly. Id. 6:21-23, 9:15-23.

172. A person of ordinary skill in the art would have understood that "regularly" updating the list requires "regularly" sending polling/pinging messages to the websites to collect current data. For example, Kumar teaches that RSD metrics can be collected "before any transaction takes place" so that when a transaction occurs the list is already established and up-to-date. Kumar 5:58-65. Further, to maintain reliable rankings, a person of ordinary skill in the art would have been motivated to send polling

messages "periodically" and without an instruction from a user as claimed because it was well accepted in the art to implement repeating operations periodically such that the system remains current on a predictable schedule. See supra ¶¶137, 167.

173. Each of Salam, Loghmani, and Kumar relates to systems and methods for retrieving information on a network and delivering that content in response to a user's request. After all, both Salam and Kumar recognize and seek to address the same fundamental reality: some web locations are better than others for delivering content to a user. In Salam the "quality" of sources is based on, among other things, "statistics" about the quantity and quality of results produced in response to prior user requests. See, e.g., Salam, 9:35-40, 15:20-24, 20:22-30. In Kumar, the "optimal" server website is the one that "is capable of giving the fastest response to a user's request." Kumar, 7:13-15.

174. A person of ordinary skill in the art would appreciate that the concept of source "quality" described in Salam would encompass more than strictly the quantity and quality of results produced. Salam, 15:20-22 (referring to "the number, relevancy, and quality" of results, indicating that "quality" encompasses more than simply numeracy and relevancy). In

particular, the person of ordinary skill in the art would understand that the "quality" of sources would likely encompass the speed with which those sources produced those results.

175. With this understanding, a person of ordinary skill in the art would have been motivated to seek out techniques for ranking sources by response time. And a person of ordinary skill in the art would find such techniques in Kumar, which teaches how to identify an "optimal site" "that is capable of giving the fastest response to a user's request." Kumar, 3:18-19.

176. In Kumar, the system selects an optimal server from multiple "replicated servers," which "contain the same information." Id. 1:26-36. While the sources in Salam are not "replicated" in the sense that they do not contain identical content, the sources may nonetheless contain the "same information." Specifically, for sources that have been selected for inclusion in the "sources database," there is a likelihood that these sources will produce the same or similar answers to a given query. See Salam 23:24-33 (describing selection of new sources that satisfy "minimum criteria" of results produced). For example, for a query of "What is the capital of Virginia?," each of the highest-ranked sources is likely to produce the same answer of "Richmond." In that sense, each of the sources contains the "same

information" that is equally useful to the querying user. Similarly, although the sites in Kumar are replicas, there are nonetheless reasons to rank the replicas because they may have different response times.. Some provide the information to be retrieved faster than others. For this reason, Kumar teaches ranking the sites by response time.

177. Thus, once a person of ordinary skill in the art has utilized the techniques of Salam to assign the highest rankings to sources that are all likely to produce useful responses, the person of ordinary skill in the art would be motivated to utilize the techniques of Kumar to rank those sources according to which will produce a relevant result as quickly as possible.

178. Therefore, it is my opinion that the combination of Salam, Loghmani, and Kumar teaches, discloses, or would have suggested all of the elements of claims 7 and 15.

VIII. GROUND 3: THE COMBINATION OF LOGHMANI AND MESSERLY

A. Opinions Regarding Loghmani

179. In addition to the teachings of Loghmani discussed above in connection with Ground 1, it is my opinion that Loghmani further discloses accessing multiple web sites to obtain an information to be retrieved, and parsing the results from web sites to identify the location of relevant

information to be retrieved (and which information is presented to the user via text-to-speech synthesis). Loghmani, 7:63-8:8 ("A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers. For example, the TII 66 can instruct a telephone user to select one of a preselected number of Internet sites to which access is desired by selecting from pre-recorded menu options. The user responds by stating or dialing a digit corresponding to the selected menu option. . . . TIM can handle multiple connections at any given time."). The "PSTN" is the Public Switched Telephone Network (see, for example, '402 Patent, 5:67), which means that "incoming calls from the PSTN" are telephone calls.

180. Loghmani discloses a Telephone Interface Module (TIM), which "performs speech recognition [and] speech-to-text conversions" and, further, discloses a Data Presentations Module (DPM), which "converts commands received from the TIM 110 into electronic commands such as HTTP requests" that are submitted to a web site to retrieve data items to be presented in response to user queries. Loghmani 8:9-25. In an example described by Loghmani, the DPM "uses an input script to provide the URL

for [an] online bookshop and contacts the online bookshop" to perform a "context-sensitive search of subject matter in [the bookshop's] database." Loghmani 10:10-25. The online bookshop searches items that are close to the spoken query and transmits the information back to the user. Loghmani 10:39-43.

181. In my opinion, the only feature of '402 Patent Claim 1 not explicitly taught by Loghmani is Claim 1.5, which relates to what happens when the information to be retrieved is not found at the first site. See discussion supra ¶¶108-112.

182. Loghmani also teaches the "content descriptor" limitation of Claims 2 and 9.3. "To communicate with the above-mentioned pre-selected sites, the DPM 112 uses scripts to translate user inputs (e.g., DTMF tones or speech that has been converted to text by the TIM 110) into input information (e.g., electronic commands such as HTTP requests and site-specific queries) for these sites." Loghmani 8:15-20. "[T]he DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller (block 156)." Id. 10:39-43. Each site therefore has its own "site-specific" script, which "pre-defines a portion of said web site containing said information to

be retrieved," such as the title of a book sought by the user's command. See the discussion of the DPM (Data Presentations Module) in Loghmani at 8:9-42: "The DPM 112 parses the HTML-type information returned by a site (e.g., an online shop or database) via the IIM and posts queries to the site query pages provided to the IIM 114. By parsing the information in the HTTP replies, important data items are extracted and can be reported to the customers."

B. Opinions Regarding Messerly

183. I have been informed by counsel that Messerly (Ex. 1012) is prior art to the '402 Patent using either the February 4, 2000 or the September 15, 2000 priority date. I have reviewed Messerly and provide herein my opinions on the teachings of Messerly. The opinions provided herein do not necessarily represent my entire understanding of Messerly.

184. Messerly teaches a system for analyzing the contents of electronic documents, such as web sites, to determine their degree of similarity to another electronic document and identify those electronic documents that are "substantially identical". Messerly teaches that this method can provide a useful fallback, or fault tolerant process, when a link, URL, or site is unavailable or otherwise not available in a "timely fashion":

"when a uniform resource locator (URL) associated with the hyperlink cannot be resolved or cannot be resolved in a timely fashion, one of the identicals of the desired web page documents may be returned to provide a requesting party with the desired content." Messerly, Abstract.

185. The preferred method of determining the similarity of electronic documents (i.e., web sites) in Messerly is to compute weights for each document term (basically, a word, word stem, or other item used to store words or phrases as tokens) and use these weighted terms to calculate a similarity score between any two documents. A normalized dot product is used for the similarity score. Although Messerly doesn't mention the vector space model, anyone who had taken my class on information architectures or even heard the introduction to an introductory course on information retrieval would have recognized this approach to computing document similarity. See, e.g., Salton; Messerly Fig. 9, 9:3-10:61.

186. Documents above a threshold are added to an "identicals list" for a given document. Given that the method is based on term similarity scores between documents, it would be obvious to one of ordinary skill in the art to rank the identicals list by similarity score and access the sites in that order. One of ordinary skill in the art would have recognized that this is the way the

vector space model works, and how information retrieval systems worked in general. After all, web searchers from the earliest days of web search engines and e-commerce systems would often scroll down through results from multiple sites, and any system that accessed multiple sites would necessarily access them in some order and most likely would be programmed to apply a more rigorous search after an initial ranking, just as Lisa's and my SCISOR system did with news articles in the late 1980's. See supra ¶¶48-49.

187. Since the whole idea of Messerly is to retrieve content that is similar to the unavailable site, the "substantially identical" site would therefore also have been obviously responsive to the user request.

188. In addition to suggesting the "ranking" features of the claims, Messerly teaches the polling features. As noted above, the whole point of the Messerly invention is to provide a fallback if a URL doesn't respond in a reasonable amount of time. Messerly, Abstract. The ranking and re-ranking of web sites is done as a "background process" (id. 6:55-59) and could also have been done as part of "link repair" when a site fails to respond within a designated period of time. Id. 10:62-11:23.

189. Because Messerly, like the '402 Patent, is directed to retrieving

information from web sites, Messerly is pertinent to a problem to be solved by the claimed invention in the ’402 Patent.

190. A more complete mapping of the teachings of Messerly against the ’402 Patent claims can be found in the discussions below regarding each ground and in the summary included in Section XI below.

C. Claim 1

191. It is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 1.

1. Claim 1[Preamble]:

“A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:”

192. Loghmani teaches a method for retrieving information, such as information about book titles from a shopping web site, by uttering speech commands into a voice enabled device, such as a phone. See Loghmani, Abstract.

2. Claim 1.1:

“providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent

speech recognition engine and to at least one speech synthesis engine;"

193. Loghmani teaches a computer operatively connected to the Internet and connected to a speaker-independent speech recognition engine and a speech synthesis (i.e., text-to-speech) engine. See Loghmani, Abstract, 8:57-9:7, 8:4-5 ("TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary"). See also my discussion supra ¶¶89, 100 (regarding speaker-independence, Gone Wid Da Wind etc.).

3. Claim 1.2:

"providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;"

194. Loghmani teaches a voice-enabled device (e.g., a phone) connected to a computer, configured to receive speech commands: "TIM [Telephone Interface Module] 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary". Loghmani 8:4-5. See also Loghmani 14:19 ("converts said spoken queries to commands"); Fig. 10.

4. Claim 1.3:

"providing a speech command to said speaker-independent speech recognition engine, . . ."

195. See Claim 1.2 above; Loghmani 14:19 ("converts said spoken queries to commands").

5. Claim 1.4:

"said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,"

196. Loghmani teaches that the online shopping system uses spoken to commands to generate HTTP requests to access a web site (e.g., bookbuys.com) to obtain information on titles (such as Gone With the Wind) based on a spoken command. Loghmani Fig.2, 8:57-9:7.

6. Claim 1.5:

"said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed;"

197. As discussed above for Claim 1.4, Loghmani teaches accessing a web site (e.g., bookbuys.com) to retrieve information based on a spoken request.

198. As discussed supra ¶¶184-186, Messerly teaches first

accessing a first web site of a plurality of web sites and, if information to be retrieved is not found at the first web site, sequentially accessing a plurality of web sites until the information is found or until each of the plurality of sites has been accessed. For example, Messerly teaches that if a site fails to respond within a given time limit, "one of the identicals" of that site can be accessed to retrieve the requested information. Messerly, Abstract. Such a failure may occur due to the constantly changing nature of the Internet. Messerly 1:55-2:10. The "identicals" are sites that have been deemed to be "substantially similar" to the first site based on analysis of the content of the sites. See Messerly 4:9-12, 9:3-59. Although not required by Claim 1.5 because of the disjunctive "or," if the second accessed web site were also unavailable, it would have been obvious to select a third web site from Messerly's list of identicals until the information to be retrieved is found or all web sites in the list of identicals are accessed.

199. The description of "sequential access" (along with the "in order of rankings" part of Claim 9) in the '344 Application is:

> "The information retrieval computer associates the computer-readable data from the voice server with information sources, which the information retrieval computer contacts with an information request. Multiple information sources may be

> prioritized by the information retrieval computer so that if any one source is unavailable, other sources can be quickly contacted."

'344 Application, p. 4, ll. 3-8. Compare the above to Messerly:

> "when a uniform resource locator (URL) associated with the hyperlink cannot be resolved or cannot be resolved in a timely fashion, one of the identicals of the desired web page documents may be returned to provide a requesting party with the desired content."

Messerly, Abstract.

200. In my opinion, the above teachings of Messerly (and Messerly offers much more) more completely describe the sequential-access limitations of the Challenged Claims than the '344 Application: the '344 Application merely states that sources are prioritized and that "other sources can be quickly contacted", while Messerly additionally gives numerous details about how the ranking or priority can be determined. Should the Board not accept my opinion that Messerly therefore fully teaches the "sequential access" features, these features would at least have been obvious to one of ordinary skill in the art.

201. Further, in my opinion it would have been obvious to one of ordinary skill in the art to combine the online information-retrieval system described in Loghmani with the techniques described in Messerly for

identifying web sites containing similar information and sequentially accessing such sites in the event information cannot be retrieved from a first web site, and there would have been a reasonable expectation of success in doing so. After all, Messerly addresses a well-known problem of the day, i.e., to provide a similar site in the event that one site, for example, becomes unavailable. Loghmani addresses a related problem – that of searching for items to buy, such as books. In March of 2000, millions of searchers would visit book sites, such as amazon.com, barnesandnoble.com, or borders.com, to look for books, like the "Gone with the Wind" example in Loghmani. The obvious approach when such an item is not found is to look at a similar place; hence it would have been obvious to one of ordinary skill in the art to use a method such as Messerly's method for identifying substantially identical sites and creating a list of identical sites to provide sequential access to a search system such as Loghmani's.

7. Claim 1.6:

"said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and"

202. Loghmani teaches this claim element. See Loghmani 8:5 ("text to speech conversion").

8. Claim 1.7:

"said speech synthesis engine transmitting said audio message to said users via said voice enabled device."

203. Loghmani teaches this element. See e.g., Loghmani 8:44-46 ("The voice enabled system can provide a fully integrated solution for online shopping"); 8:5 ("text to speech conversion"); 6:61-65 ("the Voice-enabled Shopping cart 64 is operable to generate hidden tags to convert Search results and other information provided by the online shop 20, which can be in a text or HTML format, for example, to an audio message that can be provided to a telephony customer.")

D. Claim 2:

"The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved."

204. Loghmani teaches a content descriptor pre-defines a portion of a web site containing information to be retrieved. See, for example, Loghmani 8:9-32 ("the DPM uses site-specific scripts which help to identify

. . . where important data elements reside."); 10:39-43 ("[T]he DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller . . . ."); 12:8-12 ("extracting said portion of said information using scripts corresponding to respective said data applications to indicate where said portion of said information is located in markup language-type pages with only non audio tags received therefrom").

205. Note that "pre-defining" in the context of the '402 Patent includes pre-defining a script that locates information using an "extractor" – see discussion supra in Ground 1 at ¶¶117-125 – the '402 Patent does not provide any written description of a content description file containing the actual location of the information. Rather, the content description files are scripts that tell the extraction agent where to find the information, just as in Loghmani: See especially "This content description the [sic] directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data." '402 Patent, 7:21-24.

206. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 2.

E. Claim 3:

"The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed."

207. Messerly suggests the additional limitations of this claim. Messerly teaches "when a uniform resource locator (URL) associated with the hyperlink cannot be resolved or cannot be resolved in a timely fashion, one of the identicals of the desired web page documents may be returned to provide a requesting party with the desired content." Messerly, Abstract. It would have been obvious to one of ordinary skill in the art to rank the identicals (i.e., substantially similar sites) using a content-based comparison of terms and a resulting "similarity score" for each identical, which represents the degree of similarity between the documents. Messerly, 9:29-44. To rank these documents in order of this similarity score would have been the next logical step to make sure that when an "identical" was delivered to a user, it would be the identical having the closest (e.g., most similar) document to what the user requested, which is the stated goal of Messerly. Messerly Abstract.

208. Should the Board accept the argument that my client expects Patent Owner to make—i.e., that the '402 Patent is entitled a priority date

of Feb. 4, 2000, and that the ’344 Application provides adequate written description support for the Challenged Claims, I believe that Messerly at least would have suggested, if it does not disclose, the “ranking” features of the claims.

209. With respect to “ranking”, the words “rank” and “ranking” appear 47 times in the ’402 Patent, including 21 mentions in the disputed claims. In the ’344 Application, there is no mention of ranking—only the statement that sources can be “prioritized”. As noted above, Messerly gives extensive detail on the analysis of sources and computation of similarity scores, which is used to determine which sources will be included in the list of identical web sites, which is then used in the event that a site fails to respond. While Messerly doesn’t use the word “ranking” in the body of the description either, Messerly does cite a relevant reference about “ranking” (Harman et. al.) and one of ordinary skill in the art would have understood that it would be obvious to rank documents based on a similarity score computed using the vector space model as taught by Messerly.

210. Because Loghmani and Messerly are both directed to retrieving information from web sites, and Messerly specifically implements a fallback method for sequentially accessing sites based on their similarity scores to

one another, it would have been obvious to one of ordinary skill in the art to combine the spoken language retrieval (and output) features of Loghmani, as well as the associated parsing, with the sequential access features of Messerly and there would have been a reasonable expectation of success in doing so.

211. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 3.

F. Claim 4:

"The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking."

212. See the discussion for Claim 3 above. It would have been obvious based on Messerly to rank the documents (web sites) similarity to a given document, and it would be obvious to first access that the top-ranked site (i.e., that with the highest similarity score).

213. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 4.

G. Claim 5:

"The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings."

214. Messerly would have suggested the additional limitations of this claim. As discussed supra ¶188, the scoring and re-scoring of web sites is done as a "background process" (Messerly 6:57-58) and can also be done as part of "link repair" when a site fails to respond within a designated period of time. Id. 10:62-11:23. The "background process" "locates changes in content on web sites". Id. 6:58. Because the site that's being compared (e.g., the site that is or will be unavailable at some point) must be the one that has the information that's being retrieved, and the other sites in Messerly are deemed to be substantially similar in content to that base site, Messerly would have suggested that the crawler is ranking and re-ranking based on the content that's being sought by the user. Additionally, if a crawler were to identify a new site with a similarity score above the threshold, that site would be added to the list of identicals and ranked based on the similarity score of that new site as compared to the scores of the existing "identicals."

215. In other words, given that Messerly teaches comparing sites based on their content as expressed in term similarity, it would have been obvious to one of ordinary skill that any additional sites sequentially accessed would have been similar in content to the first site (i.e., in Messerly, the site that becomes unresponsive or the first site sequentially accessed). For this reason, it would have been obvious to one of ordinary skill that each time Messerly's system crawls, the ranking with respect to every other site is adjusted based on term similarity, which is also similarity to any given query (a site that is similar to a site that would have been requested or retrieved for a given query is also similar to that query, so the most similar sites for a given crawl are also the sites most likely to have the information to be retrieved).

216. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 5.

H. Claim 6:

"The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved."

217. See the discussion of Claim 5 above. I have been informed by

counsel that Patent Owner has asserted in its infringement contentions that crawling a web site to create an index meets Claim 6's limitation of "periodically polling each said web site to determine whether the web site contains said information to be retrieved." See Ex. 1006. For purposes of my analysis, I have applied such a claim interpretation. Messerly's system includes a "web crawler" that "crawls web sites as a background process" and, in doing so, "enables the index 38 to be incrementally updated." Messerly 6:55-63. Messerly's web crawler "locates changes **in content on web sites**" and thus "determines whether the web site contains information to be retrieved". Ibid (emphasis added). One of ordinary skill in the art would have understood that a crawler that indexes in the "background" would operate periodically, just as most search engine crawlers would have periodically updated their indexes at that time. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 6.

I. Claim 8:

"The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites."

218. Messerly teaches the additional limitations of this claim. Messerly discloses "[t]he web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document." Messerly, 6:61-66. Messerly thus teaches the feature of "finding new web sites" as claimed, and because, as discussed supra ¶¶184, 214-217, it adds these sites to the catalog of potential "identicals", the reference teaches adding the new sites to "said plurality" (i.e. those that might be retrieved when seeking information from a similar site).

219. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 8.

J. Claim 9

220. It is my opinion that the combination of Loghmani and Messerly also teaches, discloses, or would have suggested all of the elements of claim 9.

1. Claim 9[Preamble]:

"A system for retrieving information from web sites by uttering speech commands into a phone and for

providing to users retrieved information in an audio form via said phone, said system comprising:"

221. See Ground 3, Claim 1[Preamble].

2. Claim 9.1:

"a computer, said computer operatively connected to the internet and to at least one phone; at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer; at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;"

222. See Ground 3, Claim 1(i).

3. Claim 9.2:

"a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;"

223. Messerly teaches this limitation. See, e.g., Messerly 4:9-12 ("The exemplary embodiment of the present invention described herein builds a database containing sets of substantially identical data objects, such as web pages."), 6:34-45 (a "catalog" stores "property information regarding web page documents . . . including the uniform resource locator (URL) for the document.").

4. Claim 9.3:

"a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;"

224. See Ground 3, Claim 2.

5. Claim 9.4:

"a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;"

225. See Ground 3, Claim 3.

6. Claim 9.5:

"said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;"

226. See Ground 3, Claim 1.3.

7. Claim 9.6:

"said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;"

227. See Ground 3, Claims 1.4 and 1.5.

8. Claim 9.7:

"said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;"

228. See Ground 3, Claim 5.

9. Claim 9.8:

"said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and said speech synthesis engine further configured to transmit said audio message to said users via said phone."

229. See Ground 3, Claims 1.6 and 1.7.

K. Claim 10:

"The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone."

230. Loghmani teaches the additional limitations of this Claim. For example, Loghmani (which teaches a voice-driven, potentially telephony-based system throughout), states "The TII 66 allows customers to access an Internet or online shop using plain old telephone service (POTS) telephones, computers or other telecommunications devices." Loghmani 7:56-59. "The

configuration depicted in FIG. 16 supports online shopping access by telephone 108 and user computers 172 employing VOIP." Id. 10:62-64. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 10.

L. Claim 11:

"The system of claim 9 wherein said internet is a local area network."

231. Note that "said internet" refers in claim 9 to "said computer operatively connected to the internet and to at least one phone" and has no other antecedent basis. Therefore this claim merely requires that said computer, i.e., the computer that also accesses web sites, is also connected to a LAN. Loghmani teaches, "A user computer 12 (e.g., a personal computer or PC) having browser software 14 can connect via the public switched telephone network (PSTN) or other network." Notwithstanding that it would have been obvious to one of ordinary skill that most computers would have been connected to a LAN, Loghmani teaches that it was possible at the time to connect to Internet applications using "plain old telephone", or using some "other network", which could obviously have been a LAN. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 11.

M. Claim 12:

"The system of claim 9 wherein said internet is a wide area network."

232. The Internet is a wide area network. Presumably "the internet" (lower case) refers to a broader genus—otherwise I believe this claim is invalid as it simply adds nothing to Claim 9. In any case, Loghmani and Messerly both teach computers used for accessing web sites that are connected to the Internet, which is a WAN. Should the Patent Owner somehow successfully argue that "said internet", which also must be "the internet" (lower case) of Claim 9, must for some reason be a WAN that is not The Internet (which, while not identical to the antecedent, must also be the Internet), then it would have been obvious, for the same reasons given above for Claim 11, to have a computer that is connected to the Internet and also to a WAN, given Loghmani's mention of "other network". Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 12.

N. Claim 13:

"The system of claim 9 wherein said internet is the Internet."

233. Both Loghmani and Messerly teach the additional limitation of

this claim. As I have noted, “said internet” can only refer to “the internet” so the claim is adding the stipulation that “the internet” must be “the Internet”. With respect to Ground 3, and as noted above, Loghmani and Messerly both teach computers that access information over the Internet, that are also connected to the Internet, and therefore this claim, to the extent that it is a claim, would have been obvious given Loghmani and Messerly. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 13.

O. Claim 14:

“The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.”

234. Claim 14 requires that establishing or adjusting site rankings occurs “when instructed by said user to access said plurality of web sites to retrieve said information.” The “said user” referred to in this claim is the user that submitted the query and/or requested information in the first instance. Messerly teaches at 6:55-7:4 that a web crawler, working as a “background process”, drives the disclosed method of organizing “identical” sites by similarity. See claims 3-8. Messerly also teaches “link repair” when a site

fails to respond within a designated period of time. Messerly 10:62-11:23. As the "link repair" is initiated by the browser, this repair obviously could have been initiated by a user activity, such as the user requesting the link now needing repair. Further, Messerly teaches "[a] number of optimizations may be applied to the above described approach…. A further optimization is to perform calculation of identical documents only upon demand (i.e., after a broken link arrives)." Id. 11:28-38. If the calculation were performed when the broken link arrives, the ranking would be occurring when the user is instructing the system to retrieve the requested document.

235. Therefore, it is my opinion that the combination of Loghmani and Messerly teaches, discloses, or would have suggested all of the elements of claim 14.

IX. GROUND 4: THE COMBINATION OF LOGHMANI, MESSERLY AND CULLISS

A. Opinions Regarding Culliss

236. I have been informed by counsel that Culliss (Ex. 1013) is prior art to the '402 Patent using either the February 4, 2000 or the September 15, 2000 priority date. I have reviewed Culliss and provide herein my opinions on the teachings of Culliss. The opinions provided herein do not necessarily represent my entire understanding of Culliss.

237. Culliss teaches a system aimed at improving search results by monitoring the activity of users and sites and altering the ranking of those sites (referred to as "articles") based on a variety of factors. "The invention operates by assigning scores to articles under key term components in an index. As users enter search queries and select articles, the scores are altered according to, among other things, the amount of time spent inspecting an article, whether the article is the last one inspected, how many articles are ranked higher than the article, how many articles have been previously inspected by the user, and whether an advertising banner was selected by the user." Culliss, Abstract.

238. In addition to traditional ranking methods (based on words), Culliss includes "volatility" scores that include factors such as the age of an article, "the length of time the article has been subjected to user selection" (Culliss 4:12-18), whether "the article no longer exists at a certain URL or other location" (id. 4:5), and numerous other factors. The rankings can be adjusted when these factors change, or "periodically" when cookies are downloaded. Id. 29:27-30.

239. Culliss teaches that the cumulative effect of the ranking is to combine such volatility measures with the adjustment to rankings based on

how well an article responds to a query. For example, "[a]s users enter search queries and select articles, the scores are altered. The scores are then used in subsequent searches to organize the articles that match a search query." Id. 3:4-7.

240. As discussed under Ground 3, the combination of Loghmani with Messerly would have rendered obvious Claims 1-6 and 8-14 to one of ordinary skill in the art. Culliss adds additional, specific detail and discloses a compatible style of polling to that taught in Messerly. Specifically, both Culliss and Messerly analyze documents using term weights. Culliss applies this analysis primarily to determining the relevance of documents to a query, while Messerly uses the weights to determine document similarity. Culliss makes explicit what I have opined would have been obvious to one of ordinary skill given Messerly – that is, that ranking documents based on relevance goes hand in hand with using similarity to rank documents that are responsive to a query.

241. Because Loghmani, Messerly, and Culliss are all directed to web searches based on user queries, which is also the subject matter of the '402 Patent, and because Culliss would have added additional ranking features that complement and are compatible with those taught by Messerly, in my

opinion it would have been obvious for one of ordinary skill to combine the spoken language and parsing (i.e., content descriptor) features of Loghmani with the combined ranking and polling disclosures of Messerly and Culliss as discussed below, and there would have been a reasonable expectation of success in doing so.

242. A more complete mapping of the teachings of Culliss against the '402 Patent claims can be found in the discussions below regarding each ground and in the summary included in Section XI below.

B. Claims 3 and 4

Claim 3: "The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed."

Claim 4: "The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking."

243. Messerly teaches if the web browser is unable to retrieve the requested content from the first web site, the browser attempts to access a second web site that has been determined to contain, based on a calculated "similarity value," substantially similar information to the first web site. See, e.g., Messerly, 11:2-23 discussion supra ¶¶184-188, 198-201.

244. Culliss teaches ranking a plurality of web sites (i.e., "articles") based on responsiveness/relevance to a user's query, among other ranking factors. Culliss, 5:5-9, 6:28-41. Like Messerly, Culliss teaches scoring matching web sites based on key terms within the web site. Compare Messerly 9:36-39 ("The document similarity value [e.g., similarity score"] is initially calculated as the dot product of the weight for the term in the first web page document with the weight for this term in the second document") with Culliss 5:19-20 ("a key term score is associated with each article for each of the key terms"). Culliss uses these scores to create (and, subsequently, to modify) a ranking of web sites. One of ordinary skill in the art would have understood that such ranking based on matching sets of weighted terms was a widely practiced method of information retrieval that was in use by most web search engines, and that variations on such methods were widespread and often interchangeable. Note that Culliss uses the terms "article" and "web site" interchangeably. See Culliss, 5:5-9.

245. Culliss "uses [] search activity to rank information available over the Internet through an evolutionary process." Id. Abstract. After data is collected relating to user search activity, "[f]or the next search by either the same or a different user, the invention could then rank the matched articles

by using the key term scores[.]" Id. 6:29-31. The ranking may be based on the scores assigned to the web sites and the key terms located therein, and determines the order that sites are displayed to the user. Id. 6:37-40 ("The matched articles can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first"); see also id. 7:54-56.

246. In my opinion, one of ordinary skill in the art would have been motivated to combine Messerly's techniques for identifying substantially similar web sites (e.g., using a similarity score) and sequentially accessing the substantially similar web sites with Culliss's teaching of a ranked list of web sites based on scores associated with aspects of the sites.

247. A person having ordinary skill in the art would have been motivated to implement the functionalities in Loghmani's system for using a spoken command to access one of a plurality of online web sites using Messerly's list of identical web sites (as described above), and further using the score ranking feature of Culliss to rank Messerly's list of identical sites from highest to lowest similarity score such that the highest ranked identical site is accessed first. This combination would access first the most superior identical web from the list of identical web sites for users' requests without

requiring user intervention. Employing the ranking process taught by Culliss to the list of identical sites taught by Messerly would have maximized the chances of the user receiving the information requested, increasing the desirability of the system, and motivating the combination.

248. Moreover, a person having ordinary skill in the art would have been motivated to combine Loghmani with Messerly and Culliss to provide a voice interaction system capable of providing the best answers to user queries. Like Loghmani and Messerly, Culliss teaches techniques for improving the ability to respond to user requests for information. Just as a person having ordinary skill in the art would have been motivated to combine Messerly's teaching of "sequential access" with Loghmani's voice interaction system to improve user experience in the event of an unavailable or non-responsive web page, a person having ordinary skill in the art would have been motivated to combine the teachings of Culliss to rank web pages based on similarity scores of Messerly.

249. Therefore, it is my opinion that the combination of Loghmani, Messerly, and Culliss teaches, discloses, or would have suggested all of the elements of claims 3-4.

C. Claim 5:

"The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings."

250. Messerly explains that the system includes a "web crawler" that "crawls web sites as a background process" and "enables the index 38 to be incrementally updated." Messerly, 6:55-63. The web crawler both (a) "locates changes in content on web sites" that have been previously identified and (b) "locates newly added data objects, such as web page documents." Ibid. One of ordinary skill in the art would have understood that if the web crawler identifies changed or new web page content, features of the web page (e.g., terms within the text of the web page document) would be extracted, tokenized, and used to reevaluate/evaluate the document's similarity score. The updated or new similarity scores would be compared to the threshold, and if sufficient, the updated or new web pages would be added to the identical documents list.

251. Culliss explicitly teaches that rankings are dynamically adjusted for a given query match based on the interactions of users (i.e., other users) with retrieved results. See Culliss, 15:1-23:23; 15:5-12 ("the value (or

volatility of the scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) for a particular matched article can be adjusted or set (either positively, negatively or neutrally) according to the number of other matched articles inspected by the user before and/or after the particular matched article."); 12:58-65 ("the value (or 'volatility') of the scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) can be adjusted or set according to the length of time spent by the user inspecting a matched article (or location related to that matched article) by reading, downloading, viewing, listening to or otherwise inspecting the article."). One of ordinary skill in the art would have understood from these teachings of Culliss that, as these scores determine the ranking of sites, adjustment of scores has the potential objective of adjusting rankings based on user activities, such as the length of time spent examining a page.

252. As I have discussed earlier, one of ordinary skill in the art would have understood that Messerly's approach was meant as an adjunct to searching, and that Culliss teaches the kind of searching using weighted terms that is consistent with Messerly. One of ordinary skill would have understood that different methods of term weighting could be combined (and

had been combined) in numerous search engines, and Messerly specifically discusses "optimizations" and states that other optimizations could be added. Therefore, one of ordinary skill in the art would have been motivated to combine the types of ranking done in Culliss and Messerly to have a more complete and "optimized" search system.

253. Therefore, it is my opinion that the combination of Loghmani, Messerly, and Culliss teaches, discloses, or would have suggested all of the elements of claim 5.

D. Claims 9-14

254. See Ground 3 at Sections XIII(J) – XIII(O) for teachings that Loghmani and Messerly teach these claims.

255. See Ground 4 at ¶¶237-242 for the reasons why it would be obvious to one of ordinary skill in the art to combine Loghmani, Messerly, and Culliss for these claims.

256. Therefore, it is my opinion that the combination of Loghmani, Messerly, and Culliss teaches, discloses, or would have suggested all of the elements of claims 9-14.

X. GROUND 5: THE COMBINATION OF LOGHMANI, MESSERLY, CULLISS, AND KUMAR

A. Claims 7 and 15

[7] The method of claim 6 wherein the computer periodically polls each said web site without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.

[15] The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site.

257. As discussed supra ¶¶214-218 with respect to Ground 3, Messerly teaches periodic polling (in the case of Messerly assuming the Board adopts what I understand is the Patent Owner's position that crawling/indexing comprises polling), and it would have been obvious to perform ranking and re-ranking of identicals, including based on the periodic polling. The combination does not specifically teach ranking or adjusting ranks based on the time it takes a site to respond. However, because Culliss adjusts scores (and therefore ranks) based on the detection of dead links, and response time is measured (i.e. in connection with calculating the time

users spend interacting with sites), it would have been obvious to one of ordinary skill in the art to rank web sites based on response time.

258. Kumar makes the teaching of ranking by response time explicit; in fact, it is the main point of Kumar.

259. Techniques such as site replication, server load balancing, and failover were widely, if not universally practiced in February 2000. See, e.g., Lotus Notes 4.5. Messerly is directed toward one approach to providing an alternative list of sites for a given site—that is, maintaining a list of "substantial identicals" based on site content. Kumar is directed toward maintaining a list of replicas to optimize speed of response. Culliss adjusts ranks based on "dead links" and Messerly teaches adjusting ranks based on changes.

260. These techniques for organizing and ranking sites are complementary and compatible. For example, because Culliss teaches ranking based on "dead links" (or 404 errors) and also teaches measuring the response time in connection with measuring the amount of time spent by a user on an article, it would have been obvious to extend the ranking methods of Culliss by ranking based on terribly slow links using the response time rankings of Kumar.

261. Messerly teaches periodic polling, assuming that background indexing is considered polling, as well as updating based on changes. See discussion supra ¶¶214-218, Messerly 6:56-59.

262. Culliss discloses detecting dead links and specifically teaches adjusting scores (and rankings) based on the detection of dead links and "other similar indictor[s]": "should the method detect that the article no longer exists at a certain URL or other location (such as by the user finding a 'dead link' or by a '404 Error' or other similar indicator), then the value or volatility of the scores which are assigned to key terms, key term components and/or categories for articles may be less (or even negative or negatively adjusted) than if the user had found the article." Culliss, 4:4-11.

263. Each of the necessary polling features (i.e., polling to determine site availability, polling to determine response time, and polling for changes in the location of information) is at least obvious given Messerly and Culliss. Culliss further teaches adjusting the rankings (by way of adjusting scores that are used for rankings) based on site availability, and both teach adjusting rankings based on changes to sites. Culliss teaches that these adjustments can be made "periodically" or based on interaction with users (who may be other users, not the "said" user).

264. What is missing is a teaching of establishing or adjusting rankings based specifically on the combination of the three factors. However, given that one of ordinary skill in the art would have recognized that different ranking methods are possible, it would in my opinion have been obvious for one of ordinary skill to combine the three factors for ranking, and it is therefore my opinion that the combination of Loghmani, Messerly, Culliss, and Kumar teaches, discloses, or would have suggested all of the elements of claims 7 and 15.

XI. CLAIM MAPPING FOR CITED PRIOR ART REFERENCES

265. The discussions above regarding Grounds 1-5 contain numerous citations to portions of Salam, Loghmani, Kumar, Messerly, and Culliss that disclose, teach, and/or suggest elements of the Challenged Claims. As noted above, for ease of reference, I also prepared reference-specific claim mappings that illustrate in one place portions of the prior art references discussed with respect to elements of the Challenged Claims. These illustrative claim mappings, which do not necessarily include every single relevant portion of a reference, are set forth in the sections below.

A. Salam Claim Mapping

U.S. Patent No. 8,185,402 Claims	Salam
1. A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	"Systems and methods for accumulating and displaying information items obtained via a computer network. A user having access to the Internet is provided, via a web site, with a plurality of selectable expert topics. Each expert topic comprises one or more network computer accessible sources of information. The user enters a user search request, selects one of the expert topics, and enters update schedule information. The user search request, a selected expert topic, and update schedule information is stored at a server site. In accordance with the update schedule information, the user search request is provided to the information sources in the selected expert topic. Raw search results from the information sources are received, stored, and processed to eliminate dead links and duplicate items. The processed raw search results are stored as search results comprising a plurality of stored search items. A predetermined subset of the stored search items is selected and communicated to the user." (Abstract) "The knowledge engine then submits the search request to a number of sources it has previously identified on the Internet and retrieves the information available from those sources. For the purposes of this discussion, a "source" is considered to include any computer-accessible site that can be queried

U.S. Patent No. 8,185,402 Claims	Salam
	via a network connection. In other words, a source must provide information and the capability to search that information (whether indexed or via other means).” (5:45-52). “Although the disclosed best modes of the invention will be described in terms of procedural processes, methods, and routines, with respect various user controls such as buttons, check boxes, etc., it will be understood that the invention can be implemented with equivalent computer programming methodologies such as object-oriented programming, and alternative user input devices such as voice recognition of commands and text, gestural input devices, body position detection devices, and other similar computer input technologies now available and being developed for use in connection with networked (wireless or wired) computer systems.” (Col. 12:51-60). “However, it will be appreciated that other forms of notification for receipt of information about their searches and search results are also possible, e.g. notification by a non e-mail type communication delivered to a user’s computer, paging, FTP to a server of a user’s choice, online html displays, voice response, personal digital assistant (PDA) or personal information managers (PIM) connected for communications, cellular telephones, and pagers.” (Col. 10:8-16).

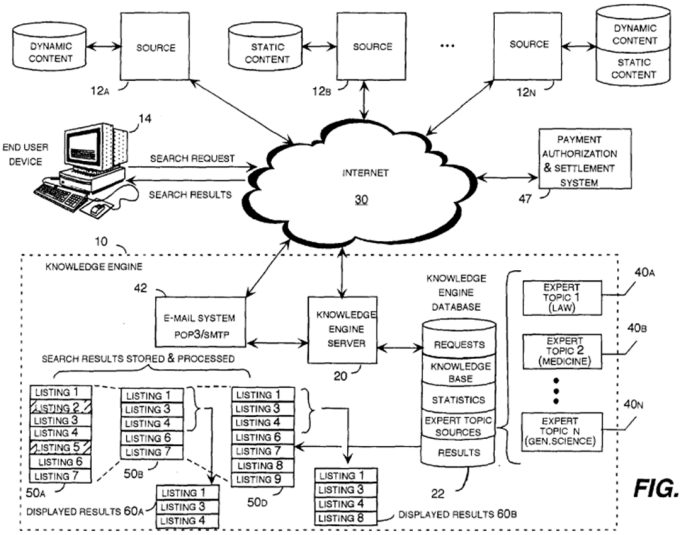
U.S. Patent No. 8,185,402 Claims	Salam
	"Still a further object of the present invention is to provide an INTERNET website with speech processing capability so that voice based data and commands can be used to interact with such site, thus enabling voice-based e-commerce and e-support services to be easily scaleable . . . ." (Col. 6:25-29). "According to one aspect of the invention, knowledge engine 10 is operative to receive a search request from a user via their end user device 14, locate relevant information pertaining to that search request, and transmit that information to the user." (Col. 10:31-35). "Information identifying a plurality of sources is stored in the knowledge engine database 22 as a plurality of data entries, each entry comprising a network address or URL of the source, as well as other associated information such as source quality indication information and expert topic association information. The knowledge engine database 22 further stores information corresponding to one or more expert topics 40a, 40b, and 40n. In accordance with the invention, the sources 12 are preferably grouped according to subject areas, for example expert topics for law 40a, medicine 40b, ... general science 40n. For example, a source that provides pharmaceutical information may be included within the expert topic of medicine. It should be understood that a source l containing information covering multiple disciplines or

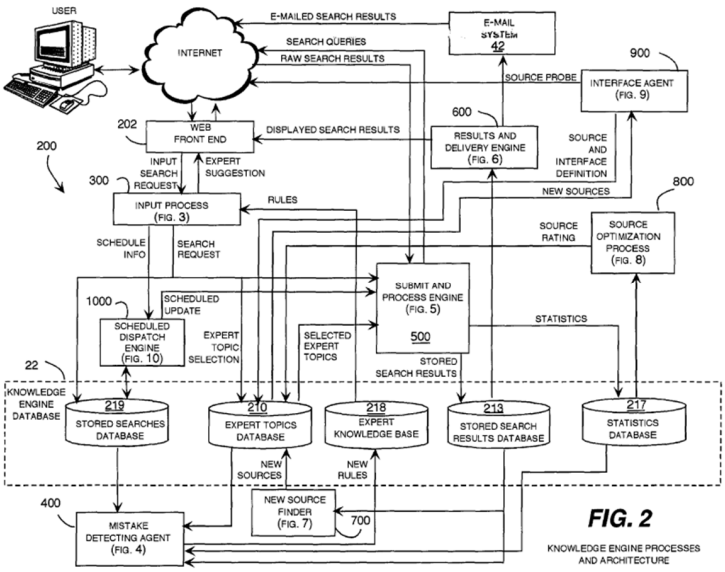
U.S. Patent No. 8,185,402 Claims	Salam
	topics may be included in multiple expert topics, for example, a source that provides information about treatments for cancer may be classified as a source for the “medicine” expert topic 40b as well as for the “general science” expert topic 40n.” (Col. 9:35-54). “Aspects of the present invention may be implemented in a distributed computing environment such as the global computer network commonly referred to as the “Internet” 40. The knowledge engine server 20 is connected to a plurality of information sources 12, shown connected and accessible via the Internet 30, although it will be understood that information sources may be accessed by other communication means such as direct connections, wireless networks, public telephone company ("telco') connections, proprietary networks, and other methods of connecting computers for communications, which are deemed equivalent for these purposes. Sources 12a, 12b, ... 12n are shown as examples of a dynamic source, a static source, and a combined dynamic/static source, respectively. It will be understood that in the example being described, a "source” is typically an Internet connected and accessible computer system that retrievably stores information, which information can be retrieved upon provision of an appropriate inquiry or “query' in a standard HTML form request format, using the

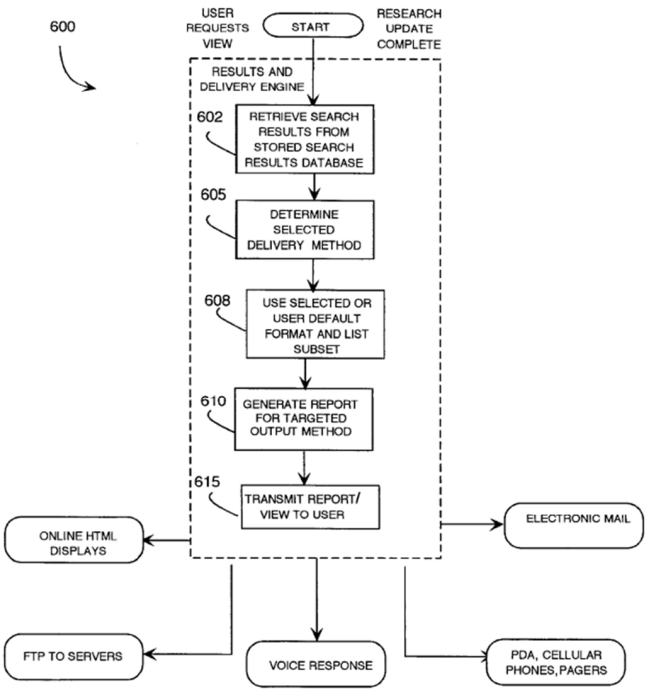
U.S. Patent No. 8,185,402 Claims	Salam
	parameters usually demonstrated by the site's own "search box.' For example, a source could be a web site of a dynamic information source such as CNN.COM, or a search engine such as ALTAVISTA.COM or NORTHERNLIGHT.COM, or a metasearch engine such as DOGPILE.COM, or a site of multiple static web pages made available by an individual or a company or a university where the web pages contain their own searchable index or can be indexed by a third-party. Information identifying a plurality of sources is stored in the knowledge engine database 22 as a plurality of data entries, each entry comprising a network address or URL of the source, as well as other associated information such as source quality indication information and expert topic association information. The knowledge engine database 22 further stores information corresponding to one or more expert topics 40a, 40b, and 40n. In accordance with the invention, the sources 12 are preferably grouped according to subject areas, for example expert topics for law 40a, medicine 40b, ... general science 40n. For example, a source that provides pharmaceutical information may be included within the expert topic of medicine. It should be understood that a source lo containing information covering multiple disciplines or topics may be included in multiple expert

U.S. Patent No. 8,185,402 Claims	Salam
	topics, for example, a source that provides information about treatments for cancer may be classified as a source for the “medicine” expert topic 40b as well as for the “general science” expert topic 40n.” (Col. 9:7-54). “In accordance with the preferred embodiment of the present invention, and as shown in FIG. 1, the search request is received by knowledge engine server 20, processed by reference to selected sources within a selected expert topic 40 (e.g. 40b, for medicine) and a first set of raw search results 50a are stored, assembled, and verified in the manner which will be described. The first set of search results 50a which includes listings 1-7 are processed to obtain a second set of results 50b. It will be noted that the second set 50b does not include listings 2 and 5, which might be dead links for example. A third set of results 60a is selected from the stored second set 50b, e.g. listings, 1, 3, 4, and formatted for communication to the user, typically by e-mail, and are displayed on the user's computer device 14, or by other means.” (Col. 10:48-62). “The predetermined subset of stored search items is then communicated to the user, e.g. by e-mail, pager, cell phone.” (Col. 4:26-28). “The knowledge engine 10 is accessed by users employing end user devices 14 such as personal computers (PC), personal information managers (PIMs) or personal digital assistants

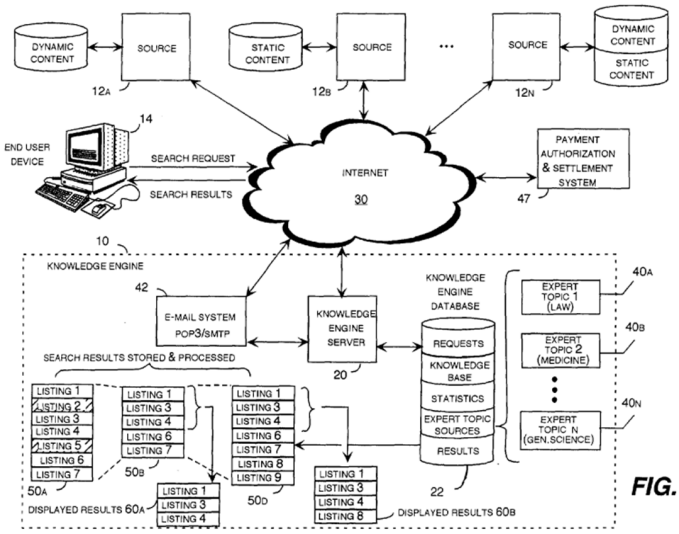
U.S. Patent No. 8,185,402 Claims	Salam
	(PDAS), wireless telephones with computing capability, or other computing devices, all of which are considered equivalent." (Col. 8:48-54).
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;	"The knowledge engine 10 comprises a knowledge engine server 20 constructed with one or more commercially available server computers connected for cooperative operation and data storage." (Col. 8:55-58) "[T]he knowledge engine server 20 is shown directly connected to Internet 30. The direct link is shown to indicate the capability of the knowledge engine server 20 to search the Internet 30 for new sources, access known resources for research processing, and to communicate directly with end users 14." (Col. 9:59-64). "The knowledge engine 10 is accessed by users employing end user devices 14 such as personal computers (PC), personal information managers (PIMs) or personal digital assistants (PDAs), wireless telephones with computing capability, or other computing devices, all of which are considered equivalent." (Col. 8:38-54).

U.S. Patent No. 8,185,402 Claims	Salam
	 *FIG. 1* "Although the disclosed best modes of the invention will be described in terms of procedural processes, methods, and routines, with respect various user controls such as buttons, check boxes, etc., it will be understood that the invention can be implemented with equivalent computer programming methodologies such as object-oriented programming, and alternative user input devices such as voice recognition of commands and text, gestural input devices, body position detection devices, and other similar computer input technologies now available and being developed for use in connection with networked (wireless or wired) computer systems." (Col. 12:51-60) "[A] results and delivery engine 600 retrieves a selected set of search results (e.g. subset *60a* in FIG. 1), and transmits a context sensitive

U.S. Patent No. 8,185,402 Claims	Salam
	summary of the results to the user. In the preferred embodiment of the present invention, results are transmitted to the user via electronic mail via the 30 e-mail system 42. . . . The reader should appreciate, however, that other methods of 35 transmission, such as Internet sites, FTP, pagers, and cellular phones are available." (Col. 15:26-36).  FIG. 2 KNOWLEDGE ENGINE PROCESSES AND ARCHITECTURE

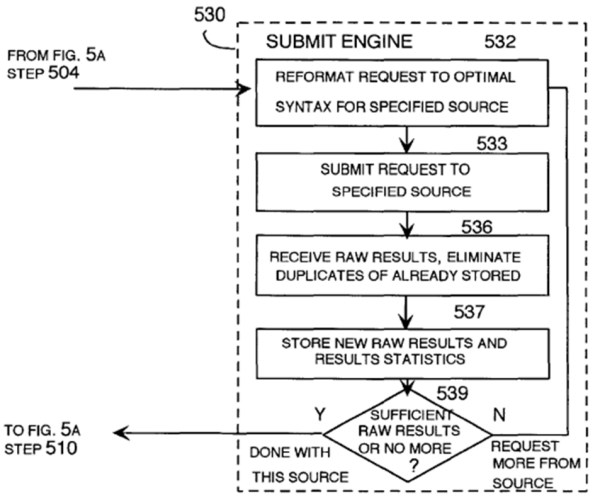
U.S. Patent No. 8,185,402 Claims	Salam
	 ***FIG. 6*** RESULTS & DELIVERY ENGINE "According to one aspect of the invention, knowledge engine 10 is operative to receive a search request from a user via their end user device 14, locate relevant information pertaining to that search request, and transmit that information to the user. For example, in the preferred embodiment of the present invention, a user may use a computer, such as end user device 14, to request the knowledge engine 10 to commence a search of the Internet 30 for some desired information." (Col. 10:31-39). "Refer now to FIG. 6 for a discussion of the

U.S. Patent No. 8,185,402 Claims	Salam
	results and delivery engine 600, which is operative for retrieving search results processed by the submit and process engine 500, as stored in the stored search results database 213, and communicating corresponding lists of results to the user." (Col. 22:47-51). "At step 605, a selected delivery method is determined. For example, the user may have selected to have search results displayed or viewed only via a web browser via online HTML display, via e-mail, via FTP to a user's remote computer, via display to a personal digital assistant (PDA) or personal information manager (PIM) or cellular phone or page, or via voice response delivery." (Col. 22:61-67). "At step 610, the selected N items are then formatted appropriately for the selected delivery method, e.g. by creating a report format for the selected delivery method. Then at step 615 the report or view of the information is delivered to the user." (Col. 23:11-15).
[1.2] providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;	"[T]he knowledge engine server 20 is shown directly connected to Internet 30. The direct link is shown to indicate the capability of the knowledge engine server 20 to search the Internet 30 for new sources, access known resources for research processing, and to communicate directly with end users 14." (Col. 9:59-64).

U.S. Patent No. 8,185,402 Claims	Salam
	"The knowledge engine 10 is accessed by users employing end user devices 14 such as personal computers (PC), personal information managers (PIMs) or personal digital assistants (PDAs), wireless telephones with computing capability, or other computing devices, all of which are considered equivalent." (Col. 8:38-54).  *FIG. 1* "[K]knowledge engine 10 is operative to receive a search request from a user via their end user device 14[.]" (Col. 10:31-35). "[A] user may user a computer, such as end user device 14, to request the knowledge engine to commence a search of the Internet 30 for some desired information." (Col. 10:36-39).

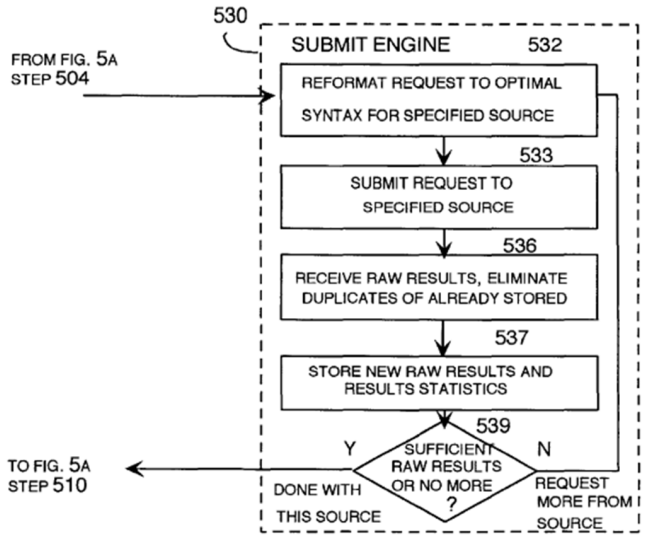
U.S. Patent No. 8,185,402 Claims	Salam
	"Although the disclosed best modes of the invention will be described in terms of procedural processes, methods, and routines, with respect various user controls such as buttons, check boxes, etc., it will be understood that the invention can be implemented with equivalent computer programming methodologies such as object-oriented programming, and alternative user input devices such as voice recognition of commands and text, gestural input devices, body position detection devices, and other similar computer input technologies now available and being developed for use in connection with networked (wireless or wired) computer systems." (Col. 12:51-60).
[1.3] providing a speech command to said speaker-independent speech recognition engine,	"[K]knowledge engine 10 is operative to receive a search request from a user via their end user device 14[.]" (Col. 10:31-35). "[A] user may use a computer, such as end user device 14, to request the knowledge engine to commence a search of the Internet 30 for some desired information." (Col. 10:36-39). "Although the disclosed best modes of the invention will be described in terms of procedural processes, methods, and routines, with respect various user controls such as buttons, check boxes, etc., it will be understood that the invention can be implemented with equivalent computer

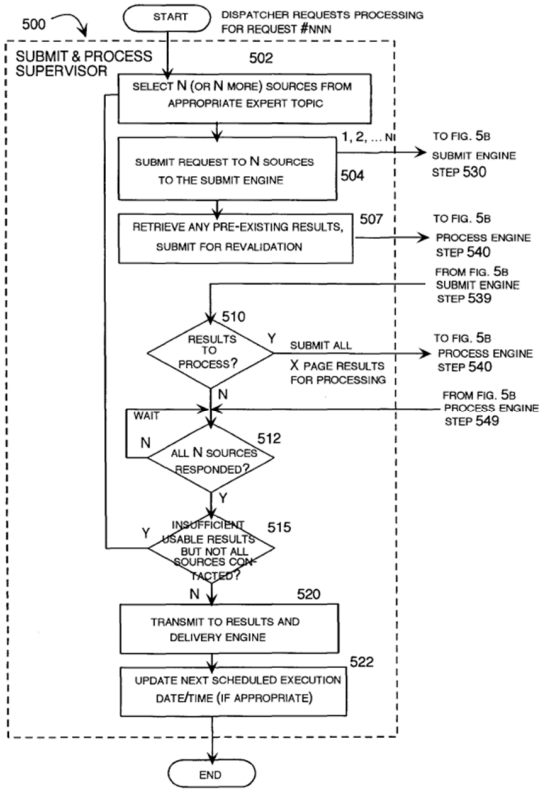
U.S. Patent No. 8,185,402 Claims	Salam
	programming methodologies such as object-oriented programming, and alternative user input devices such as voice recognition of commands and text, gestural input devices, body position detection devices, and other similar computer input technologies now available and being developed for use in connection with networked (wireless or wired) computer systems." (Col. 12:51-60).
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,	"[O]nce a search request is formulated and any desired improvements are made to the search request, the finalized search request is routed as a SEARCH REQUEST to submit and process engine 500." (Col. 14:23-26). "The submit and process engine 500 submits the request to a number of sources within the chosen expert topic in the appropriate syntax as required by each particular source." (Col. 14:37-40). "The submit and process engine 500 submits one or more SEARCH QUERIES to selected sources identified in the selected expert topic, and receives RAW SEARCH RESULTS back from these queries." (Col. 14:53-56). "Starting at step 502, the first step taken is to select one or more sources from the appropriate preselected expert topic associated with the stored search request or requests. At step 504, the request is then submitted to the submit engine 530. The

U.S. Patent No. 8,185,402 Claims	Salam
	submit engine 530 is independently operative to submit the request(s) to one or more specified sources, 1, 2, . . . N as will be described." (Col. 19:65-20:4). "At step 533, the syntactically properly formatted search request is submitted to the specified source, typically via an http request. At step 536, assuming the source responds, raw search results are received." (Col. 20:59-62).  "According to one aspect of the invention, knowledge engine 10 is operative to receive a search request from a use via their end user device 14, locate relevant information pertaining to that search request, and transmit that information to the user." (Col. 10:31-35). "The knowledge engine then submits the search request to a number of sources it has

U.S. Patent No. 8,185,402 Claims	Salam
	previously identified on the Internet and retrieves the information available from those sources. For the purposes of this discussion, a "source" is considered to include any computer-accessible site that can be queried via a network connection. In other words, a source must provide information and the capability to search that information (whether indexed or via other means). According to one aspect of the invention, the knowledge engine can be viewed as a dynamic "index of indexes." For example, the knowledge engine will index the index provided on sites such as CNN.COM, BRITANNICA.COM, and ESPN.COM." (Col. 5:45-57) "It will be understood that in the example being described, a "source" is typically an Internet connected and accessible computer system that retrievably stores information, which information can be retrieved upon provision of an appropriate inquiry or "query' in a standard HTML form request format, using the parameters usually demonstrated by the site's own "search box.'" (Col. 9:21-27) "In the preferred embodiment of the present invention, the user selects an expert topic for the search from an expert topic database 210, a component of the knowledge engine database 22. The reader should appreciate, however, that an expert topic may be selected without user involvement based upon the submitted search terms." (Col. 14:30-35)

U.S. Patent No. 8,185,402 Claims	Salam
[1.5] said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed;	"[O]nce a search request is formulated and any desired improvements are made to the search request, the finalized search request is routed as a SEARCH REQUEST to submit and process engine 500." (Col. 14:23-26). "The submit and process engine 500 submits the request to a number of sources within the chosen expert topic in the appropriate syntax as required by each particular source." (Col. 14:37-40). "The submit and process engine 500 submits one or more SEARCH QUERIES to selected sources identified in the selected expert topic, and receives RAW SEARCH RESULTS back from these queries." (Col. 14:53-56). "Starting at step 502, the first step taken is to select one or more sources from the appropriate preselected expert topic associated with the stored search request or requests. At step 504, the request is then submitted to the submit engine 530. The submit engine 530 is independently operative to submit the request(s) to one or more specified sources, 1, 2, . . . N as will be described." (Col. 19:65-20:4). "At step 533, the syntactically properly formatted search request is submitted to the specified source, typically via an http request.

U.S. Patent No. 8,185,402 Claims	Salam
	At step 536, assuming the source responds, raw search results are received." (Col. 20:59-62).  "[W]hen the submit engine has received a response (and hopefully raw search results from a source, control is passed to decision 510, where the inquiry is made whether there are any results to process." (Col. 20:11-13). "After all N sources have responded or timed-out, at step 515 the inquiry is made whether the searches to the various N sources have resulted in insufficient usable results, but there are still other sources that can be contacted. In accordance with an aspect of the invention, not all possible sources associated with a selected expert topic are searched at the same time. Certain sources, typically lesser quality sources, can be delayed in searching to see if

U.S. Patent No. 8,185,402 Claims	Salam
	the higher quality searches have produced adequate search results. If at 515 not all sources have been contacted and there are insufficient results, control passes back to step 502 to contact other (and possibly lower quality rated) sources." (Col. 20:18-30).  FIG. 5A SUBMIT & PROCESS ENGINE "On the other hand, if a sufficient number of usable search results have been generated, then control passes to step 520, where the results are stored and transmitted to the results and delivery engine 600 (FIG. 6)." (Col. 20:30-34).

U.S. Patent No. 8,185,402 Claims	Salam
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and	"[A] results and delivery engine 600 retrieves a selected set of search results (e.g. subset *60a* in FIG. 1), and transmits a context sensitive summary of the results to the user. In the preferred embodiment of the present invention, results are transmitted to the user via electronic mail via the 30 e-mail system 42. . . . The reader should appreciate, however, that other methods of 35 transmission, such as Internet sites, FTP, pagers, and cellular phones are available." (Col. 15:26-36). "For example, the user may have selected to have search results displayed or viewed only via a web browser via online HTML display, via e-mail, via FTP to a user's remote computer, via display to a personal digital assistant (PDA) or personal information manager (PIM) or cellular phone or page, or via voice response delivery. The appropriate delivery method is determined, so as to establish a format for delivery of the information." (Col. 22:62-23:2). "These search listings or items are stored in a stored search results database 213, a component of the knowledge engine database 22." (Col. 14:62-64). "Refer now to FIG. 6 for a discussion of the results and delivery engine 600, which is operative for retrieving search results processed by the submit and process engine

U.S. Patent No. 8,185,402 Claims	Salam
	500, as stored in the stored search results database 213, and communicating corresponding lists of results to the user." (Col. 22:47-51). "With the foregoing overview of the illustrative operating environment, turn now to FIG. 2 for a discussion of various related processes 200 that implement the preferred embodiment of the invention. These processes are preferably carried out in the knowledge engine server 20, and pass information between them so as to carry out the objectives of the present invention." (Col. 13:6-12). "At step 610, the selected N items are then formatted appropriately for the selected delivery method, e.g. by creating a report format for the selected delivery method. Then at step 615 the report or view of the information is delivered to the user." (Col. 23:11-15).

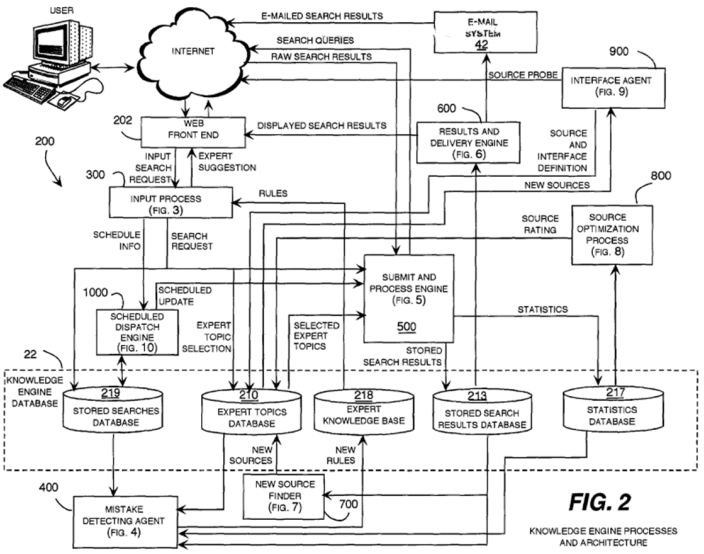
U.S. Patent No. 8,185,402 Claims	Salam
	

FIG. 2
KNOWLEDGE ENGINE PROCESSES AND ARCHITECTURE

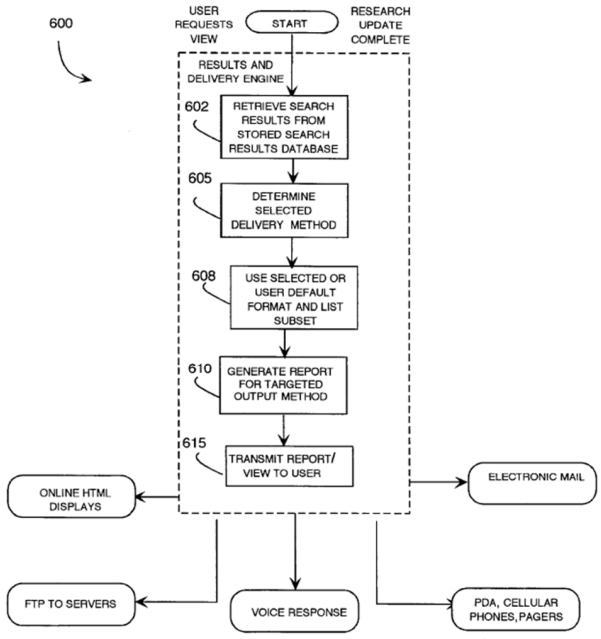


FIG. 6
RESULTS & DELIVERY ENGINE

U.S. Patent No. 8,185,402 Claims	Salam
[1.7] said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	"[A] results and delivery engine 600 retrieves a selected set of search results (e.g. subset *60a* in FIG. 1), and transmits a context sensitive summary of the results to the user. In the preferred embodiment of the present invention, results are transmitted to the user via electronic mail via the 30 e-mail system 42. . . . The reader should appreciate, however, that other methods of 35 transmission, such as Internet sites, FTP, pagers, and cellular phones are available." (Col. 15:26-36). "For example, the user may have selected to have search results displayed or viewed only via a web browser via online HTML display, via e-mail, via FTP to a user's remote computer, via display to a personal digital assistant (PDA) or personal information manager (PIM) or cellular phone or page, or via voice response delivery. The appropriate delivery method is determined, so as to establish a format for delivery of the information." (Col. 22:62-23:2).

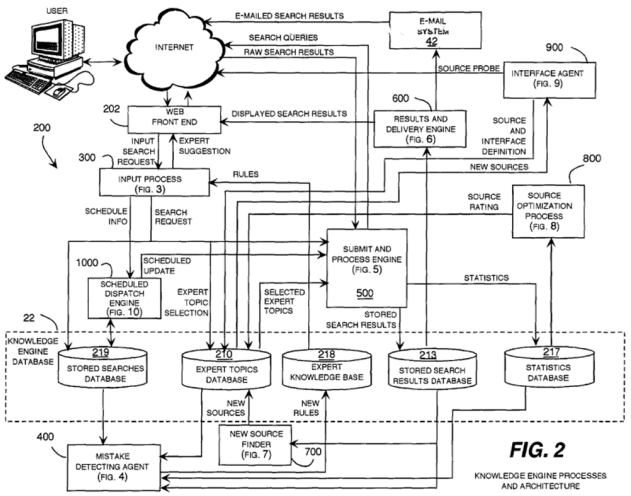
U.S. Patent No. 8,185,402 Claims	Salam
	

FIG. 2
KNOWLEDGE ENGINE PROCESSES AND ARCHITECTURE

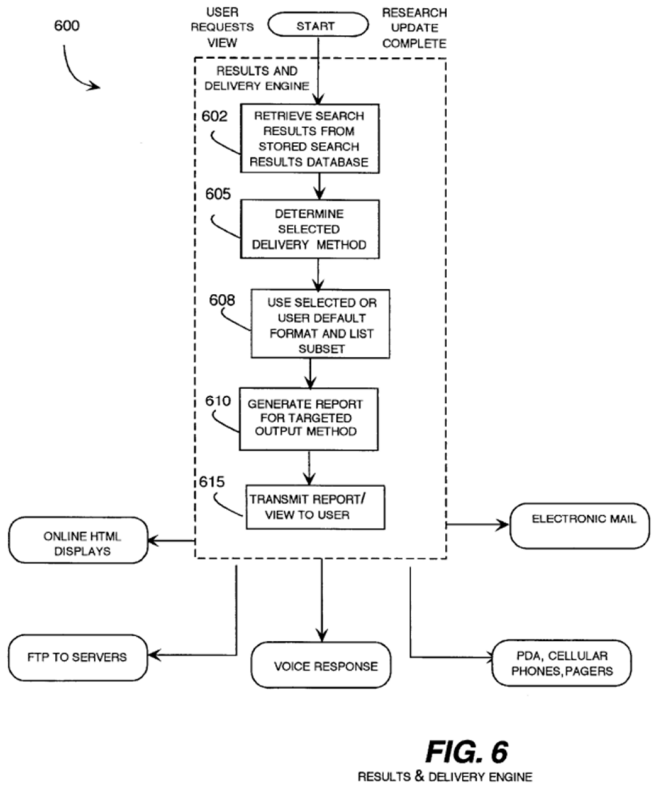
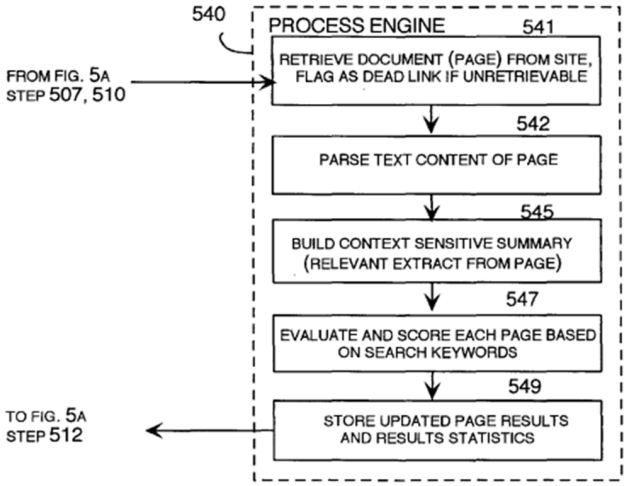


FIG. 6
RESULTS & DELIVERY ENGINE

U.S. Patent No. 8,185,402 Claims	Salam
2. The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	"In addition to retrieving each located listing, the submit and process engine 500 also parses and reviews each listing. By 'parsing,' it is meant that the text in the item or listing is examined to locate the search terms, select a predetermined number of words surrounding the search term, and formulate a display item that includes the search term or terms in context with a predetermined number of words so that the user can evaluate the relevance of the hit." (Col. 15:7-14). "At step 545, a context sensitive summary is constructed, i.e. a predetermined number of words before and after the search terms in the search results are obtained. In other words, the process engine extracts and annotates (i.e., highlights) the portions of the listings that have the highest statistical likelihood of relevance to the search terms for display to the user." (Col. 21:28-35). "The process engine 540 begins when it is passed any pre-existing or pre-stored search results from step 507 in the supervisor, or when results received from the submit engine are passed to it via step 510 in the supervisor. These results are typically in the form of hyperlinks or URLs." (Col. 21:18-22).

U.S. Patent No. 8,185,402 Claims	Salam
	 ***FIG. 5B***
3. The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed.	"All sources are maintained in a sources database containing source address information (e.g. URL), as well as source quality information and expert topic categories, and expert topic relevance. Sources are re-evaluated from time to time, and their associated quality information and expert topic categories revised." (Col. 6:56-62). "Information identifying a plurality of sources is stored in the knowledge engine database 22 as a plurality of data entries, each entry comprising a network address or URL of the source, as well as other associated information such as source quality indication information and expert topic association information." (Col. 9:35-41).

U.S. Patent No. 8,185,402 Claims	Salam
	"According to an aspect of the invention, the source optimization process is operative to rank the quality of a source, and store a rating of the source in association with the source address in the expert topics database 210. In the disclosed embodiment according to this aspect of the invention, each source is flagged in the expert topics database with an indicator representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items." (Col. 25:1-9). "Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches. For example, for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and so on." (Col. 25:22-28). "[O]nce a search request is formulated and any desired improvements are made to the search request, the finalized search request is routed as a SEARCH REQUEST to a submit and process engine 500." (Col. 14:23-26)." "Starting at step 502, the first step taken is to select one or more sources from the appropriate preselected expert topic associated with the stored search request or requests. At step 504, the request is then

U.S. Patent No. 8,185,402 Claims	Salam
	submitted to the submit engine 530. The submit engine 530 is independently operative to submit the request(s) to one or more specified sources, 1, 2, ... N as will be described." (Col. 19:63-20:4). "In accordance with an aspect of the invention, not all possible sources associated with a selected expert topic are searched at the same time. Certain sources, typically lesser quality sources, can be delayed in searching to see if the higher quality searches have produced adequate search results." (Col. 20:22-27). "The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at which each source is applied toward researching within a particular expert topic. As someone proficient in this field would know, the nature, content, quality, and interface specifications for these sources often change over time. Some improve, some deteriorate, some go through minor to major changes in their interface or syntax or output formats. The source improvement process allows the described system to constantly adapt to these changes by monitoring the success of interaction with the sources and reprioritizing its use of each source for an optimal mix of broad content coverage and efficient use of sources to achieve the desired quantity of results for each update. This allows the good sources (defined

U.S. Patent No. 8,185,402 Claims	Salam
	by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the queue, while less successful sources sink toward the bottom." (Col. 24:37-56) "Eighth, a source optimization process 800 rates each source based on the reliability of search results that the source has provided in recent searches. In other words, the sources are rated based on factors including but not limited to the relevance, uniqueness, and quantity of usable item(s) retrieved for recent search requests. Any new or updated rating developed for each source is then formulated as SOURCE RATING information and stored in the expert topic database 210. The source optimization process is shown and described in connection with FIG. 8. In the preferred embodiment of the present invention, the rating developed for each source is then ultimately used in prioritizing that source as used within any and all expert topics it is used in." (Col. 15:61-16:7) "If at 515 not all sources have been contacted and there are insufficient results, control passes back to step 502 to contact other (and possibly lower quality rated) sources." (Col. 20:28-30)

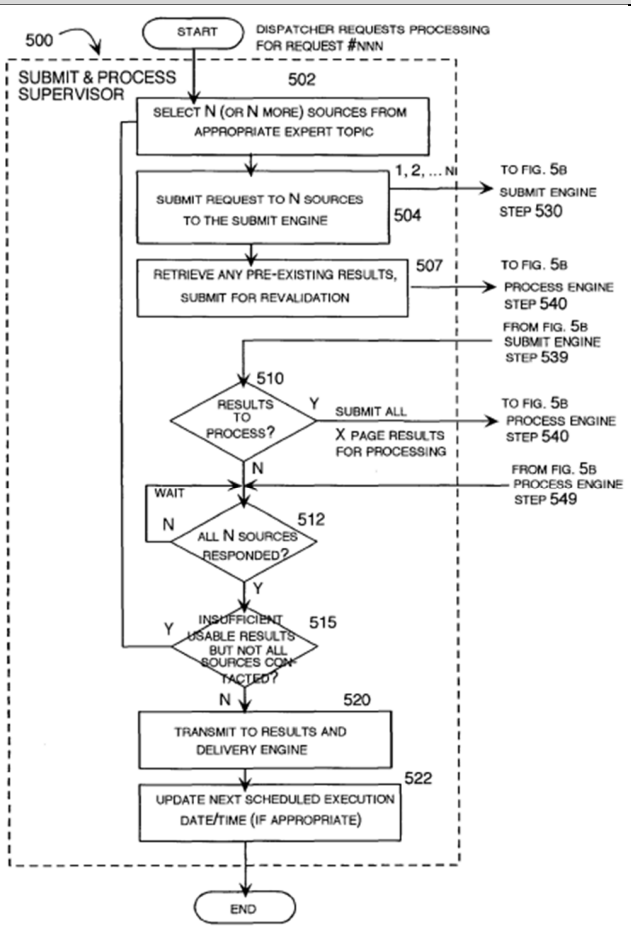
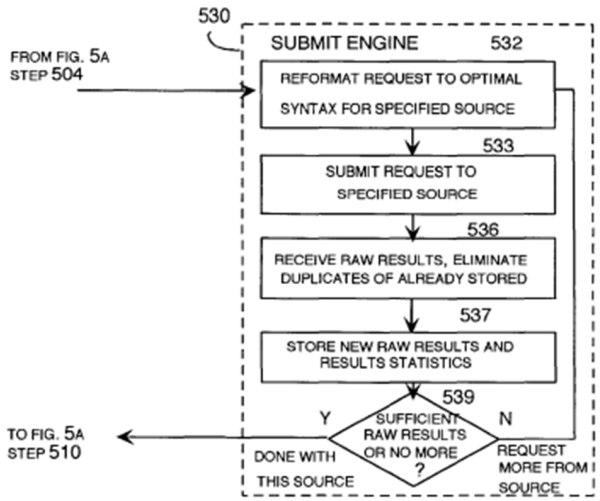
U.S. Patent No. 8,185,402 Claims	Salam
	

FIG. 5A SUBMIT & PROCESS ENGINE

U.S. Patent No. 8,185,402 Claims	Salam
	 "Still referring to FIG. 5A, when the submit engine has received a response (and hopefully raw search results) from a source, control is passed to decision 510, where the inquiry is made whether there are any results to process. If so, the 15 results are passed to the process engine 540 for processing. If not, then at decision 512 the inquiry is made whether all N sources have responded. If not, the system loops in waiting for all N sources to respond (or time out). After all N sources have responded or timed-out, at step 515 the 20 inquiry is made whether the searches to the various N sources have resulted in insufficient usable results, but there are still other sources that can be contacted." (Col. 20:11-22). "If at 515 not all sources have been contacted and there are insufficient results, control passes back to step 502 to contact 30 other

U.S. Patent No. 8,185,402 Claims	Salam
	(and possibly lower quality rated) sources." (Col. 20:27-30).
4. The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking.	"[O]nce a search request is formulated and any desired improvements are made to the search request, the finalized search request is routed as a SEARCH REQUEST to a submit and process engine 500." (Col. 14:23-26)." "Starting at step 502, the first step taken is to select one or more sources from the appropriate preselected expert topic associated with the stored search request or requests. At step 504, the request is then submitted to the submit engine 530. The submit engine 530 is independently operative to submit the request(s) to one or more specified sources, 1, 2, ... N as will be described." (Col. 19:63-20:4). "In accordance with an aspect of the invention, not all possible sources associated with a selected expert topic are searched at the same time. Certain sources, typically lesser quality sources, can be delayed in searching to see if the higher quality searches have produced adequate search results." (Col. 20:22-27). "The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at which each source is applied toward researching

U.S. Patent No. 8,185,402 Claims	Salam
	within a particular expert topic. As someone proficient in this field would know, the nature, content, quality, and interface specifications for these sources often change over time. Some improve, some deteriorate, some go through minor to major changes in their interface or syntax or output formats. The source improvement process allows the described system to constantly adapt to these changes by monitoring the success of interaction with the sources and reprioritizing its use of each source for an optimal mix of broad content coverage and efficient use of sources to achieve the desired quantity of results for each update. This allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the queue, while less successful sources sink toward the bottom." (Col. 24:37-56) "Eighth, a source optimization process 800 rates each source based on the reliability of search results that the source has provided in recent searches. In other words, the sources are rated based on factors including but not limited to the relevance, uniqueness, and quantity of usable item(s) retrieved for recent search requests. Any new or updated rating developed for each source is then formulated as SOURCE RATING information and stored in the expert topic database 210. The source optimization process is shown and described in connection with FIG. 8. In the preferred

U.S. Patent No. 8,185,402 Claims	Salam
	embodiment of the present invention, the rating developed for each source is then ultimately used in prioritizing that source as used within any and all expert topics it is used in." (Col. 15:61-16:7)
5. The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	"Turn now to FIG. 8 for a discussion of the source optimization process 800 constructed in accordance with an aspect of the present invention. The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at which each source is applied toward researching within a particular expert topic. As someone proficient in this field would know, the nature, content, quality, and interface specifications for these sources often change over time. Some improve, some deteriorate, some go through minor to major changes in their interface or syntax or output formats. The source improvement process allows the described system to constantly adapt to these changes by monitoring the success of interaction with the sources and reprioritizing its use of each source for an optimal mix of broad content coverage and efficient use of sources to achieve the desired quantity of results for each update. This allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top

U.S. Patent No. 8,185,402 Claims	Salam
	of the queue, while less successful sources sink toward the bottom." (Col. 24:35-56). "In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 24:57-67). "According to an aspect of the invention, the source optimization process is operative to rank the quality of a source, and store a rating of the source in association with the source address in the expert topics database 210. In the disclosed embodiment according to this aspect of the invention, each source is flagged in the expert topics database with an indicator representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most

U.S. Patent No. 8,185,402 Claims	Salam
	of those items emerge as link rot, irrelevant, or the like." (Col. 25:1-13). "Starting in FIG. 8 at step 802, statistics are retrieved from the statistics database and tabulated by source per expert topic. Stated in other words, the source rankings are recalculated based upon the addition of the new statistical indicators. Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches. For example, for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and so on." (Col. 25:17-27). "At step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806. The reader should appreciate that, while this process of ranking sources is described using indicators and recalculating rankings based on new statistical indicators, that description is used only as one possible implementation of the present process. Those skilled in the art will appreciate that other well known means of ranking based on the reliability of prior and present search results may be used. From step 808, method 800 proceeds to step 810, where for each expert topic any new or updated ranking

U.S. Patent No. 8,185,402 Claims	Salam
	developed for each source is stored in the expert topic database 210." (Col. 25:28-40). "The source optimization process examines recent performance of sources used within each expert topic and as a whole." (Col. 24:37-39) "This allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the queue, while less successful sources sink toward the bottom. In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator." (Col. 24:52-64) "For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 25:11-13)

U.S. Patent No. 8,185,402 Claims	Salam
	"Starting in FIG. 8 at step 802, statistics are retrieved from the statistics database and tabulated by source per expert topic. Stated in other words, the source rankings are recalculated based upon the addition of the new statistical indicators. Within each expert topic, each source is ranked, or numbered, based on the reliability of prior search results that the source has provided in past searches. For example, for any given expert topic, a source consistently generating the most relevant items may be ranked number one, a source generating the second most relevant items may be ranked number two, and so on. At Step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806. The reader should appreciate that, while this process of ranking sources is described using indicators and recalculating rankings based on new statistical indicators, that description is used only as one possible implementation of the present process. Those skilled in the art will appreciate that other well known means of ranking based on the reliability of prior and present search results may be used. From step 808, method 800 proceeds to step 810, where for each expert topic any new or updated ranking developed for each source is stored in the expert topic database 210." (Col. 25:17-40)

U.S. Patent No. 8,185,402 Claims	Salam
6. The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved.	"According to yet another aspect of the invention, after the search results have been provided to the user, the knowledge engine may be configured to periodically reevaluate the sources to determine whether they contain additional information that might be relevant to the user's initial search." (Col. 6:40-44). "Referring now to FIG. 10, the scheduled dispatch engine 1000 will be described. This engine is operative for scheduling updated searches in accordance with schedule information stored in the stored searches database 219." (Col. 27:6-10). "The scheduled dispatch engine or process 1000 begins at step 1008, where the scheduled dispatch engine 1000 receives a clock interrupt. Those skilled in the art will understand that a clock interrupt generated within the computer system may be utilized to trigger search updating. At step 1010, the current time is compared to the time of an item in a queue of searches. This queue of searches may be created by querying the stored searches database for any searches whose update date and/or time are earlier than the current date and/or time. At decision 1014, if the current time is later than the time of any item in the queue, control passes to step 1018, and the search request which is earlier than the current time is

U.S. Patent No. 8,185,402 Claims	Salam
	retrieved from the stored searches database 219 and submitted to the submit and process engine 500." (Col. 27:36-51). "Next, at step 507 the supervisor retrieves any pre-existing (pre-stored) search results associated with the particular search being handled, and submit them to the process engine 540 for re-evaluation. Re-evaluation helps determine if any pages or information found in a prior search have changed or become dead links. Still referring to FIG. 5A, when the submit engine has received a response (and hopefully raw search results) from a source, control is passed to decision 510, where the inquiry is made whether there are any results to process. If so, the results are passed to the process engine 540 for processing. If not, then at decision 512 the inquiry is made whether all N sources have responded. If not, the system loops in waiting for all N sources to respond (or time out). After all N sources have responded or timed-out, at step 515 the inquiry is made whether the searches to the various N sources have resulted in insufficient usable results, but there are still other sources that can be contacted." (Col. 20:5-22). "The preferred processes 200 for operating the knowledge engine 10 in accordance with the present invention shown in FIG. 2 generally include processes for carrying out the following

U.S. Patent No. 8,185,402 Claims	Salam
	eleven basic steps, which are not necessarily taken the listed order, and which may be combined in various subcombinations: 1. Enter a search request and select an expert topic; 2. Interact with the system to modify the search request to improve results, 3. From time to time, detect mistakes in search logic and syntax, and create new rules to assist users in modifying search requests and improve results. 4. Submit a finalized search request to the sources within the selected expert topic; 5. Collect and evaluate search results, 6. Communicate a context-sensitive summary to the user; 7. Analyze statistics generated by the search for potential new sources, 8. Rate and optimize sources, 9. Determine interface with new sources; 10. Establish a scheme for repeating the search at scheduled times to provide for a search update; and 11. Return to step 4. at an appropriate scheduled time for repeating the search." (Col. 13:23-48)
7. The method of claim 6 wherein the computer periodically polls each said web site without being	"The scheduled dispatch engine or process 1000 begins at step 1008, where the scheduled dispatch engine 1000 receives a clock interrupt. Those skilled in the art will understand that a clock interrupt generated

U.S. Patent No. 8,185,402 Claims	Salam
instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.	within the computer system may be utilized to trigger search updating. At step 1010, the current time is compared to the time of an item in a queue of searches. This queue of searches may be created by querying the stored searches database for any searches whose update date and/or time are earlier than the current date and/or time. At decision 1014, if the current time is later than the time of any item in the queue, control passes to step 1018, and the search request which is earlier than the current time is retrieved from the stored searches database 219 and submitted to the submit and process engine 500." (Col. 27:36-51). "Next, at step 507 the supervisor retrieves any pre-existing (pre-stored) search results associated with the particular search being handled, and submit them to the process engine 540 for re-evaluation. Re-evaluation helps determine if any pages or information found in a prior search have changed or become dead links. Still referring to FIG. 5A, when the submit engine has received a response (and hopefully raw search results) from a source, control is passed to decision 510, where the inquiry is made whether there are any results to process. If so, the results are passed to the process engine 540 for processing. If not, then at decision 512 the inquiry is made whether all

U.S. Patent No. 8,185,402 Claims	Salam
	N sources have responded. If not, the system loops in waiting for all N sources to respond (or time out). After all N sources have responded or timed-out, at step 515 the inquiry is made whether the searches to the various N sources have resulted in insufficient usable results, but there are still other sources that can be contacted." (Col. 20:5-22). "Referring now to FIG. 10, the scheduled dispatch engine 1000 will be described. This engine is operative for scheduling updated searches in accordance with schedule information stored in the stored searches database 219. Schedule information is typically input from the user via the input process of FIG. 3 (e.g. see FIG. 21 for a page that allows input of user notification options in the form of a frequency of search updating). For example, the user may choose to receive updated search results periodically in daily, weekly, or monthly increments. The reader should appreciate that the user may enter the scheduling input during the initial search request or after receiving the initial search results, or may change the update frequency at any time. Moreover, if the user does not choose any scheduling input, a default update schedule may be used." (Col. 27:7-22). "According to yet another aspect of the invention, unavailable search items in the updated search are identified (e.g. "Error 404"), the unavailable items having been

U.S. Patent No. 8,185,402 Claims	Salam
	available in a prior search. The unavailable items are preferably deleted from the subset of information provided to the user." (Col. 4:47-52). "In this regard, assume in FIG. 11 that an initial search conducted by a user at time t1 has resulted in production of an initial set of raw search results, designated as set 50a. As described above in connection with FIG. 5, the submit and process engine 500 determines that certain of these results may be dead links (resulting in the "error 404", and certain other results may be determined to be irrelevant when examined in context. Accordingly, the initial raw set of 15 search items in set 50a, after processing at time t2, may only constitute a second set or subset 50b of ten items. These ten items in subset 50b are then suitable for communication to the user." (Col. 28:39-51). "Turning now to FIG. 12 to continue the example, assume buttons 1403-1407. As discussed above in connection with that later at time t9, the scheduled dispatch engine 1000 has conducted yet another search update from new sources, resulting in new search items 14-18 of set 50g. Of this set 50g, the system may determine that item 3 is a now dead link, item 5 is a changed link, and item 17 is a dead line. After processing and elimination of the dead links, a new set 50h is produced and stored at time t10. Of the items in this set, items 2, 3, 6, and 11 are hidden. Item 4 is now the changed

U.S. Patent No. 8,185,402 Claims	Salam
	item in the new set. Of the resultant set 50h, the system may select additional items for communication to the user at time t11 , e.g. set 60e, consisting of items 1, 4 (changed), 5, 7-10, 12, and 13-14 (new). The hidden items remain in the system as set 50h, but are selectively obscured from view. The above described process may be repeated indefinitely, thereby allowing the user to accumulate knowledge pertaining to a particular topic, receive notification when changed or new items appear, and not be bothered or distracted by dead links." (Col. 29:21-40). "In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 24:57-67). "From step 902, method 900 proceeds to step 906, where a model search request or source probe is submitted to the source. . . . At step

U.S. Patent No. 8,185,402 Claims	Salam
	908, the results from the model search or probe are received and evaluated. . . . Once the results have been evaluated, method 900 proceeds to step 910, where an appropriate set of interfacing parameters are generated based on the evaluation at step 908." (Col. 25:61-26:26). "Further still, once a potential new source is discovered, the knowledge engine determines how to interface with the source by testing and evaluating the source. More particularly, the knowledge engine finds the source and issues a command to find the "search box," which is typically the field that is used to enter a search request to the source. Once the search box is found, the knowledge engine may iteratively enter model search requests, receive the results from the issued requests, and analyze the results. These analyses allow the knowledge engine to determine how to interface with the source (e.g., how to communicate back and forth, pass the results, and how to deal with the information that is received from the source)." (Col. 6:63-7:8). "Unlike many conventional search engines, the disclosed knowledge engine: Eliminates dead links, Reduces or eliminates questionable links, Creates customized and relevant summaries, Creates email notification and updates,

U.S. Patent No. 8,185,402 Claims	Salam
	Stores research results in a "personal library," Is accessible anywhere the searcher can connect to the Internet, Alerts the searcher to new and changed items, and Accesses pages with rapidly changing content that cannot be indexed by search engines." (Col. 5:10-24) "Then, on a regular basis, the sources within an expert topic database are reevaluated to determine if the source site setup has changed; and, if it has changed, in most cases, the knowledge engine automatically detects the new structure and adapts to it." (Col. 7:14-18) "Turn now to FIG. 8 for a discussion of the source optimization process 800 constructed in accordance with an aspect of the present invention. The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at which each source is applied toward researching within a particular expert topic. As someone proficient in this field would know, the nature, content, quality, and interface specifications for these sources often change over time. Some improve, some deteriorate, some go through minor to major changes in their interface or syntax or output formats. The source improvement process allows the

U.S. Patent No. 8,185,402 Claims	Salam
	described system to constantly adapt to these changes by monitoring the success of interaction with the sources and reprioritizing its use of each source for an optimal mix of broad content coverage and efficient use of sources to achieve the desired quantity of results for each update. This allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the queue, while less successful sources sink toward the bottom. In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 24:33-67) "Based on evaluating the listings from each source, the submit and process engine 500 stores statistics on the number, relevancy, and quality of results from each source. Those statistics are then stored in a statistics database 217, also a component of the

U.S. Patent No. 8,185,402 Claims	Salam
	knowledge engine database 22." (Col. 15:20-24) "At step 533 the syntactically properly formatted search request is submitted to the specified source, typically via an http request. At step 536, assuming the source responds, raw search results are received. Any duplicates to any prestored search results for that specific request are preferably discarded. At step 537, the new raw results are stored. Statistics corresponding to the search are generated, e.g. how many findings or "hits" were obtained from this source, and the statistics stored in the statistics database 217." (Col. 20:59-67) "That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 25:11-13)
8. The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites.	"Refer now to FIG. 7 for a discussion of the new source finder process 700 constructed in accordance with the preferred embodiment of the present invention. The new source finder is operative periodically or upon other condition to process statistics stored in the statistics database and find sites that might be suitable for inclusion as a source within an expert topic." (Col. 23:23-31). "A preferred way of testing a site for use as a source is to pass the site a plurality of

U.S. Patent No. 8,185,402 Claims	Salam
	exemplary search requests that are specific to a particular expert topics, e.g. oncology, and determining whether the site returns a sufficient number of results." (Col. 23:57-62). "If the site appears usable, i.e. it produces reliable and repeatable results, in a sufficient number, for a plurality of test requests, the site is stored as a new source in the expert topics database 210 and the new source finder exits." (Col. 24:8-12).
9. A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:	*See* claim 1 preamble.
[9.1a] a computer, said computer operatively connected to the internet and to at least one phone;	*See* limitations [1a] and [1b]
[9.1b] at least one speaker-independent speech recognition engine, said speaker-independent speech	*See* limitation [1a].

U.S. Patent No. 8,185,402 Claims	Salam
recognition engine operatively connected to said computer;	
[9.1c] at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;	*See* limitation [1a].
[9.2] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;	"A knowledge engine database 22 is operatively coupled to the server 20 for storage of information required to handle a plurality of search requests, and resultant search results, for a plurality of users. In particular, database 22 stores information corresponding to (a) a plurality of sources of information for use in searching, in the form of a sources database, (2) a plurality of expert topics with which one or more of the sources 12 are associated, in the form of an expert topics database[.]" (Col. 8:58-66). "Information identifying a plurality of sources is stored in the knowledge engine database 22 as a plurality of data entries, each entry comprising a network address or URL of the source, as well as other associated information such as source quality indication information and expert topic association information." (Col. 9:35-41).
[9.3] a content descriptor associated with each said web	*See* claim 2.

U.S. Patent No. 8,185,402 Claims	Salam
site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;	
[9.4] a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;	*See* claim 3.
[9.5] said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;	*See* limitation [1c]
[9.6] said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the	*See* limitation [1d] and claim 4.

U.S. Patent No. 8,185,402 Claims	Salam
highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;	
[9.7] said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;	*See* claim 5.
[9.8a] said speech synthesis engine	*See* limitation [1e].

U.S. Patent No. 8,185,402 Claims	Salam
configured to produce an audio message containing any retrieved information from said web sites, and	
[9.8b] said speech synthesis engine further configured to transmit said audio message to said users via said phone.	*See* limitation [1f]
10. The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone.	"The knowledge engine 10 is accessed by users employing end user devices 14 such as personal computers (PC), personal information managers (PIMs) or personal digital assistants (PDAs), wireless telephones with computing capability, or other computing devices, all of which are considered equivalent." (Col. 8:48-54).
11. The system of claim 9 wherein said internet is a local area network.	"In a distributed computing environment like the Internet, program modules may be physically located in different local and remote computers and memory storage devices. Execution of the program modules may occur locally in a stand-alone manner or remotely in a client/server manner. Examples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." (Col. 11:33-40).

U.S. Patent No. 8,185,402 Claims	Salam
12. The system of claim 9 wherein said internet is a wide area network.	"In a distributed computing environment like the Internet, program modules may be physically located in different local and remote computers and memory storage devices. Execution of the program modules may occur locally in a stand-alone manner or remotely in a client/server manner. Examples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." (Col. 11:33-40).
13. The system of claim 9 wherein said internet is the Internet.	For example, "In a distributed computing environment like the Internet, program modules may be physically located in different local and remote computers and memory storage devices. Execution of the program modules may occur locally in a stand-alone manner or remotely in a client/server manner. Examples of such distributed computing environments include local area networks (LAN) of an office, enterprise-wide area networks (WAN), and the global Internet." (Col. 11:33-40).
14. The system of claim 9 wherein said computer is configured to establish or adjust	"The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at which each source is applied toward researching

U.S. Patent No. 8,185,402 Claims	Salam
said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.	within a particular expert topic." (Col. 24:37-41). "In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 24:57-67). "Based on evaluating the listings from each source the 20 submit and process engine 500 stores statistics o; the number, relevancy, and quality of results from each source. Those statistics are then stored in a statistics database 217 also a component of the knowledge engine database 22." (Col. 15:20-24). "Turn now to FIG. 8 for a discussion of the source optimization process 800 constructed in accordance with an aspect of the present invention. The source optimization process examines recent performance of sources used within each expert topic and as a whole. The analysis is used to re-optimize the priorities at

U.S. Patent No. 8,185,402 Claims	Salam
	which each source is applied toward researching within a particular expert topic. As someone proficient in this field would know, the nature, content, quality, and interface specifications for these sources often change over time. Some improve, some deteriorate, some go through minor to major changes in their interface or syntax or output formats. The source improvement process allows the described system to constantly adapt to these changes by monitoring the success of interaction with the sources and reprioritizing its use of each source for an optimal mix of broad content coverage and efficient use of sources to achieve the desired quantity of results for each update. This allows the good sources (defined by those the described processes have the greatest success obtaining valid and unique results from) to rise to the top of the queue, while less successful sources sink toward the bottom." (Col. 24:35-56). "Starting in FIG. 8 at step 802, statistics are retrieved from the statistics database and tabulated by source per expert topic. Stated in other words, the source rankings are recalculated based upon the addition of the new statistical indicators." (Col. 25:17-21). "At step 808, those rankings are recalculated based upon the new statistical information tabulated in step 806." (Col. 25:28-30).

U.S. Patent No. 8,185,402 Claims	Salam
	"At step 533 the syntactically properly formatted search request is submitted to the specified source, typically via an http request. At step 536, assuming the source responds, raw search results are received. Any duplicates to any prestored search results for that specific request are preferably discarded. At step 537, the new raw results are stored. Statistics corresponding to the search are generated, e.g. how many findings or "hits" were obtained from this source, and the statistics stored in the statistics database 217." (Col. 20:59-67) "Finally, at step 549 any updated page results are stored in the search results database 213 and any associated statistics are stored in the statistics database 217. Based on evaluating the items from each source, the process engine processes and generates statistics on the number of items from each source and the relevance of each of those items." (Col. 21:66-22:4) "Finally, the preferred embodiment provides a user friendly web site for interacting with the user to modify the search request to obtain better search results." (Col. 5:5-7) "First, a user enters a search request via a web front end 202 to an input process 300 that analyzes the request. The input process 300 is shown and described in connection with FIG. 3. The search request is denoted in FIG. 2 as

U.S. Patent No. 8,185,402 Claims	Salam
	INPUT SEARCH REQUEST. Also, the user will typically make a selection of an expert topic, which selection is routed as an EXPERT TOPIC SELECTION to an expert topic database 210, and may also enter schedule information regarding the user's desire to receive scheduled updates to the entered search." (Col. 13:51-61) "Tenth, a scheme is established for repeating the search for updating purposes in accordance with a predetermined schedule. This established scheme is handled by a scheduled dispatch engine 1000. The schedule can be set by the user in an earlier step (e.g. SCHEDULE INFO provided during the input process), or can be a default update schedule, e.g. once a day, once a week, etc., or can be customized by a schedule entered by the user via an appropriately constructed user interface. The schedule, whether predetermined or customized, is stored in association with the stored searches in the stored searches database by a scheduled dispatch engine. The scheduled dispatch engine 1000 is shown and described in connection with FIG. 10." (Col. 16:25-37) "Beginning at step 302 or 304 in FIG. 3, a search request may thus be received from two sources: a user may enter a new search request and start at 302, or a user may choose to improve an existing (e.g. prestored) request and start at 304. If a user enters a new search

U.S. Patent No. 8,185,402 Claims	Salam
	request, method 300 proceeds to step 310. If a user chooses to improve an existing search request, then at step 306 the search request is retrieved from storage, and at step 308 the user is requested to provide feedback on the search results (e.g. see FIG. 19). Control then passes to step 310 for either entry method." (Col. 17:41-50) "In accordance with an aspect of the invention, each stored search request is stored in association with a user selectable date and/or time for receiving updates." (Col. 27:23-25)
15. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer,	"According to yet another aspect of the invention, after the search results have been provided to the user, the knowledge engine may be configured to periodically reevaluate the sources to determine whether they contain additional information that might be relevant to the user's initial search." (Col. 6:40-44). "Referring now to FIG. 10, the scheduled dispatch engine 1000 will be described. This engine is operative for scheduling updated searches in accordance with schedule information stored in the stored searches database 219." (Col. 27:6-10). "The scheduled dispatch engine or process 1000 begins at step 1008, where the scheduled dispatch engine 1000 receives a clock interrupt. Those skilled in the art will

U.S. Patent No. 8,185,402 Claims	Salam
and changes to the location of said information to be retrieved from each said web site.	understand that a clock interrupt generated within the computer system may be utilized to trigger search updating. At step 1010, the current time is compared to the time of an item in a queue of searches. This queue of searches may be created by querying the stored searches database for any searches whose update date and/or time are earlier than the current date and/or time. At decision 1014, if the current time is later than the time of any item in the queue, control passes to step 1018, and the search request which is earlier than the current time is retrieved from the stored searches database 219 and submitted to the submit and process engine 500." (Col. 27:36-51). "Next, at step 507 the supervisor retrieves any pre-existing (pre-stored) search results associated with the particular search being handled, and submit them to the process engine 540 for re-evaluation. Re-evaluation helps determine if any pages or information found in a prior search have changed or become dead links. Still referring to FIG. 5A, when the submit engine has received a response (and hopefully raw search results) from a source, control is passed to decision 510, where the inquiry is made whether there are any results to process. If so, the results are passed to the process engine 540 for processing. If not, then

U.S. Patent No. 8,185,402 Claims	Salam
	at decision 512 the inquiry is made whether all N sources have responded. If not, the system loops in waiting for all N sources to respond (or time out). After all N sources have responded or timed-out, at step 515 the inquiry is made whether the searches to the various N sources have resulted in insufficient usable results, but there are still other sources that can be contacted." (Col. 20:5-22). "Referring now to FIG. 10, the scheduled dispatch engine 1000 will be described. This engine is operative for scheduling updated searches in accordance with schedule information stored in the stored searches database 219. schedule information is typically input from the user via the input process of FIG. 3 (e.g. see FIG. 21 for a page that allows input of user notification options in the form of a frequency of search updating). For example, the user may choose to receive updated search results periodically in daily, weekly, or monthly increments. The reader should appreciate that the user may enter the scheduling input during the initial search request or after receiving the initial search results, or may change the update frequency at any time. Moreover, if the user does not choose any scheduling input, a default update schedule may be used." (Col. 27:7-22). "According to yet another aspect of the invention, unavailable search items in the updated search are identified (e.g. "Error

U.S. Patent No. 8,185,402 Claims	Salam
	404"), the unavailable items having been available in a prior search. The unavailable items are preferably deleted from the subset of information provided to the user." (Col. 4:47-52). "In this regard, assume in FIG. 11 that an initial search conducted by a user at time t1 has resulted in production of an initial set of raw search results, designated as set 50a. As described above in connection with FIG. 5, the submit and process engine 500 determines that certain of these results may be dead links (resulting in the "error 404", and certain other results may be determined to be irrelevant when examined in context. Accordingly, the initial raw set of 15 search items in set 50a, after processing at time t2, may only constitute a second set or subset 50b of ten items. These ten items in subset 50b are then suitable for communication to the user." (Col. 28:39-51). "Turning now to FIG. 12 to continue the example, assume buttons 1403-1407. As discussed above in connection with that later at time t9 , the scheduled dispatch engine 1000 has conducted yet another search update from new sources, resulting in new search items 14-18 of set 50g. Of this set 50g, the system may determine that item 3 is a now dead link, item 5 is a changed link, and item 17 is a dead line. After processing and elimination of the dead links, a new set 50h is produced and stored at time t10. Of the items in this set,

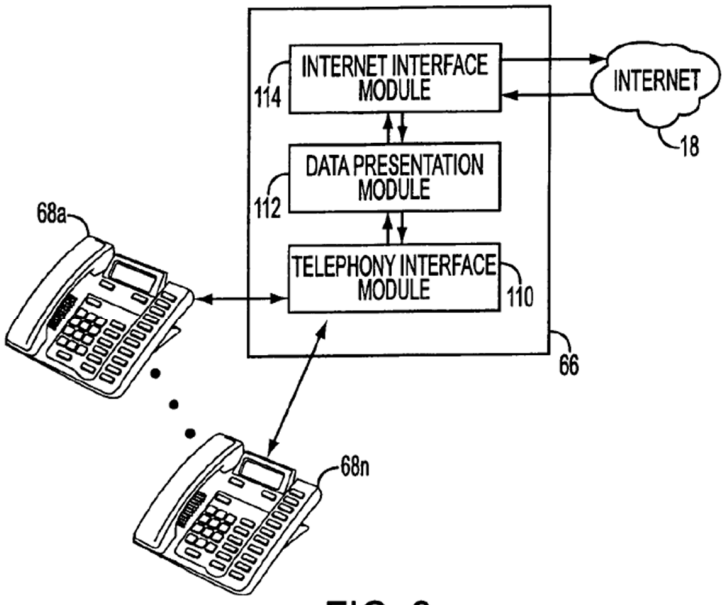
U.S. Patent No. 8,185,402 Claims	Salam
	items 2, 3, 6, and 11 are hidden. Item 4 is now the changed item in the new set. Of the resultant set 50h, the system may select additional items for communication to the user at time t11, e.g. set 60e, consisting of items 1, 4 (changed), 5, 7-10, 12, and 13-14 (new). The hidden items remain in the system as set 50h, but are selectively obscured from view. The above described process may be repeated indefinitely, thereby allowing the user to accumulate knowledge pertaining to a particular topic, receive notification when changed or new items appear, and not be bothered or distracted by dead links." (Col. 29:21-40). "In the disclosed embodiment according to this aspect of the invention, each source in the expert topics database is linked to statistics representing the number of items retrieved for any given search as well as the cumulative relevance/irrelevance of those items. The source optimization agent 800 periodically analyzes these statistics to determine updated rankings. For example, a source producing a large number of items for a particular search request may be given an elevated indicator. That indicator, however, will be substantially lowered if most of those items emerge as link rot, irrelevant, or the like." (Col. 24:57-67). "From step 902, method 900 proceeds to step 906, where a model search request or source

U.S. Patent No. 8,185,402 Claims	Salam
	probe is submitted to the source. . . . At step 908, the results from the model search or probe are received and evaluated. . . . Once the results have been evaluated, method 900 proceeds to step 910, where an appropriate set of interfacing parameters are generated based on the evaluation at step 908." (Col. 25:61-26:26). "Further still, once a potential new source is discovered, the knowledge engine determines how to interface with the source by testing and evaluating the source. More particularly, the knowledge engine finds the source and issues a command to find the "search box," which is typically the field that is used to enter a search request to the source. Once the search box is found, the knowledge engine may iteratively enter model search requests, receive the results from the issued requests, and analyze the results. These analyses allow the knowledge engine to determine how to interface with the source (e.g., how to communicate back and forth, pass the results, and how to deal with the information that is received from the source)." (Col. 6:63-7:8).

B. Loghmani Claim Mapping

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
1. A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	"In accordance with one aspect of the present invention, a telephony-Internet interface allows telephone callers to access online databases and electronic shopping carts. The telephony-Internet interface converts spoken queries into text for electronic commands transmitted to online shops or shopping carts, and converts requested information from markup language pages to audio messages for callers." (Col. 2:53-59). "In accordance with another aspect of the present invention, the telephony-Internet interface provides a caller with a menu for selecting an Internet site or item-type for browsing. The user selects a menu option using DTMF tones or speech. An HTTP request is then generated to access the selected online site through the desired item-type is available. In accordance with another aspect of the present invention, data extracted from a markup language-type page via parsing is used to generate an audio message using text-to-speech conversion and pre-recorded messages." (Col. 3:20-30). "Throughout the description of the present invention, an HTML-type page is understood to mean any type of hypertext or mark-up language (e.g., HTML, DHTML and XML) or language using hidden tags in text for creating, for

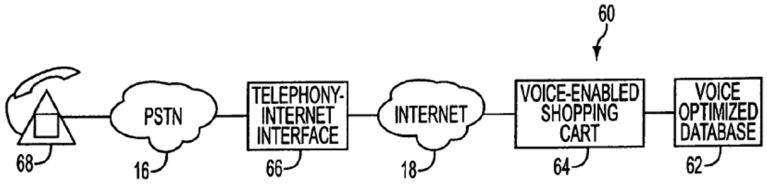
U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	example, Web-type pages for browsing content. As stated previously, telephone users do not have a computer with which to receive HTML-type pages to query and view search results from an online database. The TII 66 described below provides a mechanism to facilitate audio messaging to report search results, among other events and information, to a telephony customer." (Col. 6:50-65). The TII 66 allows customers to access an Internet or online shop using plain old telephone service (POTS) telephones, computers or other telecommunications devices. The TII 66 comprises hardware and software components to connect to the Public Switching Telephone Network (PSTN), as well as the Internet. The subsections of the TII 66 are shown in FIG. 9." (Col. 7:56-62).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	 FIG. 9 "A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers. . . . TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software." (Col. 7:63-8:5). "A Data Presentations Module (DPM) 112 converts commands received from the TIM 110 into electronic commands such as HTTP requests (e.g. HTTP get and HTTP post) and other electronic communication protocols, and changes replies received from an Internet Interface Module (IIM) 114 to information that

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	can be presented to a customer in an audio format by the TIM." (Col. 8:9-15). "The Internet Interface Module (IIM) 114 consists of the hardware and software for connecting to the Internet. The IIM handles multiple connections to different sites (e.g., online shops). IIM 114 receives connection commands and addresses from the DPM 112, and returns results in form of HTML-type pages or pages created using other mark-up languages." (Col. 8:36-42). "The voice-enabled system of the present invention can be implemented in a number of different ways. The voice-enabled system can provide a fully integrated solution for online shopping, as well as telephone shopping, or only a portion of the solution. The voice-enabled system of the present invention can be integrated into an existing shopping cart, an existing database, or an existing telephone shopping system which currently has no online capability (e.g., a catalog order system using telephone operators to process transactions)." (Col. 8:43-52). "When a spoken query is received for the voice-optimized database 62, a processor 76 operating in conjunction with the database 62, as depicted in FIG. 6, is programmed to parse the query based on the phonemes therein, and to assign an AV 70 value to the query." (Col. 4:54-58).

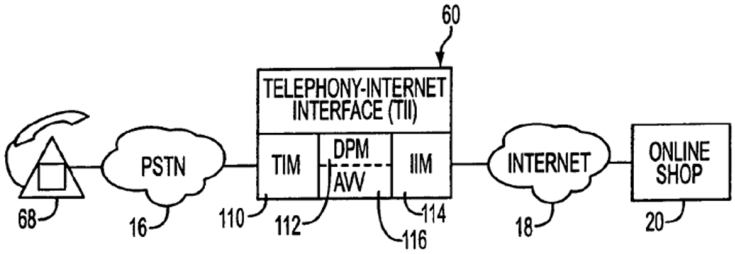
U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	"In a full implementation of the voice-enabled system, the components described above in connection with FIG. 4 are used to provide Internet catalogue and database capabilities, a voice-enabled electronic shopping cart and telephone Internet interface capabilities for users. In the configuration depicted in FIG. 10, only the TII 66 is used to provide connectivity to an existing online shop. Since the database in this configuration does not support Audio Vector Valuation for voice queries, the DPM 112 is enhanced with a Audio Vector Valuation Module 116 to send in multiple queries based on what a given query sounds like. For example, phonemes are determined for "Gone with the Wind', or "Gone wid da Wind', or "Gone vidda Vind", and so on. Linguistic rules are used to select different pronunications of a requested item. The phonemes are converted to text. Multiple types of related text is therefore determined for the spoken query text. Searches are then performed in the database using the spoken query text and the related text." (Col. 8:57-9:8). "In a non-voice enabled database, several samples of a spoken query are generated to conduct multiple searches of the data in the database. The phoneme string of the spoken query sample is selectively divided and regrouped to create, for example, five or six variations of the phoneme string. In accordance with the present invention, individual phonemes in the string are analyzed, as well as combinations of phonemes and individual

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	phonemes which have been divided. These components of the string are analyzed in phonemic space to compare respective vector distances, for example. Phonemes and corresponding string components which are relatively close in value indicate possible desirability of these string components in alternate samples. The spoken query samples and the alternate samples are then converted to text for searching the database for corresponding items." (Col. 9:15-30).
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;	"When a spoken query is received for the voice-optimized database 62, a processor 76 operating in conjunction with the database 62, as depicted in FIG. 6, is programmed to parse the query based on the phonemes therein, and to assign an AV 70 value to the query. Values for respective phonemes in the query can be obtained from a library 78, for example. A library 78 for a given language or dialect can store records of each phoneme used in that language and dialect. Each library record stores a predetermined value for that phoneme. Phoneme values can be individual numbers, or vectors if minute degrees of distinction are desired between similar-sounding phonemes." (Col. 4:54-65). "With reference to FIG. 4, a voice-enabled system 60 for online shopping is provided in accordance with the present invention to allow customers to access an online shop, among other databases. The voice-enabled system 60

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	comprises three main subsystems, that is, a voice-optimized database or catalogue 62, a voice-enabled shopping cart 64 capable of generating output for both online shoppers using a browser and telephony users connecting through a telephony interface, and a telephony-Internet interface (TII) 66 which connects a user via a telephone 68 or other telecommunications device to an electronic shopping cart for online shopping. It is to be understood that the telephone 68 or other telecommunications device can connect to the TII 66 via wireline and wireless modes of communication." (Col. 4:15-28).  FIG. 4 "As shown in FIG. 8, the voice-enabled shopping cart 64 comprises transaction module 96 for communicating with a user computer or the TII 66, for example, a communications module 98 for communicating with an online shop or other database, a payment module 100 for completing electronic credit card transactions, and an account module 102 for monitoring each user transaction and the user's selections during a browsing session and, optionally, account information for users who are account holders." (Col. 7:3-11)

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	"In the configuration depicted in FIG. 10, only the TII 66 is used to provide connectivity to an existing online shop. Since the database in this configuration does not support Audio Vector Valuation for voice queries, the DPM 112 is enhanced with a Audio Vector Valuation Module 116 to send in multiple queries based on what a given query sounds like. For example, phonemes are determined for "Gone with the Wind', or "Gone wid da Wind', or "Gone vidda Vind", and so on. Linguistic rules are used to select different pronunciations of a requested item. The phonemes are converted to text. Multiple types of related text is therefore determined for the spoken query text. Searches are then performed in the database using the spoken query text and the related text." (Col. 8:61-9:7). "A Data Presentations Module (DPM) 112 converts commands received from the TIM 110 into electronic commands such as HTTP requests (e.g. HTTP get and HTTP post) and other electronic communication protocols, and changes replies received from an Internet Interface Module (IIM) 114 to information that can be presented to a customer in an audio format by the TIM. To communicate with the above mentioned pre-selected sites, the DPM 112 uses scripts to translate user inputs (e.g., DTMF tones or speech that has been converted to text by the TIM 110) into input information (e.g., electronic commands such as HTTP requests and site-specific queries) for these

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	sites. The DPM 112 parses the HTML-type information returned by a site (e.g., an online shop or database) via the IIM and posts queries to the site query pages provided to the IIM 114. By parsing the information in the HTTP replies, important data items are extracted and can be reported to the customers. If the electronic shopping cart used is a voice-enabled shopping cart 64 (FIG. 8), the DPM looks for hidden tags generated by the voice-enabled shopping cart to identify the important data items. To parse the output of other shopping carts, DPM uses site specific scripts which help to identify what each site's output means, and where important data elements reside. For example, when looking at an online bookstore's search output, the DPM preferably extracts only names of many books found to match or are similar to a user's query. The DPM can handle multiple customers at any given time." (Col. 8:9-35). "TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software." (Col. 8:4-5).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	 FIG. 10 "In FIG. 11, a TII 66 and a shopping cart 22 are connected to an existing database 120 of items to provide an online shop that is also accessible by telephone. As in FIG. 10, the TII 66 can be enhanced by an Audio Vector Valuation module 116 to compensate for lack of such functionality in the database 120. As stated previously, a voice-enabled database is configured to store AVS for multiple pronunciations of searchable items in the database. In a non-voice enabled database, several samples of a spoken query are generated to conduct multiple searches of the data in the database. The phoneme string of the spoken query sample is selectively divided and regrouped to create, for example, five or six variations of the phoneme string. In accordance with the present invention, individual phonemes in the string are analyzed, as well as combinations of phonemes and individual phonemes which have been divided. These components of the string are analyzed in phonemic space to compare respective vector distances, for example. Phonemes and corresponding string components which are relatively close in value indicate possible

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	desirability of these string components in alternate samples. The spoken query samples and the alternate samples are then converted to text for searching the database for corresponding items." (Col. 9:8-30).

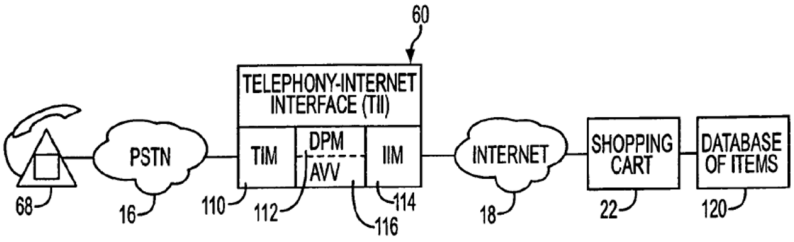


FIG. 11

"In FIG. 14, an AVV module 116 is provided to an existing database in lieu of a voice-enabled shopping cart to allow access to the database via spoken queries." (Col. 9:58-61).

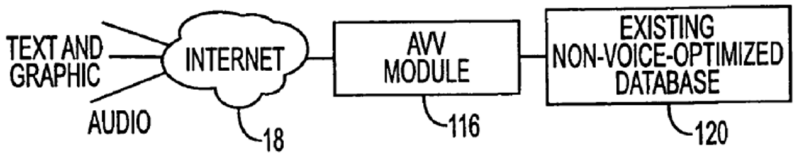


FIG. 14

"The DPM 112 provides an audio message to the user via the TIM 110 which instructs the user to state the name or author of a book, for example (block 146). The message can also instruct the user to state a search category (e.g., "Subject" or "title" or "author" or "ISBN"). Thus, if the user states "subject', the DPM 112 is programmed via an input script to select the button 50 in the query

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	page 24 (FIG. 2) via an electronic command. The online bookshop can then perform a context-sensitive search of subject matter in its database, as well as search only the subject fields 40 of database records 34 instead of every searchable item in each record. After the user provides a spoken query such as "civil war" (blocks 148 and 149), the query is processed by a speech recognition module in the TIM 110. An audio vector 70 is determined for the spoken query using, for example, an AVV module 116 at the TII 66 (FIG. 4) or at a shopping cart in front of a non-voice-enabled database (FIG. 12) or at a voice-optimized database 62, for example, depending on the configuration of the voice-enabled shopping system of the present invention (block 150). The online bookshop searches its records for database items that are close to the spoken query and transmits a Web-type results page to the TII 66 (blocks 152 and 154). The DPM 112 parses the results page to locate hidden tags if a voice-optimized shopping cart 64 is used; otherwise, the DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller (block 156). The DPM 112 can play a pre-recorded message to the caller when no books are located which are similar to the spoken query. Text corresponding to the title in the results page can be converted to speech by the TIM 110 to provide at least a few of the book titles listed in the results page to the caller (block 158)." (Col. 10:15-49).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
[1.2] providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;	"In accordance with one aspect of the present invention, a telephony-Internet interface allows telephone callers to access online databases and electronic shopping carts. The telephony-Internet interface converts spoken queries into text for electronic commands transmitted to online shops or shopping carts, and converts requested information from markup language pages to audio messages for callers." (Col. 2:53-59). "The voice-enabled system 60 comprises three main subsystems, that is, a voice-optimized database or catalogue 62, a voice-enabled shopping cart 64 capable of generating output for both online shoppers using a browser and telephony users connecting through a telephony interface, and a telephony-Internet interface (TII) 66 which connects a user via a telephone 68 or other telecommunications device to an electronic shopping cart for online shopping. It is to be understood that the telephone 68 or other telecommunications device can connect to the TII 66 via wireline and wireless modes of communication." (Col. 4:18-28). "The TII 66 allows customers to access an Internet or online shop using plain old telephone service (POTS) telephones, computers or other telecommunications devices. The TII 66 comprises hardware and software components to connect to the Public Switching Telephone Network (PSTN), as well as the Internet." (Col. 7:56-62).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	"A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers. . . . TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software." (Col. 7:63-8:5). 3:4-7
[1.3] providing a speech command to said speaker-independent speech recognition engine,	"In accordance with one aspect of the present invention, a telephony-Internet interface allows telephone callers to access online databases and electronic shopping carts. The telephony-Internet interface converts spoken queries into text for electronic commands transmitted to online shops or shopping carts, and converts requested information from markup language pages to audio messages for callers." (Col. 2:53-59). "The TII 66 allows customers to access an Internet or online shop using plain old telephone service (POTS) telephones, computers or other telecommunications devices. The TII 66 comprises hardware and software components to connect to the Public Switching Telephone Network (PSTN), as well as the Internet." (Col. 7:56-62). "A Telephone Interface Module (TIM) 110 is provided which has hardware and software

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	components for handling incoming calls from the PSTN, and provide audio communications to customers. . . . TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software." (Col. 7:63-8:5). "An exemplary voice transaction with an online shop is illustrated in FIGS. 15A and 15B. A user calls a TII 66 using an 800 number, for example (blocks 130 and 132). The TIM 110 plays a pre-recorded message to the user to provide a number of site options (e.g., "If you wish to browse for books, dial or say '1' . . . 'If you wish to browse for computer equipment, dial or say 2 . . . 'If you wish to browse for airline tickets, dial say '3' . . . 'If you wish to repeat this list, press the pound key or say repeat"), as indicated in block 134. In the illustrated example, the caller selects to browse for books. The TIM 110 provides the user selection information to the DPM 112. If the caller stated "1" (block 136), as opposed to dialing the menu selection, the TIM 110 performs speech-to-text conversion (blocks 138 and 140)." (Col. 9:63-10:14). "After the user provides a spoken query such as "civil war" (blocks 148 and 149), the query is processed by a speech recognition module in the TIM 110. An audio vector 70 is determined for the spoken query using, for example, an AVV module 116 at the TII 66 (FIG. 4) or at a shopping cart in front of a non-voice-enabled

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	database (FIG. 12) or at a voice-optimized database 62, for example, depending on the configuration of the voice-enabled shopping system of the present invention (block 150)." (Col. 10:27-35).

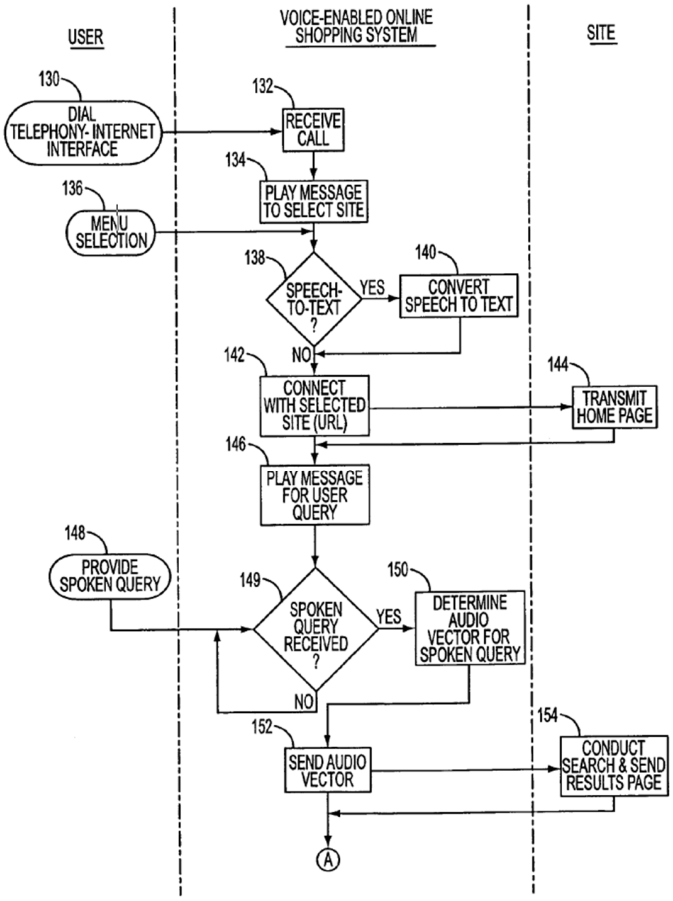


FIG. 15A

"In a full implementation of the voice-enabled system, the components described above in connection with FIG. 4 are used to provide Internet catalogue and database capabilities, a

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	voice-enabled electronic shopping cart and telephone-Internet interface capabilities for users. In the configuration depicted in FIG. 10, only the TII 66 is used to provide connectivity to an existing online shop. Since the database in this configuration does not support Audio Vector Valuation for voice queries, the DPM 112 is enhanced with a Audio Vector Valuation Module 116 to send in multiple queries based on what a given query sounds like. For example, phonemes are determined for "Gone with the Wind", or "Gone wid da Wind", or "Gone vid da Vind", and so on. Linguistic rules are used to select different pronunciations of a requested item. The phonemes are converted to text. Multiple types of related text is therefore determined for the spoken query text. Searches are then performed in the database using the spoken query text and the related text. In FIG. 11, a TII 66 and a shopping cart 22 are connected to an existing database 120 of items to provide an online shop that is also accessible by telephone. As in FIG. 10, the TII 66 can be enhanced by an Audio Vector Valuation module 116 to compensate for lack of such functionality in the database 120. As stated previously, a voice-enabled database is configured to store AVs for multiple pronunciations of searchable items in the database. In a non-voice-enabled database, several samples of a spoken query are generated to conduct multiple searches of the data in the database. The phoneme string of the spoken query sample is selectively divided and

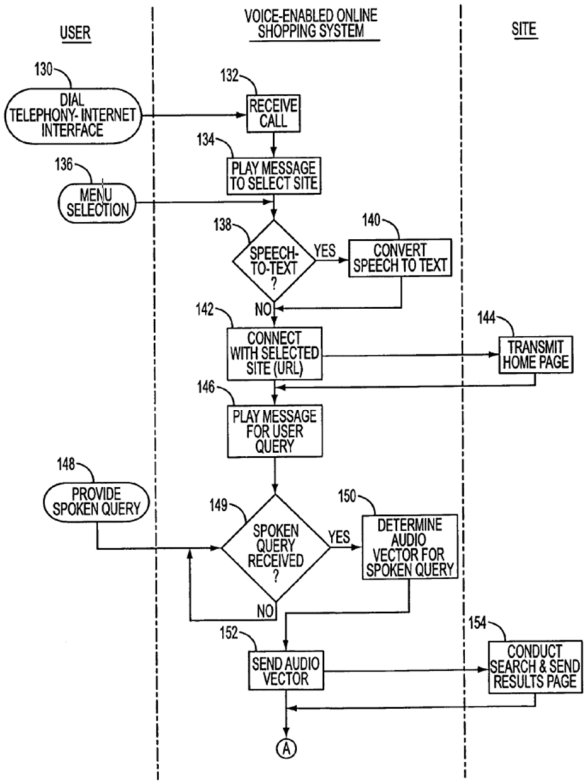
U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	regrouped to create, for example, five or six variations of the phoneme string. In accordance with the present invention, individual phonemes in the string are analyzed, as well as combinations of phonemes and individual phonemes which have been divided. These components of the string are analyzed in phonemic space to compare respective vector distances, for example. Phonemes and corresponding string components which are relatively close in value indicate possible desirability of these string components in alternate samples. The spoken query samples and the alternate samples are then converted to text for searching the database for corresponding items. In accordance with the present invention, a voice-enabled database and a non-voice-enabled database are searched with regard to plural possibilities for a spoken query. In the voice-enabled database, AVs are stored for plural anticipated pronunciations of the same database item for comparison to the AV of a spoken query. The phonemic string of a spoken query is used to create plural samples for searching a non-voice-enabled database having no AVs stored therein. In either case, the use of phonemes is used to convert from spoken words to concepts in that plural pronunciations for the same database item are considered for searching database content. The audio processing of the present invention therefore realizes an advantage over existing phoneme

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	recognition systems which merely analyze phonemes for word recognition." (Col. 8:57-9:45). "A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers. For example, the TII 66 can instruct a telephone user to select one of a preselected number of Internet sites to which access is desired by selecting from pre-recorded menu options. The user responds by stating or dialing a digit corresponding to the selected menu option. TIM 110 also performs speech recognition, speech-to-text and text-to-speech conversion operations, if necessary. The text/speech conversion can be implemented via commercially available software. TIM can handle multiple connections at any given time. A Data Presentations Module (DPM) 112 converts commands received from the TIM 110 into electronic commands such as HTTP requests (e.g. HTTP get and HTTP post) and other electronic communication protocols, and changes replies received from an Internet Interface Module (IIM) 114 to information that can be presented to a customer in an audio format by the TIM. To communicate with the above mentioned pre-selected sites, the DPM 112 uses scripts to translate user inputs (e.g., DTMF tones or speech that has been converted to text by the TIM 110) into input information (e.g., electronic commands such as HTTP requests and site-specific queries) for these

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	sites. The DPM 112 parses the HTML-type information returned by a site (e.g., an online shop or database) via the IIM and posts queries to the site query pages provided to the IIM 114. By parsing the information in the HTTP replies, important data items are extracted and can be reported to the customers." (Col. 7:63-8:25). "The DPM 112 parses the results page to locate hidden tags if a voice-optimized shopping cart 64 is used; otherwise, the DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller (block 156). The DPM 112 can play a pre-recorded message to the caller when no books are located which are similar to the spoken query. Text corresponding to the title in the results page can be converted to speech by the TIM 110 to provide at least a few of the book titles listed in the results page to the caller (block 158)." (Col. 10:39-49).
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,	"A Data Presentations Module (DPM) 112 converts commands received from the TIM 110 into electronic commands such as HTTP requests (e.g. HTTP get and HTTP post) and other electronic communication protocols, and changes replies received from an Internet Interface Module (IIM) 114 to information that can be presented to a customer in an audio format by the TIM. To communicate with the above mentioned pre-selected sites, the DPM 112 uses scripts to translate user inputs (e.g.,

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	DTMF tones or speech that has been converted to text by the TIM 110) into input information (e.g., electronic commands such as HTTP requests and site-specific queries) for these sites. The DPM 112 parses the HTML-type information returned by a site (e.g., an online shop or database) via the IIM and posts queries to the site query pages provided to the IIM 114. By parsing the information in the HTTP replies, important data items are extracted and can be reported to the customers. If the electronic shopping cart used is a voice-enabled shopping cart 64 (FIG. 8), the DPM looks for hidden tags generated by the voice-enabled shopping cart to identify the important data items. To parse the output of other shopping carts, DPM uses site specific scripts which help to identify what each site's output means, and where important data elements reside. For example, when looking at an online bookstore's search output, the DPM preferably extracts only names of many books found to match or are similar to a user's query. The DPM can handle multiple customers at any given time. The Internet Interface Module (IIM) 114 consists of the hardware and software for connecting to the Internet. The IIM handles multiple connections to different sites (e.g., online shops). IIM 114 receives connection commands and addresses from the DPM 112, and returns results in form of HTML-type pages or pages created using other mark-up languages." (Col. 8:9-42).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	"The DPM uses an input script to provide the URL for the online bookshop and contacts the online bookshop via the IIM 114 (block 142). As indicated in FIG. 144, the online bookshop returns a Web-style home page which provides browser users with onscreen prompts to enter query information, such as the page 24 in FIG. 2. The DPM 112 provides an audio message to the user via the TIM 110 which instructs the user to state the name or author of a book, for example (block 146). The message can also instruct the user to state a search category (e.g., "Subject" or "title" or "author" or "ISBN"). Thus, if the user states "subject', the DPM 112 is programmed via an input script to select the button 50 in the query page 24 (FIG. 2) via an electronic command. The online bookshop can then perform a context-sensitive search of subject matter in its database, as well as search only the subject fields 40 of database records 34 instead of every searchable item in each record." (Col. 10:10-26). "The online bookshop searches its records for database items that are close to the spoken query and transmits a Web-type results page to the TII 66 (blocks 152 and 154). The DPM 112 parses the results page to locate hidden tags if a voice-optimized shopping cart 64 is used; otherwise, the DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller (block 156)." (Col. 10:35-43).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	 FIG. 15A
[1.5] said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
to be retrieved is found or until said plurality of web sites has been accessed;	
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and	"As stated previously, telephone users do not have a computer with which to receive HTML-type pages to query and view search results from an online database. The TII 66 described below provides a mechanism to facilitate audio messaging to report search results, among other events and information, to a telephony customer. In accordance with an aspect of the present invention, the voice-enabled shopping cart 64 is operable to generate hidden tags to convert search results and other information provided by the online shop 20, which can be in a text or HTML format, for example, to an audio message that can be provided to a telephony customer." (Col. 6:54-65). "In accordance with the present invention, the voice enabled shopping cart also comprises an audio interface directives module 104 for providing hidden tags in the HTML-type pages provided by the online shop during a browsing session. The hidden tags are used by the TII 66 and other audio interfaces (e.g., Netscape browser with audio plug-in) to locate relevant information in an HTML-type page (e.g., a search result page indicating that the online shop has two book titles relating to a particular subject specified in a spoken query). For example, the hidden tags indicate where the book title information, price information or out-of-stock

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	message is located in a search results HTML page returned by an online bookstore in response to a spoken query. The TII 66 can then generate an appropriate audio message to provide the search result data to the user." (Col. 7:33-47). "A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers." (Col. 7:63-66). "Text corresponding to the title in the results page can be converted to speech by the TIM 110 to provide at least a few of the book titles listed in the results page to the caller (block 158)." (Col. 10:46-49).
[1.7] said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	"As stated previously, telephone users do not have a computer with which to receive HTML-type pages to query and view search results from an online database. The TII 66 described below provides a mechanism to facilitate audio messaging to report search results, among other events and information, to a telephony customer. In accordance with an aspect of the present invention, the voice-enabled shopping cart 64 is operable to generate hidden tags to convert search results and other information provided by the online shop 20, which can be in a text or HTML format, for example, to an audio message that can be provided to a telephony customer." (Col. 6:54-65).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	"In accordance with the present invention, the voice enabled shopping cart also comprises an audio interface directives module 104 for providing hidden tags in the HTML-type pages provided by the online shop during a browsing session. The hidden tags are used by the TII 66 and other audio interfaces (e.g., Netscape browser with audio plug-in) to locate relevant information in an HTML-type page (e.g., a search result page indicating that the online shop has two book titles relating to a particular subject specified in a spoken query). For example, the hidden tags indicate where the book title information, price information or out-of-stock message is located in a search results HTML page returned by an online bookstore in response to a spoken query. The TII 66 can then generate an appropriate audio message to provide the search result data to the user." (Col. 7:33-47). "A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers." (Col. 7:63-66). "Text corresponding to the title in the results page can be converted to speech by the TIM 110 to provide at least a few of the book titles listed in the results page to the caller (block 158)." (Col. 10:46-49).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
2. The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	"A Data Presentations Module (DPM) 112 converts commands received from the TIM 110 into electronic commands such as HTTP requests (e.g. HTTP get and HTTP post) and other electronic communication protocols, and changes replies received from an Internet Interface Module (IIM) 114 to information that can be presented to a customer in an audio format by the TIM. To communicate with the above mentioned pre-selected sites, the DPM 112 uses scripts to translate user inputs (e.g., DTMF tones or speech that has been converted to text by the TIM 110) into input information (e.g., electronic commands such as HTTP requests and site-specific queries) for these sites. The DPM 112 parses the HTML-type information returned by a site (e.g., an online shop or database) via the IIM and posts queries to the site query pages provided to the IIM 114. By parsing the information in the HTTP replies, important data items are extracted and can be reported to the customers. If the electronic shopping cart used is a voice-enabled shopping cart 64 (FIG. 8), the DPM looks for hidden tags generated by the voice-enabled shopping cart to identify the important data items. To parse the output of other shopping carts, DPM uses site specific scripts which help to identify what each site's output means, and where important data elements reside." (Col. 8:9-32). "The DPM 112 parses the results page to locate hidden tags if a voice-optimized shopping cart 64

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	is used; otherwise, the DPM 112 uses site-specific scripts to locate relevant information (e.g., titles of books having AVs which are close to the spoken query AV) to report to the caller (block 156)." (Col. 10:39-43).
3. The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
4. The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
5. The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
6. The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
7. The method of claim 6 wherein the computer periodically polls each said web site without being instructed by said user to determine the	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.	
8. The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
9. A system for retrieving information from web sites by uttering speech	*See* claim 1 preamble.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:	
[9.1a] a computer, said computer operatively connected to the internet and to at least one phone;	*See* limitation [1a] and [1b]
[9.1b] at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer;	*See* limitation [1a].
[9.1c] at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;	*See* limitation [1a].
[9.2] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
[9.3] a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;	*See* claim 2.
[9.4] a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
[9.5] said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;	*See* limitation [1c]
[9.6] said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said	*See* limitation [1d]

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;	
[9.7] said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
retrieved are assigned lower rankings;	
[9.8a] said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and	*See* limitation [1e].
[9.8b] said speech synthesis engine further configured to transmit said audio message to said users via said phone.	*See* limitation[1f]
10. The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone.	"The voice-enabled system 60 comprises three main subsystems, that is, a voice-optimized database or catalogue 62, a voice-enabled shopping cart 64 capable of generating output for both online shoppers using a browser and telephony users connecting through a telephony interface, and a telephony-Internet interface (TII) 66 which connects a user via a telephone 68 or other telecommunications device to an electronic shopping cart for online shopping. It is to be understood that the telephone 68 or other telecommunications device can connect to the TII 66 via wireline and wireless modes of communication." (Col. 3:18-28). "The TII 66 allows customers to access an Internet or online shop using plain old telephone

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	service (POTS) telephones, computers or other telecommunications devices. The TII 66 comprises hardware and software components to connect to the Public Switching Telephone Network (PSTN), as well as the Internet. The subsections of the TII 66 are shown in FIG. 9. A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers." (Col. 7:56-65). "With reference to FIGS. 16 and 17, a voice-enabled Internet interface is provided to access an online catalogue or other database using voice over Internet Protocol (VOIP). As shown in FIG. 16, a VOIP module 170 is connected between a DPM 112 and a computer 172 with a microphone 174. The configuration depicted in FIG. 16 supports online shopping access by telephone 108 and user computers 172 employing VOIP. FIG. 17 depicts a voice-enabled Internet interface for computers 172 and no telephones." (Col. 10:57-65). "The Voice-enabled system 60 comprises three main subsystems, that is, a voice-optimized database or catalogue 62, a voice-enabled shopping cart 64 capable of generating output for both online shoppers using a browser and telephony users connecting through a telephony interface, and a telephony-Internet interface (TII) 66 which connects a user via a telephone 68 or

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	other telecommunications device to an electronic shopping cart for online shopping." (Col. 4:18-26).
11. The system of claim 9 wherein said internet is a local area network.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
12. The system of claim 9 wherein said internet is a wide area network.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
13. The system of claim 9 wherein said internet is the Internet.	"The voice-enabled system 60 comprises three main subsystems, that is, a voice-optimized database or catalogue 62, a voice-enabled shopping cart 64 capable of generating output for both online shoppers using a browser and telephony users connecting through a telephony interface, and a telephony-Internet interface (TII) 66 which connects a user via a telephone 68 or other telecommunications device to an electronic shopping cart for online shopping. It is to be understood that the telephone 68 or other telecommunications device can connect to the TII 66 via wireline and wireless modes of communication." (Col. 3:18-28). "The TII 66 allows customers to access an Internet or online shop using plain old telephone service (POTS) telephones, computers or other telecommunications devices. The TII 66

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
	comprises hardware and software components to connect to the Public Switching Telephone Network (PSTN), as well as the Internet. The subsections of the TII 66 are shown in FIG. 9. A Telephone Interface Module (TIM) 110 is provided which has hardware and software components for handling incoming calls from the PSTN, and provide audio communications to customers." (Col. 7:56-65).
14. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
15. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,941,273 ("Loghmani")
based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site.	

C. Kumar Claim Mapping

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
1. A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;	"[I]t is desirable to have a mechanism that allows web users to locate optimal servers for their requests. As will be seen, one embodiment of the present invention provides a mechanism that allows an optimal server to be allocated without user's intervention." (Col. 2:14-19)
[1.2] providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;	
[1.3] providing a speech command to said speaker-independent speech recognition engine,	
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,	"A replicated server discovery ("RSD") method and apparatus provides optimal or best-replicated server access to web users without users intervention." (Col. 2:22-24) "The replicated server discovery ("RSD") method and apparatus of the present invention provides a mechanism that allows Web and file transfer protocol ("FTP") users to access the Internet using optimal servers or sites. Websites are generally composed

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	of servers or clusters of servers and consequently, the words "server" and "site' are synonymous in the following description. In one embodiment, RSD identifies an optimal site according to responses from data transactions and data types involved in transactions. An optimal site is referred to as a Website that is capable of giving the fastest response to a user's request. Response time from server is one element used to determine an optimal server, where response time is measured between the time of initiating an access request to the server and the time of receiving a response to the request from the server." (Col. 3:9-23).
[1.5] said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed;	"To identify an optimal server, multiple factors such as the physical distance between servers and users, loading status of servers, bandwidth of server, and type of data should be considered. Moreover, the loading status of each server may dynamically change as each server accepts new accessing requests." (Col. 1:47-52). "A replicated server discovery ("RSD") method and apparatus provides optimal or best-replicated server access to web users without users intervention." (Col. 2:22-24) "The replicated server discovery ("RSD") method and apparatus of the present invention provides a mechanism that allows Web and file transfer protocol ("FTP) users

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	to access the Internet using optimal servers or sites. Websites are generally composed of servers or clusters of servers and consequently, the words "server" and "site' are synonymous in the following description. In one embodiment, RSD identifies an optimal site according to responses from data transactions and data types involved in transactions. An optimal site is referred to as a Website that is capable of giving the fastest response to a user's request. Response time from server is one element used to determine an optimal server, where response time is measured between the time of initiating an access request to the server and the time of receiving a response to the request from the server." (Col. 3:9-23). "Upon receiving the server addresses, RSD selects a server address and then uses the selected server address to perform the requested data transfer. RSD records the responses from the server and calculates the rate of transfer according to server response time and the types of data involved in the transfer. After all server addresses have been selected at least once for a network transfer, RSD sorts the server addresses where the sorting may depend on the rate of transfer and the types of data involved in transaction. After the sorting, the address listed on the top of the sorted list is the most preferred or the optimal server address and the address listed on the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	bottom of the sorted list is the least preferred server address for the transaction. Moreover, if the optimal server goes out of operation, the RSD automatically selects the next most preferred server on the sorted list as the new optimal server." (Col. 3:50-65).
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and	
[1.7] said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	
2. The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	
3. The method of claim 1 wherein said speech command is further associated with a ranking	"To identify an optimal server, multiple factors such as the physical distance between servers and users, loading status of servers, bandwidth of server, and

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed.	type of data should be considered. Moreover, the loading status of each server may dynamically change as each server accepts new accessing requests." (Col. 1:47-52). "A replicated server discovery ("RSD") method and apparatus provides optimal or best-replicated server access to web users without users intervention." (Col. 2:22-24) "The replicated server discovery ("RSD") method and apparatus of the present invention provides a mechanism that allows Web and file transfer protocol ("FTP) users to access the Internet using optimal servers or sites. Websites are generally composed of servers or clusters of servers and consequently, the words "server" and "site' are synonymous in the following description. In one embodiment, RSD identifies an optimal site according to responses from data transactions and data types involved in transactions. An optimal site is referred to as a Website that is capable of giving the fastest response to a user's request. Response time from server is one element used to determine an optimal server, where response time is measured between the time of initiating an access request to the server and the time of receiving a response to the request from the server." (Col. 3:9-23).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	"Upon receiving the server addresses, RSD selects a server address and then uses the selected server address to perform the requested data transfer. RSD records the responses from the server and calculates the rate of transfer according to server response time and the types of data involved in the transfer. After all server addresses have been selected at least once for a network transfer, RSD sorts the server addresses where the sorting may depend on the rate of transfer and the types of data involved in transaction. After the sorting, the address listed on the top of the sorted list is the most preferred or the optimal server address and the address listed on the bottom of the sorted list is the least preferred server address for the transaction. Moreover, if the optimal server goes out of operation, the RSD automatically selects the next most preferred server on the sorted list as the new optimal server." (Col. 3:50-65).
4. The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking.	*See* Claim 3.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
5. The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	*See* Claim 3., esp. "To identify an optimal server, multiple factors such as the physical distance between servers and users, loading status of servers, bandwidth of server, and type of data should be considered. Moreover, the loading status of each server may dynamically change as each server accepts new accessing requests." (Col. 1:47-52). "Moreover, the sorted list is updated regularly and also different optimal servers may be dedicated to different data types." (Col. 6:21-23).
6. The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved.	*See* Claim 3. "Moreover, if the optimal server goes out of operation, the RSD automatically selects the next most preferred server on the sorted list as the new optimal server." (Col. 3:62-65) "Moreover, the sorted list is updated regularly and also different optimal servers may be dedicated to different data types." (Col. 6:21-23).
7. The method of claim 6 wherein the computer periodically polls each said web site without being	"To identify an optimal server, multiple factors such as the physical distance between servers and users, loading status of servers, bandwidth of server, and

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.	type of data should be considered. Moreover, the loading status of each server may dynamically change as each server accepts new accessing requests." (Col. 1:47-52). "After block 410, the process proceeds to block 412, where the process records responses from transactions and data types transferred. The process sorts the list of IP server addresses according to their rate of transfer and stores the sorted list in the cache. However, if all IP server addresses are used at least once, the address situated on the top of the sorted list is the most preferred site address and the address situated on the second from the top of the sorted list is the second most preferred site address and so on." (Col. 6:11-19) "The RSD further records responses from servers addressed by the server addresses and then sorts the server addresses according to the responses and data types involved in transactions." (Abstract) "A replicated server discovery ("RSD") method and apparatus provides optimal or best-replicated server access to web users without users intervention." 2:22-24 "The replicated server discovery ("RSD") method and apparatus of the present invention provides a mechanism that allows

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	Web and file transfer protocol ("FTP) users to access the Internet using optimal servers or sites. Websites are generally composed of servers or clusters of servers and consequently, the words "server" and "site" are synonymous in the following description. In one embodiment, RSD identifies an optimal site according to responses from data transactions and data types involved in transactions. An optimal site is referred to as a Website that is capable of giving the fastest response to a user's request. Response time from server is one element used to determine an optimal server, where response time is measured between the time of initiating an access request to the server and the time of receiving a response to the request from the server. Types of data or data types to be transferred is another element used to determine an optimal server, where data types includes a large text, an audio, or video file. Different data type to be transferred across the network may require different network bandwidth for efficient transferring, (i.e., a video file normally requires a wider bandwidth to be transferred efficiently)." (Col. 3:8-30) "Processor 202 may be any of a wide variety of general purpose processors or microprocessors such as the Pentium TM microprocessor manufactured by IntelTM Corporation or the Motorola TM 68040 or Power PCTM brand microprocessor

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	manufactured by Motorola TM Corporation. It will be apparent to those of ordinary skill in the art, however, that other varieties of processors may also be used in a particular computer system. Display device 205 may be a liquid crystal device, cathode ray tube (CRT), or other suitable display device. Mass storage device 207 may be a conventional hard disk drive, floppy disk drive, CD-ROM drive, or other magnetic or optical data storage device for reading and Writing information stored on a hard disk, a floppy disk, a CD-ROM, a magnetic tape, or other magnetic or optical data storage medium. Data storage medium 208 may be a hard disk, a floppy disk, a CD-ROM, a magnetic tape, or other magnetic or optical data storage medium." (Col. 4:29-45) "Upon receiving the server addresses, RSD selects a server address and then uses the selected server address to perform the requested data transfer. RSD records the responses from the server and calculates the rate of transfer according to server response time and the types of data involved in the transfer. After all server addresses have been selected at least once for a network transfer, RSD sorts the server addresses where the sorting may depend on the rate of transfer and the types of data involved in transaction. After the sorting, the address listed on the top of the sorted list is the most

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	preferred or the optimal server address and the address listed on the bottom of the sorted list is the least preferred server address for the transaction. Moreover, if the optimal server goes out of operation, the RSD automatically selects the next most preferred server on the sorted list as the new optimal server." (Col. 3:50-65). "After block 410, the process proceeds to block 412, where the process records responses from transactions and data types transferred. The process sorts the list of IP server addresses according to their rate of transfer and stores the sorted list in the cache. However, if all IP server addresses are used at least once, the address situated on the top of the sorted list is the most preferred site address and the address situated on the second from the top of the sorted list is the second most preferred site address and so on. Accordingly, the most preferred site address is the optimal IP site address. Moreover, the sorted list is updated regularly and also different optimal servers may be dedicated to different data types." (Col. 6:11-23) "At block 854, the process sorts the addresses into a preferred list of site addresses according to the responses and data types. The site address appear on the top of the preferred list is the optimal site

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	and the address appear next to the top of the preferred list is the second most preferred site and so on. The process updates the preferred list and proceeds to block 856 where the process is terminated." (Col. 9:15-23) "In another embodiment, the process determines the optimal IP server address by performing RSD Metrics on each IP server address before any transaction takes place. RSD Metrics is a combination of network tests, such as Ping, Traceroute, opening a connection to port 80 and measuring response time, measuring the actual file transfer rate, and classifying transfer rate by file type. Ping is a common network testing method to determine response time." (Col. 5:58-65) "The address listed on the top of the sorted list is the optimal server address, which points to a server that is capable of giving the fastest response to a user's request." (Col. 7:13-15) "An optimal site is referred to as a Website that is capable of giving the fastest response to a user's request." (Col. 3:18-19) "FIG. 1A illustrates a conventional configuration 100 between a main site 102 and replicated servers 104 and 110. The configuration 100 contains a main site 102

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	located in Santa Clara, Calif., for example, which has a universal resource locator ("URL) of www.placeholder.com, a first user in New York, a second user in Orlando 108, a replicated server A 104, and a replicated server B 110. Replicated server A104 and B 110 contain the same information as the Santa Clara site 102 and the function of replicated server A 104 and B110 is to reduce the Internet accessing load from the Santa Clara site 102." (Col. 1:27-37)
8. The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites.	"Moreover, the sorted list is updated regularly and also different optimal servers may be dedicated to different data types." (Col. 6:21-23).
9. A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:	
[9.1a] a computer, said computer operatively	*See* limitations [1a] and [1b]

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
connected to the internet and to at least one phone;	
[9.1b] at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer;	*See* limitation [1a].
[9.1c] at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;	*See* limitation [1a].
[9.2] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;	"DNS is a distributed database for storing addresses of all Websites." (Col. 5:37-38). "In one embodiment, RSD is implemented by a proxy. FIG. 1B illustrates a common configuration of the Internet connection 150 containing a proxy 152. A proxy 152, which includes a server 154 or a cluster of servers 154, is used to connect between an entity 160 and the Internet 158. The entity 160 could be a single user 156, a corporation 164 or corporations, or other entity having many users 162. In operation, a proxy 152 containing RSD uses DNS protocol to initiate a DNS lookup for a universal resource locator ("URL") host name. DNS protocol currently supports a mechanism of providing all IP site addresses relating to replicated servers associated with one URL host name, and consequently, RSD may receive

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	multiple IP server addresses including replicated Servers. Upon receiving the server addresses, RSD selects a server address and then uses the selected server address to perform the requested data transfer. RSD records the responses from the server and calculates the rate of transfer according to server response time and the types of data involved in the transfer." (Col. 3:36-55)
[9.3] a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;	
[9.4] a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;	*See* claim 3.
[9.5] said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;	
[9.6] said computer configured to access at least one of said plurality	*See* limitation [1d] and claim 4.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;	
[9.7] said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;	*See* claim 5.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
[9.8a] said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and	*See* limitation [1e].
[9.8b] said speech synthesis engine further configured to transmit said audio message to said users via said phone.	*See* limitation [1f]
10. The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone.	
11. The system of claim 9 wherein said internet is a local area network.	"FIG. 6 illustrates an embodiment of RSD implementation at a proxy system 600. A proxy is a computer system used as a network server and normally used to connect between users systems and the Internet. A proxy is commonly used by an entity, such as a corporation or university, to distribute network loading and to screen data being transferred, which is commonly known as firewalls." (Col. 7:22-28)
12. The system of claim 9 wherein said internet is a wide area network.	"FIG. 6 illustrates an embodiment of RSD implementation at a proxy system 600. A proxy is a computer system used as a network server and normally used to connect between users systems and the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
	Internet. A proxy is commonly used by an entity, such as a corporation or university, to distribute network loading and to screen data being transferred, which is commonly known as firewalls." (Col. 7:22-28)
13. The system of claim 9 wherein said internet is the Internet.	"FIG. 6 illustrates an embodiment of RSD implementation at a proxy system 600. A proxy is a computer system used as a network server and normally used to connect between users systems and the Internet. A proxy is commonly used by an entity, such as a corporation or university, to distribute network loading and to screen data being transferred, which is commonly known as firewalls." (Col. 7:22-28)
14. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.	*See* Claim 5.
15. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites	*See* Claim 7.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 6,795,434 to Kumar ("Kumar")
based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site.	

D. Messerly Claim Mapping

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
1. A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	"In accordance with another aspect of the present invention, a hypertext document is provided that has a hyperlink to a selected web site that holds media content. A party selects the hyperlink and in response, an attempt is made to access the selected web site. When the attempt to access the selected web site is not successful, another web site is identified that holds substantially identical media content as the selected web site. The web site that holds the substantially

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	identical media content is accessed, and the media content held therein is returned to the requesting party." (Col. 2:33-43) "Tokenizers are available for audio files to digitize spoken language into phonemes that uniquely identify the content of the audio files." (Col. 2:48-51). "Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 11:19-23). "[W]hen a uniform resource locator (URL) associated with the hyperlink cannot be resolved or cannot be resolved in a timely fashion, one of the identicals of the desired web page documents may be returned to provide a requesting party with the desired content." (Abstract).
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;	"FIG. 2 is a block diagram that illustrates an example of a computing environment 22 that is suitable for practicing the exemplary embodiment of the present invention. The computing environment 22 includes a client computer system 24 that may communicate with servers 26 and 28 via a network connection. The connection may be realized via modem or a network adapter. For

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	illustrative purposes in the discussion below, it is assumed that the connection is an Internet connection and that servers 26 and 28 reside on the Internet. The client computer 24 includes a central processing unit (CPU) 30, such as a microprocessor. The CPU is accessed to a storage 32 and input/output (I/O) devices 34. The I/O devices 34 may include but are not limited to a keyboard, a mouse, a video display, a modem, and audio loudspeakers. The storage 32 may include both primary storage and secondary storage. Accessing code 36, such as a web browser, is held within a storage 32 and run on the CPU 30. For purposes of the discussion, it is assumed that the accessing code is a web browser." (Col. 5: 10-29) "Tokenizers are available for audio files to digitize spoken language into phonemes that uniquely identify the content of the audio files." (Col. 2:48-51).
[1.2] providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;	"The I/O devices 34 may include but are not limited to a keyboard, a mouse, a video display, a modem, and audio loudspeakers." (Col. 2:22-24).
[1.3] providing a speech command to said speaker-	This limitation is rendered obvious for at least the reasons provided discussed in

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
independent speech recognition engine,	Petition for *Inter Partes* Review and my declaration in support thereof.
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,	"FIG. 1B shows the case where an operating system (OS) or network operating System (NOS) 11 at a client 12 seeks access to a resource 13 stored on a server 16. The server 16 may be connected to the client 12 via a local area network (LAN) or wide area network (WAN). The OS/NOS 11 may use an object identifier, path name or other resource identifier to access the resource 13. Unfortunately, such an object identifier, path name or resource identifier may not be current. As a result, access to the resource may not be possible." (Col. 1:67-2:10) "In accordance with another aspect of the present invention, a hypertext document is provided that has a hyperlink to a selected web site that holds media content. A party selects the hyperlink and in response, an attempt is made to access the selected web site. When the attempt to access the selected web site is not successful, another web site is identified that holds substantially identical media content as the selected web site. The web site that holds the substantially identical media content is accessed, and the media content held therein is returned to the requesting party." (Col. 2:33-43)

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	"Accessing code 36, such as a web browser, is held within a storage 32 and run on the CPU 30. For purposes of the discussion, it is assumed that the accessing code is a web browser. Nevertheless, those skilled in the art will appreciate that the accessing code 36, more generally may be any code, such as an operating system or network operating system, that is used to gain access to a resource. The accessing code is used to gain access to resources 40A and 40B. For purposes of the discussion below, it is assumed that these resources are media content. A database, denoted as an "index" 38, is also stored on the storage 32. As will be described in more detail below, the index 38 contains information regarding what web pages are substantially identical to each other." (Col. 5:26-39)
[1.5] said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed;	"FIG. 1B shows the case where an operating system (OS) or network operating system (NOS) 11 at a client 12 seeks access to a resource 13 stored on a server 16. The server 16 may be connected to the client 12 via a local area network (LAN) or wide area network (WAN). The OS/NOS 11 may use an object identifier, path name or other resource identifier to access the resource 13. Unfortunately, such an object identifier, path name or resource identifier may not be current. As a result, access to the resource may not be possible." (Col. 1:67-2:10)

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	"In accordance with another aspect of the present invention, a hypertext document is provided that has a hyperlink to a selected web site that holds media content. A party selects the hyperlink and in response, an attempt is made to access the selected web site. When the attempt to access the selected web site is not successful, another web site is identified that holds substantially identical media content as the selected web site. The web site that holds the substantially identical media content is accessed, and the media content held therein is returned to the requesting party." (Col. 2:33-43) "Accessing code 36, such as a web browser, is held within a storage 32 and run on the CPU 30. For purposes of the discussion, it is assumed that the accessing code is a web browser. Nevertheless, those skilled in the art will appreciate that the accessing code 36, more generally may be any code, such as an operating system or network operating system, that is used to gain access to a resource. The accessing code is used to gain access to resources 40A and 40B. For purposes of the discussion below, it is assumed that these resources are media content. A database, denoted as an "index" 38, is also stored on the storage 32. As will be described in more detail below, the index 38 contains information regarding what web pages are substantially identical to each other." (Col. 5:26-39)

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	"Returning to FIG. 4, the catalog 52 serves as a property cache for holding property information regarding web page documents. FIG. 7 depicts the format of a portion of the catalog 52. Specifically, FIG. 7 depicts catalog entries 76 and 78 that are associated with two distinct documents. Each of the catalog entries 76 includes a DOCID 80, which serves as an indexing key into the catalog. Each catalog entry 76 and 78 also includes a list of identical web page documents 82. The document identifier for the identicals may be stored within the list 82. Other property information 84 is also stored within the catalog entries 76 and 78, including the uniform resource locator (URL) for the document." (Col. 6:34-45) "After the system has built the index and identified which data objects are identical, an instance may arise where a hypermedia link needs to be repaired (see step 46 in FIG. 3). In such an instance, the steps depicted in FIG. 12 are performed. The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 40a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132),

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in the catalog 50 for the document. This entry includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator (URL) for the substantially identical data object. The URL identifies the location of a substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 10:62-11:23) "As part of the creation of the occurrence streams 50, each term must be assigned a weight. FIG. 9 illustrates a flow chart of the steps that are performed to assign such weights. The steps of FIG. 9 are performed for each term that appears within a web

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	page document. A collection frequency component is calculated for each word within the web page document (step 96 in FIG. 9). The collection frequency component indicates how frequently the term appears within the collection of documents being indexed. The collection frequency component may be calculated as the logarithm base 10 of (the number of documents in the collection) divided by (the number of documents in which the term occurs). The collection frequency component specifies how readily the term differentiates documents within the collection. In general, there is an inverse relationship between meaningfulness and the number of documents in which the term occurs. The document frequency component is then calculated for the term (step 98 in FIG. 9). The document frequency component indicates the number of times that a term occurs within a document. This number may be normalized to correct for skewing due to the repetition of the term within the document. Using the collection frequency component and the document frequency component, the client computer system 24 calculates a weight for the term (step 100 in FIG. 9). In general, the weight is calculated as the product of the collection frequency

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	component with the document frequency component, divided by a normalization component. The normalization component may account for the number of terms within the document. A suitable normalization component is the square root of the sum of the squared weights of the other terms in the documents. Those skilled in the art will recognize this as the cosine normalization function and will recognize that other word weight and normalization functions may be used as well. Examples of suitable word weight functions include the binary term independence weight often calculated as log(N-n/n), where N is the number of documents in the collection and n is the collection frequency of the word, or a weighted probabilistic function such as 0.5+(0.5 tf)/max(tf), where max(tf) is the maximum term frequency found in the document. Examples of other normalization functions include simple document length calculated as length in bytes or terms, the square root of sums of squares of tf's in the document, the sum of term weights or the maximum term weight found in the document. The cosine normalization function will be preferred in many applications since the resulting number may be used both for word weight calculation and for the measurement of progress in reaching the "perfect score" for the document, as discussed below. For weighting functions in which the "perfect score" for the document is

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	not a constant, the perfect score can be recorded in an element in the index, and the same thresholds apply, except the thresholds apply as percentages of the stored perfect weight." (Col. 7:5-59). "For a given web page document, the calculation of identicals begins by locating the highest weighted term within the document (step 106 in FIG. 11). The most likely high weight terms can be determined on the fly by referencing the dictionary portion of the index. The collection frequency counts nay be stored at the leaves of the dictionary. These collection frequency counts indicate relative weights of the words. The collection frequency counts may be used in combination with the term frequency counts to identify the most highly weighted term in the document without having to probe in occurrence streams. Alternatively, the most highly weighted terms may be cached in the catalog. In one term weighting schemes (such as the weighted probabilistic function), the most important term can be determined without referencing the index. The occurrence streams 50 are examined to locate any other web page documents that contain the given term with the same or substantially the same weight (step 108 in FIG. 11). As was discussed above, the dictionary 48 may be used to access the word occurrence list (see FIG. 5) for a given term. The word occurrence list

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	contains a list of which documents contain the term and the weight assigned to the term for those documents. These word occurrence lists are utilized in step 108. If such a document containing the highest weighted term and a substantially similar weight for the term is found (see step 110), each such document is considered a potential candidate for the set of identicals. Since a perfectly identical web page document would have all of the same weights for all of the terms within the web page document being analyzed and the total of the weights would be a normalized value of 1, it can be determined how great the highest weighted term contributes to the total weight when this contribution is added to a document similarity value that is initialized as 0. The document similarity value is initially calculated as the dot product of the weight for the term in the first web page document with the weight for this term in the second document. For example, if the term "orphans" was the highest weight term in the above example document and this was compared to a second web page document that contained the same weight of 0.66581, the document similarity score would be calculated as 0.66581° or 0.4433 (see step 112 in FIG. 11). The document similarity score is then compared to a threshold (step 114 in FIG. 11). A suitable threshold value is 0.8. If the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	document similarity score exceeds the threshold in step 114, it is concluded that the candidate is identical and should be added to the identicals list (step 116 in FIG. 11). On the other hand, if it is determined that the document similarity score is not above the threshold then more terms within the web page document being analyzed must be examined. If there are any more terms remaining (see step 118) the next highest weighted term is located (see step 106 in FIG. 11) and the process is repeated. If, however, there are no more features, since the document similarity score is below the threshold or equal to the threshold, it is concluded that the document candidate is not identical to the web page document that is being analyzed (step 124 in FIG. 11)." (Col. 9:3-59). "The exemplary embodiment of the present invention described herein builds a database containing sets of substantially identical data objects, such as web pages." (Col. 4:9-12). "Given the weights for each of the terms within each of the documents, the exemplary embodiment of the present invention then calculate s which web page documents are identical. For a given web page document, the identicals are calculated step 102 in FIG. 10). The resulting list of identicals is then stored within the catalog 52 of the index 38 (step 104 in FIG. 10)." (Col. 8:59-65).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and	"Tokenizers are available for audio files to digitize spoken language into phonemes that uniquely identify the content of the audio files." (Col. 2:48-51). "The I/O devices 34 may include but are not limited to a keyboard, a mouse, a video display, a modem, and audio loudspeakers." (Col. 2:22-24).
[1.7] said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	"The I/O devices 34 may include but are not limited to a keyboard, a mouse, a video display, a modem, and audio loudspeakers." (Col. 2:22-24).
2. The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	"FIG. 3 is a flowchart that provides an overview of the sequential steps that are performed by the exemplary embodiment of the present invention. First, in step 42, the exemplary embodiment of the present invention builds the index 38. The index 38 holds information regarding what words occur within each document and where the words occur within the document. Information regarding what documents are substantially identical to a selected document is stored within the index as well. The information regarding substantially identical documents is added to the index after the completion of step 44 in FIG. 3, where data objects (i.e., web page documents) are compared to determine

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	which web pages are substantially identical. After the index 38 is completely built, it is utilized to repair broken links by identifying substantially identical web pages that may be returned as alternatives to a web page associated with a broken link (step 46 in FIG. 3)." (Col. 5:40-56). "The ordinal values indicate a location of the term within the document. For example, an ordinal value of 56 indicates that the term appears as the fifty-sixth word within the document." (Col. 6:30-33). "FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document. These terms are tokenized by using conventional natural language processing techniques. The tokens are then added to

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	the index 38 (step 94 in FIG. 8)." (Col. 6:55-7:4).
3. The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in which the plurality of web sites are accessed.	"Given the weights for each of the terms within each of the documents, the exemplary embodiment of the present invention then calculate s which web page documents are identical. For a given web page document, the identicals are calculated step 102 in FIG. 10). The resulting list of identicals is then stored within the catalog 52 of the index 38 (step 104 in FIG. 10). FIG. 11 illustrates in more detail how identicals for a data object are calculated in step 102 of FIG. 10. It should be appreciated that word occurrence list entries are stored in a sorted order with the highest weighted terms at the front of the word occurrence list." (Col. 8:59-9:2). "For a given web page document, the calculation of identicals begins by locating the highest weighted term within the document (step 106 in FIG. 11). The most likely high weight terms can be determined on the fly by referencing the dictionary portion of the index. The collection frequency counts n ay be stored at the leaves of the dictionary. These collection frequency counts indicate relative weights of the words. The collection frequency counts may be used in combination with the term frequency counts to identify the most highly weighted term in the document without

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	having to probe in occurrence streams. Alternatively, the most highly weighted terms may be cached in the catalog. In one term weighting schemes (such as the weighted probabilistic function), the most important term can be determined without referencing the index. The occurrence streams 50 are examined to locate any other web page documents that contain the given term with the same or substantially the same weight (step 108 in FIG. 11). As was discussed above, the dictionary 48 may be used to access the word occurrence list (see FIG. 5) for a given term. The word occurrence list contains a list of which documents contain the term and the weight assigned to the term for those documents. These word occurrence lists are utilized in step 108. If such a document containing the highest weighted term and a substantially similar weight for the term is found (see step 110), each such document is considered a potential candidate for the set of identicals. Since a perfectly identical web page document would have all of the same weights for all of the terms within the web page document being analyzed and the total of the weights would be a normalized value of 1, it can be determined how great the highest weighted term contributes to the total weight when this contribution is added to a document similarity value that is initialized as 0. The document similarity value is initially calculated as the dot product

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	of the weight for the term in the first web page document with the weight for this term in the second document. For example, if the term "orphans" was the highest weight term in the above example document and this was compared to a second web page document that contained the same weight of 0.66581, the document similarity score would be calculated as 0.665812 or 0.4433 (see step 112 in FIG. 11). The document similarity score is then compared to a threshold (step 114 in FIG. 11). A suitable threshold value is 0.8. If the document similarity score exceeds the threshold in step 114, it is concluded that the candidate is identical and should be added to the identicals list (step 116 in FIG. 11)." (Col. 9:3-49) "The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 4.0a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132), link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	the catalog 50 for the document. This entry includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator (URL) for the substantially identical data object. The URL identifies the location of a substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 10:66-11:23). "Those skilled in the art will appreciate that different threshold values may be utilized depending on the degree of exactitude that is required for data objects to be considered substantially identical." (Col. 10:48-51).
4. The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer	"In accordance with another aspect of the present invention, a hypertext document is provided that has a hyperlink to a selected web site that holds media content. A party selects the hyperlink and in response, an

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
first accessing said web site having the highest ranking.	attempt is made to access the selected web site. When the attempt to access the selected web site is not successful, another web site is identified that holds substantially identical media content as the selected web site. The web site that holds the substantially identical media content is accessed, and the media content held therein is returned to the requesting party." (Col. 2:33-43) The document similarity score is then compared to a threshold (step 114 in FIG. 11). A suitable threshold value is 0.8. If the document similarity score exceeds the threshold in step 114, it is concluded that the candidate is identical and should be added to the identicals list (step 116 in FIG. 11)." (Col. 9:3-49) "The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 4.0a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132), link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in the catalog 50 for the document. This entry

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator (URL) for the substantially identical data object. The URL identifies the location of a substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a. (Col. 10:66-11:23). "Those skilled in the art will appreciate that different threshold values may be utilized depending on the degree of exactitude that is required for data objects to be considered substantially identical." (Col. 10:48-51).
5. The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having	"FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document. These terms are tokenized by using conventional natural language processing techniques. The tokens are then added to the index 38 (step 94 in FIG. 8)." (Col. 6:55-7:4).
6. The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved.	"FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document. These terms are tokenized by using

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	conventional natural language processing techniques. The tokens are then added to the index 38 (step 94 in FIG. 8). As part of the creation of the occurrence streams 50, each term must be assigned a weight. FIG. 9 illustrates a flow chart of the Steps that are performed to assign such weights. The steps of FIG. 9 are performed for each term that appears within a web page document. A collection frequency component is calculated for each word within the web page document (step 96 in FIG. 9). The collection frequency component indicates how frequently the term appears within the collection of documents being indexed. The collection frequency component may be calculated as the logarithm base 10 of (the number of documents in the collection) divided by (the number of documents in which the term occurs). The collection frequency component specifies how readily the term differentiates documents within the collection. In general, there is an inverse relationship between meaningfulness and the number of documents in which the term occurs. The document frequency component is then calculated for the term (step 98 in FIG. 9). The document frequency component indicates the number of times that a term occurs within a document. This number may

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	be normalized to correct for skewing due to the repetition of the term within the document. Using the collection frequency component and the document frequency component, the client computer system 24 calculates a weight for the term (step 100 in FIG. 9). In general, the weight is calculated as the product of the collection frequency component with the document frequency component, divided by a normalization component. The normalization component may account for the number of terms within the document. A suitable normalization component is the square root of the sum of the squared weights of the other terms in the documents. Those skilled in the art will recognize this as the cosine normalization function and will recognize that other word weight and normalization functions may be used as well. Examples of suitable word weight functions include the binary term independence weight often calculated as log(N-n/n), where N is the number of documents in the collection and n is the collection frequency of the word, or a weighted probabilistic function such as 0.5+(0.5 tf)/max(tf), where max(tf) is the maximum term frequency found in the document. Examples of other normalization functions include simple document length calculated as length in bytes or terms, the square root of sums of squares of tfs in the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly (“Messerly”)
	document, the sum of term weights or the maximum term weight found in the document. The cosine normalization function will be preferred in many applications since the resulting number may be used both for word weight calculation and for the measurement of progress in reaching the “perfect score' for the document, as discussed below. For weighting functions in which the "perfect score' for the document is not a constant, the perfect score can be recorded in an element in the index, and the same thresholds apply, except the thresholds apply as percentages of the stored perfect weight. In general, a normalization approach which expresses dependence on specific word values, such as those employing the sums of word weights, would work better than those approaches which are independent of specific word values, such as byte length. These approaches would work better because the resulting word weight is more likely to occur in those documents which have the same combination of terms. The other approaches work because the factors that they measure represent a telltale statistical signature that seldom occurs in non-identical documents. Consider the following example document concerning orphans:

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	Orphan, a minor who has lost one or both parents. In ancient times the care of orphans was a private matter. The responsibility of the community for the care of orphans was recognized by the early Christians, and collections to raise funds were taken among the members of congregations. Later church charity provided for the establishment of orphan asylums as well as for the care of orphans in monasteries. The duty of the state to provide for orphans was first recognized in the early 17th century, in England, where they were often placed in institutions known as workhouses. The abuses of the workhouse system led in the 18th century to the establishment by the government of separate residential schools, called barrack schools, for the housing and instruction of orphans, and to a growing number of orphan asylums founded by private groups. Orphanages were favorite objects of philanthropy in the 19th century as concern mounted over the mistreatment of children. As the negative effects of institutional regimentation on children's personalities became better understood, however, the emphasis shifted to care in foster homes and to adoption opportunities. In most countries, including Great Britain and the United states, orphans are recognized as wards of the state, and governmental provision is made for their care. In the U.S. both state and federal legislation provides for aid to orphans in

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly (“Messerly”)
	various forms, including their total support in orphanages and foster homes, when necessary. Orphanages in the U.S. are also maintained by religious organizations, by social or fraternal organizations, and by private endowment. In recent times orphanages have been organized on the so-called cottage system, in which children live together in small groups under the care of a house mother. In these groups efforts are made to integrate the lives of the children with the life of the community. All Jewish institutions and most Protestant institutions, for example, provide for the education of their charges in public schools in which they can meet and associate with other children. In addition, increasing emphasis is given to securing qualified supervisory personnel with medical, psychiatric, dietary, and social work training. Even so, in recent years, orphanages are being replaced by group homes, where care is provided for a limited number of children, and by individual care in foster homes. These programs are funded by government agencies and by religious and charitable organizations. See also Adoption. Suppose this document is part of a collection of 25,000 documents and suppose that the term “orphans' occurs in only 44 of the 25,000 documents. This term occurs 10 times in the above example document. As a

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	result, the normalized weight for this term is 0.66581. For another document to have precisely a weight of 0.66581 for the term "orphans." the other document would have to have exactly the same combination of word weights as the source document. The chance of such a common weight value are exceedingly rare. Given the weights for each of the terms within each of the documents, the exemplary embodiment of the present invention then calculates which web page documents are identical. For a given web page document, the identicals are calculated step 102 in FIG. 10). The resulting list of identicals is then stored within the catalog 52 of the index 38 (step 104 in FIG. 10)." (Col. 6:55-8:65). "One difficulty encountered with hypertext documents is that the hypermedia links embedded within the documents may be unresolvable (i.e., not resolved to a web set). One of the causes for such unresolvable links is that the storage location of the media 18 may be changed without updating the links contained within the Hypertext document. In such cases, the web browser 10 returns an error message because the media content is no longer located at the address path specified by the link. As a result, the user is unable to access the media content associated with the link. Similar difficulties may be encountered in

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	different environments. Other references to objects or files may also be subject to change that makes them unresolvable. For example, links and path names that refer to other files or objects may change." (Col. 1:50-64).
7. The method of claim 6 wherein the computer periodically polls each said web site without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.	"The exemplary embodiment of the present invention described herein builds a database containing sets of substantially identical data objects, such as web pages. When the broken link is detected, the system accesses the database to locate a substantially identical data object to return to the user. This repairing of broken links may be performed transparently relative to the user and does not require user input." (Col. 4:8-16). "FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	page document, the features are terms within the text of the web page document. These terms are tokenized by using conventional natural language processing techniques. The tokens are then added to the index 38 (step 94 in FIG. 8)." (Col. 6:55-7:4). "After the system has built the index and identified which data objects are identical, an instance may arise where a hypermedia link needs to be repaired (see step 46 in FIG. 3). In such an instance, the steps depicted in FIG. 12 are performed. The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 40a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132), link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in the catalog 50 for the document. This entry includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	(URL) for the substantially identical data object. The URL identifies the location of a substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 10:62-11:23)
8. The method of claim 1 further comprising the step of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites.	"FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	These terms are tokenized by using conventional natural language processing techniques. The tokens are then added to the index 38 (step 94 in FIG. 8)." (Col. 6:55-7:4). "After the system has built the index and identified which data objects are identical, an instance may arise where a hypermedia link needs to be repaired (see step 46 in FIG. 3). In such an instance, the steps depicted in FIG. 12 are performed. The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 40a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132), link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in the catalog 50 for the document. This entry includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator (URL) for the substantially identical data object. The URL identifies the location of a

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 10:62-11:23)
9. A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:	*See* claim 1 preamble.
[9a] a computer, said computer operatively connected to the internet and to at least one phone;	*See* limitations [1a] and [1b]
[9b] at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine	*See* limitation [1a].

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
operatively connected to said computer;	
[9c] at least one speech synthesis engine, said speech synthesis engine operatively connected to said computer;	*See* limitation [1a].
[9d] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;	"The exemplary embodiment of the present invention described herein builds a database containing sets of substantially identical data objects, such as web pages. When the broken link is detected, the system accesses the database to locate a substantially identical data object to return to the user." (Col. 4:8-14). "Accessing code 36, such as a web browser, is held within a storage 32 and run on the CPU 30. For purposes of the discussion, it is assumed that the accessing code is a web browser. Nevertheless, those skilled in the art will appreciate that the accessing code 36, more generally may be any code, such as an operating system or network operating system, that is used to gain access to a resource. The accessing code is used to gain access to resources 40A and 40B. For purposes of the discussion below, it is assumed that these resources are media content. A database, denoted as an "index" 38, is also stored on the storage 32. As will be described in more detail below, the index 38 contains information regarding what web

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	pages are substantially identical to each other." (Col. 5:26-39) "Returning to FIG. 4, the catalog 52 serves as a property cache for holding property information regarding web page documents. FIG. 7 depicts the format of a portion of the catalog 52. Specifically, FIG. 7 depicts catalog entries 76 and 78 that are associated with two distinct documents. Each of the catalog entries 76 includes a DOCID 80, which serves as an indexing key into the catalog. Each catalog entry 76 and 78 also includes a list of identical web page documents 82. The document identifier for the identicals may be stored within the list 82. Other property information 84 is also stored within the catalog entries 76 and 78, including the uniform resource locator (URL) for the document." (Col. 6:34-45).
[9e] a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;	*See* claim 2.
[9f] a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in	*See* claim 3.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
which the plurality of web sites are accessed;	
[9g] said speaker-independent speech recognition engine configured to receive from users via said phone a speech command;	*See* limitation [1c]
[9h] said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;	*See* limitation [1d] and claim 4.
[9i] said computer further configured to establish or adjust said rankings	*See* claim 5.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings;	
[9j] said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and	*See* limitation [1e].
[9k] said speech synthesis engine further configured to transmit said audio message to said users via said phone.	*See* limitation [1f]
10. The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone.	This limitation is rendered obvious for at least the reasons provided discussed in Petition for *Inter Partes* Review and my declaration in support thereof.
11. The system of claim 9 wherein said internet is a local area network.	"It should be appreciated that the present invention may also be applied to finding and accessing resources in a LAN or WAN. The resources may be, for example, stored on a server that a client wishes to access." (Col. 2:65-3:1).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	"The present invention may also be applied to resolve and repair other references to objects, files and network resources that are not hyperlinks. For example, Microsoft(R) OLE links make reference to documents or objects embedded in other files. These files or objects may have moved from one machine to another in a distributed environment. As such, the references associated with links may change. The present invention may be applied to identify a proper reference to repair the broken link. Similarly, the same strategy may be applied to other references to files or objects, including path names and object identifiers, such as CORBA or OLE object IDs ("OIDs"). Thus, the present invention is not limited in scope to objects that are identified by URLs and an Internet or intranet environment. Instead, the present invention applies more broadly to different types of data objects that have various reference mechanisms. These data objects may include network resources located on a local or wide area network." (Col. 4:17-34).
12. The system of claim 9 wherein said internet is a wide area network.	"It should be appreciated that the present invention may also be applied to finding and accessing resources in a LAN or WAN. The resources may be, for example, stored on a server that a client wishes to access." (Col. 2:65-3:1).

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	"The present invention may also be applied to resolve and repair other references to objects, files and network resources that are not hyperlinks. For example, Microsoft(R) OLE links make reference to documents or objects embedded in other files. These files or objects may have moved from one machine to another in a distributed environment. As such, the references associated with links may change. The present invention may be applied to identify a proper reference to repair the broken link. Similarly, the same strategy may be applied to other references to files or objects, including path names and object identifiers, such as CORBA or OLE object IDs ("OIDs"). Thus, the present invention is not limited in scope to objects that are identified by URLs and an Internet or intranet environment. Instead, the present invention applies more broadly to different types of data objects that have various reference mechanisms. These data objects may include network resources located on a local or wide area network." (Col. 4:17-34).
13. The system of claim 9 wherein said internet is the Internet.	"FIG. 2 is a block diagram that illustrates an example of a computing environment 22 that is suitable for practicing the exemplary embodiment of the present invention. The computing environment 22 includes a client

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	computer system 24 that may communicate with servers 26 and 28 via a network connection. The connection may be realized via modem or a network adapter. For illustrative purposes in the discussion below, it is assumed that the connection is an Internet connection and that servers 26 and 28 reside on the Internet. The client computer 24 includes a central processing unit (CPU)30, such as a microprocessor. The CPU is accessed to a storage 32 and input/output (I/O) devices 34. The I/O devices 34 may include but are not limited to a keyboard, a mouse, a video display, a modem, and audio loudspeakers. The storage 32 may include both primary storage and secondary storage. Accessing code 36, such as a web browser, is held within a storage 32 and run on the CPU 30. For purposes of the discussion, it is assumed that the accessing code is a web browser." (Col. 5: 10-29) "FIG. 2 is a block diagram that illustrates an example of a computing environment 22 that is suitable for practicing the exemplary embodiment of the present invention. The computing environment 22 includes a client computer system 24 that may communicate with servers 26 and 28 via a network connection. The connection may be realized via modem or a network adapter. For illustrative purposes in the discussion below,

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	it is assumed that the connection is an Internet connection and that servers 26 and 28 reside on the Internet." (Col. 5:11-19).
14. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.	"Typically, a user utilizes a hypermedia link by selecting the link with a mouse. Specifically, the user positions a mouse cursor over the link (which is highlighted or displayed in a color that indicates that it is a link) and clicks the mouse to retrieve media content accessible through the link." (Col. 1:20-25). "FIG. 8 depicts the steps that are performed to build the index. The exemplary embodiment of the present invention utilizes a web crawler that crawls web sites as a background process and locates changes in content on web sites that are indexed by the index 38. Such web crawlers are well known within the art. The web crawler enables the index 38 to be incrementally updated. The web crawler locates newly added data objects, such as web page documents (step 90 in FIG. 8). Features are then extracted from the new data object and tokenized (step 92). When the data object is a web page document, the features are terms within the text of the web page document. These terms are tokenized by using conventional natural language processing techniques. The tokens are then added to

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	the index 38 (step 94 in FIG. 8)." (Col. 6:55-7:4). "After the system has built the index and identified which data objects are identical, an instance may arise where a hypermedia link needs to be repaired (see step 46 in FIG. 3). In such an instance, the steps depicted in FIG. 12 are performed. The web browser 36 attempts to resolve a link within a hypermedia document. Suppose that the web browser 36 attempts to resolve a link that points to the media 40a on server 26 (see step 130 in FIG. 12). The link resolution then either fails or exceeds within a predetermined period of time. The web browser may employ a timer such that when a fixed time period elapses (see step 132), link repair is initiated. The web browser 36 then locates a substantially similar data object (see step 134) within the index 38. In particular, the web browser 36 uses the URL to look up the doc ID to locate the entry in the catalog 50 for the document. This entry includes the list of identicals (i.e., it contains the doc IDs for the identicals). One of the identicals is then used to repair the link. In particular, the catalog 52 is again consulted to determine a uniform resource locator (URL) for the substantially identical data object. The URL identifies the location of a substantially identical data object on the Internet and is stored in the other properties 84 for the catalog data entry of the

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
	substantially identical data object. The web browser then utilizes this URL to request that the substantially similar data object be returned (step 136 in FIG. 12). Hence, if the media 40a could not be returned from server 26 as a result of a broken link in a Hypertext document, the web browser 36 could locate the URL to return the media 40b from server 28 that is substantially identical to the media 40a." (Col. 10:62-11:23) "A further optimization is to perform calculation of identical documents only upon demand (i.e., after a broken link arrives)." (Col. 11:34-38).
15. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of	*See* Claim 7.

U.S. Patent No. 8,185,402 Claims	U.S. Patent No. 5,941,944 to Messerly ("Messerly")
said information to be retrieved from each said web site.	

E. Culliss Claim Mapping

U.S. Patent No. 8,185,402 Claims	Culliss
1. A method for retrieving information from web sites by uttering speech commands into a voice enabled device and for providing to users retrieved information in an audio form via said voice enabled device, said method comprising the steps of:	"The invention operates by assigning scores to articles under key term components in the index. . . . The scores are then used in subsequent searches to organize the articles that match the query. . . . [T]he present invention uses this search activity to rank information available over the Internet through an evolutionary process." (Abstract) "The Internet is an extensive network of computer systems which allows a user to connect with various computer servers or systems. The Internet permits users to send and receive data between computers connected to this network. This data may include web sites, home pages, databases, text collections, audio, video or any other type of information made available over the Internet (collectively referred to as "articles") from a computer server connected to the Internet. The articles may also include key terms representing selected portions of the

U.S. Patent No. 8,185,402 Claims	Culliss
	information contained in the article. These key terms are available over the Internet to other computers and permit these other computers to locate the article." (Col. 1:25-37) "This data may comprise articles, databases, data collections, web sites, web pages, graphics, encryption, audio, video or any other type of information collectively referred to as articles and designated herein by the generic labels A1, A2, A3, etc." (Col. 5:5-9) "For the next search by either the same or a different user, the invention could then rank the matched articles by using the key term scores, as shown in FIG. 1 at 50 and 60. To this end, the key term scores of each matched article under each of the matched key terms of the new search could then be associated in any possible manner to create a comparison score for each matched article. For example, the key term scores could be added, multiplied together or averaged to create the comparison score for that matched article. The matched articles can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first." (Col. 6:28-41)

U.S. Patent No. 8,185,402 Claims	Culliss
	"The search engine then compares the search query with the key terms from the articles and retrieves at least a portion of the articles having key terms which match the search query. The search engine will then display to the user the portion of the article such as the title. The user can then scroll through these retrieved portions of the articles and select a desired article." (Col. 1:47-54) "The present invention is intended to operate in any form of networked or stand alone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site. The program on the server can generate a list of matched articles, by any method such as described herein, and transmit a list of squibs, such as hypertext links or other article identifiers to the remote computer for display on the screen. The user can then select one of the articles by "clicking" on the squib or other identifier, for example. By clicking is generally meant any electronic selection of the article and is specifically meant the positioning of an electronic pointer on the squib of the article displayed on the screen via a mouse or other pointing device and operating the button or switch of

U.S. Patent No. 8,185,402 Claims	Culliss
	the mouse one or more times to direct a browser to access the article or any other portion thereof. If the squib is a hypertext link, then the browser of the remote computer will retrieve the data of the article from the server URL indicated by the hypertext link. Before or after accessing the article URL through the hypertext link, the remote computer can send a data packet to the search server to indicate which matched article the user selected. As a user selects an article, the invention can send a message to the search server or other location to indicate the selected article either before or after the article is retrieved, opened, listened or otherwise viewed by the user for any amount of time, or after a pre-determined amount of time. For example, the remote computer could send a message to the search server after the remote user has selected a matched article and had the article open for more than a predetermined length of time. This would indicate that the article was what the user was searching for and indicate a stronger correlation between the search query and the selected matched article. The user could also be prompted to positively indicate selection by scoring, ranking, agreeing with the selection or otherwise positively indicating selection of the article." (Col. 26:6-42).

U.S. Patent No. 8,185,402 Claims	Culliss
	"The squib may comprise any portion or representation of the matched article, such as the title, headings, first few lines of text, audio, video or any other type of information." (Col. 28:10-12). "To determine whether, or by how much, a user has selected a matched article, the present invention may also consider the number of matched articles inspected before and after a particular matched article. Specifically, the value (or volatility of the scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) for a particular matched article can be adjusted or set (either positively, negatively or neutrally) according to the number of other matched articles inspected by the user before and/or after the particular matched article. This can be done, for example, by increasing the scores for a particular matched article by any possible function of the number of other matched articles inspected by the user before the particular matched article, and by decreasing the scores for a particular matched article by any possible function of the number of other matched articles inspected by the user after the particular matched article. "(Col. 15:2-19). "By "any possible function" is meant any possible algorithm, multiplier, quotient,

U.S. Patent No. 8,185,402 Claims	Culliss
	power, ratio, sum, difference or other possible mathematical function between variables (enumerated and/or un-enumerated), including, but not limited to, the length of time spent inspecting an article, total length of time spent inspecting articles (matched or un-matched), position within a list, articles listed before and after a particular matched article, whether or not an advertising banner was clicked on, and/or whether an article was printed, uploaded, downloaded, viewed, listened to, emailed, faxed, inspected, responded to (such as by answering questions requested by an article or its associated web site), loaded client-side or server-side, or saved to a disk. These apply either to the article or anything associated with the article, such as its URL or other location." (Col. 29:46-60).
[1.1] providing a computer operatively connected to the internet, said computer further being operatively connected to at least one speaker-independent speech recognition engine and to at least one speech synthesis engine;	"The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site. The program on the server can generate a list of matched articles, by any method such as described herein, and transmit a list of squibs, such as hypertext links or other article identifiers to the remote computer for

U.S. Patent No. 8,185,402 Claims	Culliss
	display on the screen. The user can then select one of the articles by "clicking" on the squib or other identifier, for example. By clicking is generally meant any electronic selection of the article and is specifically meant the positioning of an electronic pointer on the squib of the article displayed on the screen via a mouse or other pointing device and operating the button or switch of the mouse one or more times to direct a browser to access the article or any other portion thereof." (Col. 26:6-22) *See also* preamble.
[1.2] providing a voice enabled device operatively connected to said computer, said voice enabled device configured to receive speech commands from users;	*See* preamble.
[1.3] providing a speech command to said speaker-independent speech recognition engine,	*See* preamble.
[1.4] said computer accessing at least one of a plurality of web sites associated with said speech command to obtain an information to be retrieved,	"The Internet is an extensive network of computer systems which allows a user to connect with various computer servers or systems. The Internet permits users to send and receive data between computers connected to this network. This data may include web sites, home pages, databases, text collections, audio, video or any other

U.S. Patent No. 8,185,402 Claims	Culliss
	type of information made available over the Internet (collectively referred to as "articles") from a computer server connected to the Internet. The articles may also include key terms representing selected portions of the information contained in the article. These key terms are available over the Internet to other computers and permit these other computers to locate the article." (Col. 1:25-37) "The search engine then compares the search query with the key terms from the articles and retrieves at least a portion of the articles having key terms which match the search query. The search engine will then display to the user the portion of the article such as the title. The user can then scroll through these retrieved portions of the articles and select a desired article." (Col. 1:47-54) "The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site. The program on the server can generate a list of matched articles, by any method such as described herein, and transmit a list of

U.S. Patent No. 8,185,402 Claims	Culliss
	squibs, such as hypertext links or other article identifiers to the remote computer for display on the screen. The user can then select one of the articles by "clicking" on the squib or other identifier, for example. By clicking is generally meant any electronic selection of the article and is specifically meant the positioning of an electronic pointer on the squib of the article displayed on the screen via a mouse or other pointing device and operating the button or switch of the mouse one or more times to direct a browser to access the article or any other portion thereof. If the squib is a hypertext link, then the browser of the remote computer will retrieve the data of the article from the server URL indicated by the hypertext link. Before or after accessing the article URL through the hypertext link, the remote computer can send a data packet to the search server to indicate which matched article the user selected. As a user selects an article, the invention can send a message to the search server or other location to indicate the selected article either before or after the article is retrieved, opened, listened or otherwise viewed by the user for any amount of time, or after a pre-determined amount of time. For example, the remote computer could send a message to the search server after the remote user has selected a matched article and had the

U.S. Patent No. 8,185,402 Claims	Culliss
	article open for more than a predetermined length of time. This would indicate that the article was what the user was searching for and indicate a stronger correlation between the search query and the selected matched article. The user could also be prompted to positively indicate selection by scoring, ranking, agreeing with the selection or otherwise positively indicating selection of the article." (Col. 26:6-42). "Thus, after executing the search query "Alpha AND Gamma," the search engine would display the squib of matched articles A1 and A3. If the user selected only article A3, the index could be altered such that the key term scores for the selected matched article A3 under the matched key terms Alpha and Gamma are altered relative to the other key term scores…. For the next search by either the same or a different user, the invention could then rank the matched articles by using the key term scores, as shown in FIG. 1 at 50 and 60. To this end, the key term scores of each matched article under each of the matched key terms of the new search could then be associated in any possible manner to create a comparison score for each matched article. For example, the key term scores could be added, multiplied together or averaged to create the comparison score for that matched article. The matched articles

U.S. Patent No. 8,185,402 Claims	Culliss
	can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first." (Col. 6:10-41).
[1.5] said computer first accessing a first web site of said plurality of web sites and, if said information to be retrieved is not found at said first web site, said computer sequentially accessing said plurality of web sites until said information to be retrieved is found or until said plurality of web sites has been accessed;	"Some Internet users are not skilled in selecting and connecting key word search queries. These users will often type in a single word or two words connected by a Boolean "AND" operator. These searches are extremely broad and often retrieve thousands of articles which the user must manually search through by examining the title or other brief information about each article to find the desired information or advertisement. As the total number of articles posted on the Internet continues to increase, there is an increasing number of articles retrieved with each search query. To find an article, the user must manually search through the retrieved articles and/or repeatedly modify the search query." (Col. 2:43-55). "The invention will accept a search query from a user and a search engine will identify key terms which match the search query. These key terms which match the search query are called matched key terms. The search engine then identifies in any conceivable manner the articles which are associated with the matched key terms. This

U.S. Patent No. 8,185,402 Claims	Culliss
	can be done by comparing all or part of the search query, or terms equivalent to those in the search query with the key terms in the index to identify the key terms which match the search query. The search engine may account for Boolean logic operators in the search query." (Col. 5:32-43). "In the example above, and as illustrated at 10 in FIG. 1, a search query of "Alpha AND Gamma" would identify articles A1 and A3 because they are both associated with the matched key terms Alpha and Gamma. Because articles A1 and A3 are associated with the matched key terms, these articles are called matched articles…. For the next search by either the same or a different user, the invention could then rank the matched articles by using the key term scores, as shown in FIG. 1 at 50 and 60. To this end, the key term scores of each matched article under each of the matched key terms of the new search could then be associated in any possible manner to create a comparison score for each matched article. For example, the key term scores could be added, multiplied together or averaged to create the comparison score for that matched article. The matched articles can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first. For example,

U.S. Patent No. 8,185,402 Claims	Culliss
	the search query "Alpha AND Epsilon" would again identify matched articles A1 and A3. By multiplying the key term scores of each matched article under each matched key term together to get the comparison score, the comparison score for article A1 would equal 1, whereas the comparison score for article A3 would be 2. The invention would then display the matched article A3 to the user in a superior position to matched article A1." (Col. 5:43-6:50).
[1.6] said speech synthesis engine producing an audio message containing any retrieved information from said web sites; and	"The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site. The program on the server can generate a list of matched articles, by any method such as described herein, and transmit a list of squibs, such as hypertext links or other article identifiers to the remote computer for display on the screen. The user can then select one of the articles by "clicking" on the squib or other identifier, for example. By clicking is generally meant any electronic selection of the article and is specifically meant the positioning of an electronic pointer on the squib of the article displayed on the screen via a mouse or other pointing

U.S. Patent No. 8,185,402 Claims	Culliss
	device and operating the button or switch of the mouse one or more times to direct a browser to access the article or any other portion thereof. If the squib is a hypertext link, then the browser of the remote computer will retrieve the data of the article from the server URL indicated by the hypertext link. Before or after accessing the article URL through the hypertext link, the remote computer can send a data packet to the search server to indicate which matched article the user selected. As a user selects an article, the invention can send a message to the search server or other location to indicate the selected article either before or after the article is retrieved, opened, listened or otherwise viewed by the user for any amount of time, or after a pre-determined amount of time. For example, the remote computer could send a message to the search server after the remote user has selected a matched article and had the article open for more than a predetermined length of time. This would indicate that the article was what the user was searching for and indicate a stronger correlation between the search query and the selected matched article. The user could also be prompted to positively indicate selection by scoring, ranking, agreeing with the selection or otherwise positively indicating selection of the article." (Col. 26:6-42).

U.S. Patent No. 8,185,402 Claims	Culliss
	"The squib may comprise any portion or representation of the matched article, such as the title, headings, first few lines of text, audio, video or any other type of information." (Col. 28:10-12).
[1.7] said speech synthesis engine transmitting said audio message to said users via said voice enabled device.	*See* limitation [1e].
2. The method of claim 1 wherein said speech command is further associated with a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved.	"As shown in FIG. 1 at 20, the search engine will then display a squib of each of the matched articles. The squib may comprise any portion, hypertext link to or representation of the matched article, such as the title, headings, first few lines of text, audio, video or any other type of information." (Col. 5:50-55).
3. The method of claim 1 wherein said speech command is further associated with a ranking from highest to lowest associated with each said web site, said ranking indicating the order in	"The invention will accept a search query from a user and a search engine will identify key terms which match the search query. These key terms which match the search query are called matched key terms. The search engine then identifies in any conceivable manner the articles which are associated with the matched key terms. This can be done by comparing all or part of the

U.S. Patent No. 8,185,402 Claims	Culliss
which the plurality of web sites are accessed.	search query, or terms equivalent to those in the search query with the key terms in the index to identify the key terms which match the search query. The search engine may account for Boolean logic operators in the search query." (Col. 5:32-43). "In the example above, and as illustrated at 10 in FIG. 1, a search query of "Alpha AND Gamma" would identify articles A1 and A3 because they are both associated with the matched key terms Alpha and Gamma. Because articles A1 and A3 are associated with the matched key terms, these articles are called matched articles. For the next search by either the same or a different user, the invention could then rank the matched articles by using the key term scores, as shown in FIG. 1 at 50 and 60. To this end, the key term scores of each matched article under each of the matched key terms of the new search could then be associated in any possible manner to create a comparison score for each matched article. For example, the key term scores could be added, multiplied together or averaged to create the comparison score for that matched article. The matched articles can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first. For example, the search query "Alpha AND Epsilon"

U.S. Patent No. 8,185,402 Claims	Culliss
	would again identify matched articles A1 and A3. By multiplying the key term scores of each matched article under each matched key term together to get the comparison score, the comparison score for article A1 would equal 1, whereas the comparison score for article A3 would be 2. The invention would then display the matched article A3 to the user in a superior position to matched article A1." (Col. 5:43-6:50). "For the next search by either the same or a different user, the invention could then rank the matched articles by using the key term scores, as shown in FIG. 1 at 50 and 60. To this end, the key term scores of each matched article under each of the matched key terms of the new search could then be associated in any possible manner to create a comparison score for each matched article. For example, the key term scores could be added, multiplied together or averaged to create the comparison score for that matched article. The matched articles can then be displayed to the user in order of comparison score superiority, such as by displaying the matched article with the highest comparison score first." (Col. 6:28-41) "The articles can then be displayed to the user in order of superiority, such as by displaying the article with the highest comparison score first." (Col. 7:54-56

U.S. Patent No. 8,185,402 Claims	Culliss
4. The method of claim 3 wherein said computer accesses said plurality of web sites based on said ranking, said computer first accessing said web site having the highest ranking.	*See* Claim 3.
5. The method of claim 4 further comprising the step of adjusting said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said information to be retrieved are assigned lower rankings.	See Claim 3. "To determine whether, or by how much, a user has selected a matched article, the present invention may consider the length of time spent by the user inspecting the matched article. Specifically, the value (or "volatility") of the scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) can be adjusted or set according to the length of time spent by the user inspecting a matched article (or location related to that matched article) by reading, downloading, viewing, listening to or otherwise inspecting the article." (Col. 12:55-65). "3. Previous Ranking of Matched Article. To determine whether, or by how much, a user has selected a matched article, the present invention may also consider the number of matched articles ranked higher (and/or lower) than a particular matched

U.S. Patent No. 8,185,402 Claims	Culliss
	article. Specifically, the value or volatility of the scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) for a particular matched article can be adjusted or set (either positively, negatively or neutrally) according to the number of other matched articles which are ranked higher than (or shown to the user before) the particular matched article. This can be done, for example, by increasing the scores for a particular matched article by any possible function of the number of other matched articles ranked higher than (or shown to the user before) the particular matched article." (Col. 16:54-17:3). "By "any possible function" is meant any possible algorithm, multiplier, quotient, power, ratio, sum, difference or other possible mathematical function between variables (enumerated and/or un-enumerated), including, but not limited to, the length of time spent inspecting an article, total length of time spent inspecting articles (matched or un-matched), position within a list, articles listed before and after a particular matched article, whether or not an advertising banner was clicked on, and/or whether an article was printed, uploaded, downloaded, viewed, listened to, emailed, faxed, inspected, responded to (such as by answering questions requested by an article

U.S. Patent No. 8,185,402 Claims	Culliss
	or its associated web site), loaded client-side or server-side, or saved to a disk. These apply either to the article or anything associated with the article, such as its URL or other location." (Col. 29:46-60).
6. The method of claim 1 further comprising the step of periodically polling each said web site to determine whether said web site contains said information to be retrieved.	*See* Claims 3-5. "In yet another alternative embodiment, the search activity of a user can be stored in the form of what are commonly known in the computer industry as "cookies." For example, the key terms and/or key term groupings and scores for certain articles as a result of the search activity of the user could be stored as one or more cookies. These cookies could then be periodically downloaded to a central location for inclusion in the index, whereby the data from the cookies would be used to alter the index as described herein. If desired, the key terms or key term groupings and their associated scores (including, but not limited to, the key term scores, key term total scores, key term probability scores or comparison scores) for a particular article can be inserted into the meta-tag or otherwise associated with the particular article at that article's location, URL or elsewhere. This allows that particular article to be re-indexed by an indexing spider within another or separate

U.S. Patent No. 8,185,402 Claims	Culliss
	search engine which employs the methods taught herein. Alternatively, only certain of the key terms (or possibly key term groupings) for a particular article can be inserted into the meta-tag or otherwise associated with the particular article at that article's location or URL, such as those key terms or key term groupings which have scores above a certain or predetermined threshold." (Col. 29:22-45).
7. The method of claim 6 wherein the computer periodically polls each said web site without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site, said computer creating a ranking of said plurality of web sites based on said periodic polling.	*See* Claim 6. "Another embodiment of the present invention alters the value or volatility of the scores which are assigned to key terms, key term components and/or categories for articles according to the time spent by the user at an article or location related to that article. The time spent by a user at an article or location related to that article may be adjusted by the size of the article (or location related to that article) to compensate for disparate sized articles such that a large amount of time spent by a user at a large article may have lesser (or greater) value than a large amount of time spent by a user at a small article of lesser size (or complexity) than the large article. Further, to the extent that the time spent by a user is related to the user returning to another site (such as the site containing the

U.S. Patent No. 8,185,402 Claims	Culliss
	listing of retrieved articles), the lack of a returning to that other site may be taken as an indication that the user has (1) spent the maximum allowable time at that article, or (2) that article was the last article visited by the user. Moreover, should a user spend less than a predetermined amount of time at an article, the value or volatility of the scores which are assigned to key terms, key term components and/or categories for articles may be less (or even negative) than if the user had spent more than the predetermined amount of time at that article, whereby that article is deemed not selected (or negatively selected). Additionally or alternatively, should the method detect that the article no longer exists at a certain URL or other location (such as by the user finding a "dead link" or by a "404 Error" or other similar indicator), then the value or volatility of the scores which are assigned to key terms, key term components and/or categories for articles may be less (or even negative or negatively adjusted) than if the user had found the article." (Col. 3:47-4:11). "Another embodiment of the present invention alters the value or volatility of the scores which are assigned to key terms, key term components and/or categories for articles according to the location of the article within certain article groupings (of, for example, 10 related or unrelated articles)

U.S. Patent No. 8,185,402 Claims	Culliss
	such that scores for articles which are in lower groupings are given greater value or volatility when selected by users than for articles which are found in higher groupings." (Col. 3:24-31) "Additionally or alternatively, the present invention could detect that a matched article no longer exists at a certain URL or other location (such as by the user finding a "deadlink' or by the "404 Error," its equivalent or other similar indicator), and perform these same functions as described in this paragraph as if the length of time spent was below the predetermined length of time." (Col. 14:61-67) "For example, if the predetermined length of time is set at 10 seconds and the net length of time spent by a user inspecting a matched article is less than 10 seconds ("net' meaning to exclude any time delay in getting the article) then the index can be altered such that the key term scores for the matched article under the matched key term components are not altered relative to other key term scores of the index (while the key term total scores for the matched articles under the matched key term components are altered relative to other key term scores of the index)." (Col. 14:45-54) "Thus, after executing the search query "Alpha AND Gamma," the search engine

<table>
<tr><th>U.S. Patent No. 8,185,402 Claims</th><th>Culliss</th></tr>
<tr><td></td><td>would display the squib of matched articles A1 and A3. If the user selected only article A3, the index could be altered such that the key term scores for the selected matched article A3 under the matched key terms Alpha and Gamma are altered relative to the other key term scores. The index would then look like this:

Index

Alpha | Beta | Gamma | Delta | Epsilon
A1 - 1
A2 - 1
A3 - 2 | A1 - 1 | A1 - 1
A3 - 2 | A2 - 1
A3 - 1 | A1 - 1
A3 - 1

(Col. 6:11-23)

“The search engine will then display a squib of each of the matched articles. The user can then scroll through the squibs of the articles and select a desired one of the matched articles. Once the user has selected a matched article, the key term scores for the selected matched article under the matched key term groupings can be altered to indicate that the user believes that those matched key term groupings are properly associated with the selected matched article.” (Col. 9:15-23)</td></tr>
<tr><td></td><td></td></tr>
<tr><td>8. The method of claim 1 further comprising the step</td><td>“Initially, the key terms, category key terms and rating key terms may be associated with</td></tr>
</table>

U.S. Patent No. 8,185,402 Claims	Culliss
of periodically searching said internet to find new web sites containing said information to be retrieved, and adding said new web sites to said plurality of web sites.	words or other information in the article, or may be arbitrarily associated with the article in any manner. For example, the associations may be created by an indexing software robot which indexes all words in the article as key terms, meta tags specified by the author, reviewer or editor, or by any other means known or later developed for associating certain key terms with each article." (Col. 27:53-61).
9. A system for retrieving information from web sites by uttering speech commands into a phone and for providing to users retrieved information in an audio form via said phone, said system comprising:	*See* claim 1 preamble.
[9.1a] a computer, said computer operatively connected to the internet and to at least one phone;	*See* limitations [1a] and [1b]
[9.1b] at least one speaker-independent speech recognition engine, said speaker-independent speech recognition engine operatively connected to said computer;	*See* limitation [1a].
[9.1c] at least one speech synthesis engine, said speech synthesis engine	*See* limitation [1a].

U.S. Patent No. 8,185,402 Claims	Culliss
operatively connected to said computer;	
[9.2] a database, said database operatively connected to said computer, said database containing a plurality of web site addresses;	"The index of the present invention may comprise a database, spreadsheet or any other means of storing (temporarily or otherwise) the scores or other information about the key terms and articles. The present invention may also be incorporated in a search engine, browser, or other data managing program. The scores or other information may also be integrated or otherwise associated with any index of key terms used by any search engine, browser, or other data managing program." (Col. 27:13-21).
[9.3] a content descriptor associated with each said web site address, said content descriptor pre-defining a portion of said web site containing said information to be retrieved;	*See* claim 2.
[9.4] a ranking from highest to lowest associated with each said web site address, said ranking indicating the order in which the plurality of web sites are accessed;	*See* claim 3.
[9.5] said speaker-independent speech recognition engine configured to receive from	*See* limitation [1c]

U.S. Patent No. 8,185,402 Claims	Culliss
users via said phone a speech command;	
[9.6] said computer configured to access at least one of said plurality of web sites associated with said speech command to obtain said information to be retrieved, said computer configured to first access said web site having the highest ranking and, if said information to be retrieved is not found at said web site having the highest ranking, said computer configured to subsequently access said plurality of web sites in order of rankings until said information to be retrieved is found or until said plurality of web sites has been accessed;	*See* limitation [1d] and claim 4.
[9.7] said computer further configured to establish or adjust said rankings associated with said plurality of web sites such that said web site having said information to be retrieved is assigned the highest ranking and any web sites not having said	*See* claim 5.

U.S. Patent No. 8,185,402 Claims	Culliss
information to be retrieved are assigned lower rankings;	
[9.8a] said speech synthesis engine configured to produce an audio message containing any retrieved information from said web sites, and	*See* limitation [1e].
[9.8b] said speech synthesis engine further configured to transmit said audio message to said users via said phone.	*See* limitation [1f]
10. The system of claim 9 wherein said phone comprises a standard telephone, a cellular phone, or an IP phone.	
11. The system of claim 9 wherein said internet is a local area network.	"The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site." (Col. 26:6-12)

U.S. Patent No. 8,185,402 Claims	Culliss
12. The system of claim 9 wherein said internet is a wide area network.	"The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site." (Col. 26:6-12)
13. The system of claim 9 wherein said internet is the Internet.	"The present invention is intended to operate in any form of networked or standalone computer or computer system. For instance, the program can be run on a server connected to the Internet. A user having a remote computer connected to the Internet can access the program over the Internet via a browser or other program and enter a search query from the remote site." (Col. 26:6-12)
14. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites when instructed by said user to access said plurality of web sites to retrieve said information.	*See* Claim 5.

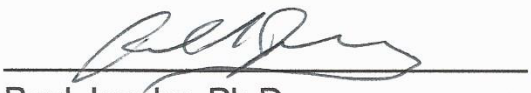
U.S. Patent No. 8,185,402 Claims	Culliss
15. The system of claim 9 wherein said computer is configured to establish or adjust said rankings associated with said plurality of web sites based on periodic polling of each of said web sites without being instructed by said user to determine the availability of each said web site, the duration of time for each said web site to respond to a request from said computer, and changes to the location of said information to be retrieved from each said web site.	*See* Claim 7.

XII. CONCLUSION

I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code.

Date: 4/6/2022

By: 

Paul Jacobs, Ph.D.