EXHIBIT A

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

PA ADVISORS, LLC, Plaintiff, v. GOOGLE INC., ET AL. Defendants.	Civil Action No. 2-07CV-480-RRR

REPORT OF DEFENDANTS' EXPERT STANLEY PETERS CONCERNING INVALIDITY

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I. BACKGROUND & QUALIFICATIONS

1. I am an expert in the field of computational and mathematical linguistics, as well as information retrieval. From 1983 to 2008, I was a professor of linguistics at Stanford University, where I am now professor emeritus and director of the Center for the Study of Language and Information. From 1996 until 2002, I was the Chair of the Department of Linguistics at Stanford University, and from 1966 until 1983, I was a professor of linguistics at the University of Texas at Austin.

2. Among the classes I have taught are courses on English Syntax and Phonology, Semantics and Pragmatics, Montague Grammar, Situation Semantics, Semantics and Logic, Mathematical Linguistics, Natural Language Understanding, and Formal Languages, Automata, and Computation.

3. One of my principal areas of interest is computational linguistics, within which I have done research on information retrieval and personalization of information retrieval. My current research interests include Situation Theory and Situation Semantics, Theory of Information Content, Mathematical Properties of Grammars, and Spoken Dialogue Systems.

4. I was awarded an S.B. in Mathematics from the Massachusetts Institute of Technology in 1963. I have been on the Editorial Board of the *International Journal of Foundations of Computer Science*; and I am a past Linguistics Editor of the *Journal of Logic, Language and Information*. In my career, I have been the recipient of over 35 research grants and contracts in the field of computational, mathematical, and theoretical linguistics. I have recently been elected a Fellow of the Linguistic Society of America.

5. In addition, I have supervised to completion more than a dozen Ph.D. students in linguistics and computer science. I have published more than 110 chapters and articles in the

field of computational, mathematical, and theoretical linguistics. I have also been invited to speak many times about my work and expertise in linguistics, including computational linguistics. I am an inventor on U.S. Patent number 5,231,379, "Navigation in a hierarchical structured transaction processing system" and on U.S. Patent application number 10/952,069, "Method and system for interactive conversational dialogue for cognitively overloaded device users" and U.S. Patent application number 10/923,590, "Method and system for adaptive navigation using a driver's route knowledge."

6. My qualifications and experience are set forth in more detail in my *Curriculum Vitae*, attached as Exhibit A.

7. As a result of my research, teaching and supervision of students, I am familiar with the knowledge and understanding of those of ordinary skill in the field of computational and mathematical linguistics, as well as information retrieval, in 1998 and 1999.

8. I have been retained by Quinn Emanuel Urquhart Oliver & Hedges, LLP, counsel for Defendant Google Inc. ("Google"), and Howrey LLP, counsel for Yahoo! Inc. ("Yahoo"), as an expert in this action.

9. I receive $350 per hour for my work. My compensation is not dependent upon the outcome of this case.

10. I have been asked by counsel for Google and Yahoo! to offer an expert opinion on the validity of the following claims (the "Asserted Claims") of U.S. Patent No. 6,199,067 (the " '067 Patent"): 1, 3, 4, 6, 43, 45, 47, 56, 61.

11. I will refer to the named inventor of the '067 Patent, Mr. Geller, as either "Geller" or "Applicant."

12. In connection with my analysis, I have reviewed the ’067 Patent, as well as the materials set forth in Exhibit B.

13. In this report, where I have cited a reference as prior art, either the reference predates the filing date of the ’067 Patent or I have been informed by counsel for Defendants that Defendants will be able to prove at trial that the reference is prior art as to the ’067 Patent. I understand that the application that led to issuance of the patent-in-suit was filed on October 21, 1999. I also understand that the patent-in-suit claims a priority date of a provisional application filed January 20, 1999.

14. I reserve the right to respond to any evidence Plaintiff nXn Tech, LLC (“Plaintiff”), formerly known as PA Advisors, LLC, may present concerning the subject matter of this report.

15. It may be necessary for me to supplement this report based on material that subsequently comes to light in this case, and I reserve the right to do so. I may be asked to present demonstrative evidence at trial, and I reserve the right to do so.

16. It may be necessary for me to revise or supplement this report, or submit a supplemental or responsive report, based on any supplemental or responsive report of Plaintiff, and I reserve the right to do so.

II. SUMMARY OF OPINIONS

17. As set forth in more detail below, if asked, I expect to testify at trial that the asserted claims of the patent-in-suit would have been obvious to one of ordinary skill in the art at the filing date.

18. The asserted claims of the ’067 Patent merely claim well-known systems and methods for creating user profiles using natural language processing and employing them in

personalized information retrieval. It was previously known to create user, query and document profiles and to use natural language processing to match those profiles in order to personalize search results.

19. The ’067 Patent merely claims predictable uses of old elements according to their established functions. Combining these old elements was well within the level of ordinary skill in the art to implement, and, in each claimed combination, each element merely performs the same function it had been known to perform. No new or different functions are performed by the elements in combination, none are recited in the claims, and the arrangements all yield no more than one of ordinary skill would have expected from such arrangements.

20. There are no unexpected advantages or results flowing from anything novel disclosed and claimed in the ’067 Patent, and not provided by the prior art. It is my understanding that under the standard for patentable subject matter articulated by the Supreme Court, the disclosure and claiming together of routine details well-known in the prior art does not entitle the claimed subject matter to patent protection. In the ’067 Patent none of the components of any claim perform any function other than their conventional functions disclosed in the prior art.

21. I also expect to testify if asked that the asserted claims are invalid as indefinite and not enabled, and that the written description of the ’067 Patent is insufficient, pursuant to 35 U.S.C § 112.

22. I also expect to testify that the claimed inventions as written would not work for their stated purpose and that therefore they are invalid under 35 U.S.C. § 101.

23. In performing my analysis, I applied appropriate legal standards, described below.

24. The Appendix of Claim Construction Charts ("ACC"), which is an integral part of this report, contains claim charts demonstrating the invalidity of each Asserted Claim. I have applied the Court's constructions of the claim terms and located prior art demonstrating that each Asserted Claim is invalid as obvious. While I have provided analysis below, the claim charts are the basis for my opinion that the '067 Patent is obvious in light of the prior art. These charts show each limitation of the claims, and how the prior art renders each limitation obvious under the Court's claim construction.

III. BACKGROUND OF THE FIELD

25. The patent-in-suit is U.S. Patent number 6,199,067, "System and Method for Generating Personalized User Profiles and For Utilizing the Generated User Profiles to Perform Adaptive Internet Searches." The '067 Patent is attached as Exhibit C.

26. The '067 Patent, as described more fully below, involves information retrieval, relevance ranking, natural language processing, and personalization. As the '067 Patent states, "[t]he present invention relates generally to the computer data searches and more particularly to a system and method for automatically generating personalized user profiles and for utilizing the generated profiles to perform adaptive Internet or computer data searches." (1:14-18).

27. Each of these fields was well developed at the time the '067 Patent was filed, and in many cases the fields intersected. The following sections trace the background of each of these fields.

Information Retrieval

28. The field of information retrieval, which involves the gathering and return of information from documents, was presciently envisioned in the 1940s in Vannevar Bush's 1945 article "As We May Think", published in the *Atlantic Monthly* Vol. 176 (pp. 101-108). This

article is attached hereto in the accompanying Appendix of References as Exhibit AR-1. Research into information retrieval began in the 1950s and ’60s, investigating its theoretical possibility and building systems. The concepts of Boolean search and relevance feedback were developed and found to have value. Information retrieval actually began to be practiced when computer-readable text became more widely available in the early 1970s and people used Boolean searches, simple string matching or vector space methods to search indexes and abstracts of documents, in order to retrieve items containing information they sought. The concept of probabilistic information retrieval, where similarities are computed as probabilities that a document is relevant to a given query, was developed in the 1970s as an alternative to Boolean search and string matching, and was found to improve search results.

29. Early commercial systems of information retrieval became available in the 1960s and ’70s, including Dialog and Lexis Nexis.

30. By the end of the 1970s, the concept of full-text search became more widespread, as the quantity of entire documents available in machine-readable form increased, and the speed by which they could be searched also increased. Use of information retrieval mushroomed during the 1980s, especially in the context of libraries, both general and specialized, and for legal documents. At this time most search was still done by specialists, who were experts in the use of available tools for information retrieval.

31. The advent of the world wide web and the creation of the Mosaic browser early in the 1990s created a different and far greater demand for information retrieval, as more and more people created computer-accessible information on the internet. *See* “The Internet: Bringing Order to Chaos,” attached hereto as Exhibit AR-2. These content creators, and many people who were not creating internet information, wanted to find web pages on subjects of interest, but the

amorphous nature of the web meant that there was no longer a uniform index of these "documents" to search, as there previously was with library catalogs. Research on information retrieval ramped up rapidly in response to this demand, as did pioneer commercial providers of web search.

Methods of Information Retrieval and Relevance Ranking

32. As full-text machine-readable documents became more available and demand for searching them increased, researchers moved away from Boolean-based searches. Methods were developed to make it easier to carry out searches with a better chance of finding what was sought and a lower ratio of "chaff" to "wheat".

33. Vector space and statistically-based approaches developed in the 1960s and '70s (see Salton 1968, for example) made retrieval based on full text much more efficient as well as easier for users. The frequency with which words or multi-word terms occur in documents was recognized as important for search and became thoroughly entrenched in information retrieval.

34. These methods, of their nature, adjudged some documents as more relevant to a given query than others. It was found that presenting documents to the searcher in decreasing order of relevance was very useful, as the searcher could see the most relevant documents immediately and then decide how many further search results to look through.

Natural Language Processing

35. Natural language processing ("NLP") is the use of computers to process human language for some useful purpose. One manifestation, machine translation, was proposed in 1949 and research began in the 1950s.

36. By the mid 1960s, other forms of computational linguistics were being actively investigated. Much research focused on finding the grammatical structure of a given string of

words—what is known in natural language processing as parsing the string as a sentence—which involves computing the part of speech of each word (e.g., noun, adjective, verb, …) and also the substrings that are phrases within the sentence, assigning each its syntactic type (e.g., noun phrase, prepositional phrase, verb phrase, …). As the speed of computers and the sophistication of natural language processing algorithms increased, it became more and more feasible to try to make use of linguistic structure and meaning in information retrieval. This was considered in the 1960s, largely as a theoretical possibility, but became truly feasible during the 1980s (compare Salton 1968 and Salton 1989).

37. In 1996, other leaders in the field of information retrieval, D. D. Lewis and K. Sparck Jones, laid out a series of seminal ideas for using NLP in information retrieval in their paper "Natural language processing for information retrieval," published in Communications of the ACM, (vol. 32, pp. 92-101), and attached hereto as Exhibit AR-3.

38. Much of the attraction of natural language processing for information retrieval relates to the hope of finding more documents that actually are relevant to a search (e.g., ones that contain a synonym or close paraphrase of terms in the query)—improving "recall" in the jargon of information retrieval—and the different hope of improving "precision"—retrieving fewer documents that are not relevant to the query, e.g., because an ambiguous term has a different sense in the document than in the query.

39. Natural language processing is carried out to various levels of analysis. The most basic is the *morphological* level; for example, finding the stem of words (e.g., in English the infinitive form of a verb or the singular of a noun). The next is *syntactic*; from identifying the part of speech of each word in a sentence on up to identifying the complete grammatical structure of the sentence (e.g., the two very different structures of "He saw her duck" when

"duck" is a noun and when it is a verb). Beyond this is the *semantic* level, at which the meaning of the sentence, as well all its parts, is computed (and the near identity of meaning is obtained between the sentences "Does he resemble his father or his mother?" and "Which one of his parents does he look like?"). At various times at least some linguistic properties of each of these levels of analysis have been used by one or another practitioner of information retrieval: word stems, parts of speech, short multi-word phrases, synonyms, disambiguation of ambiguous words' senses, and others.

Personalization

40. In parallel, the idea gradually penetrated the field of information retrieval that different people might be looking for such different kinds of information that even the same search string might be meant to find very different documents when given as a query by one person than when given by another. A simple example is a young person vs. an oncologist searching for "Hodgkin Lymphoma"; each might get little value out of the documents that the other finds most informative. This "subjective" notion of relevance contrasts with the "objective" notion of uniform relevance that dominated information retrieval in the period when it was largely the province of librarians and information specialists in other professions, such as law. Now that a vast majority of search is carried out by non-specialists looking for web pages, it is impossible to disregard the desire for personalized relevance. Interpersonal differences in satisfaction with a given search result present a significant challenge for search providers.

41. By the late 1980s, Myaeng and Korfhage, among others, had published research showing that combining an individual's profile with a query presented by that individual enabled retrieval of documents that were more useful to the individual than documents that were retrieved without use of the user's profile. "Integration of User Profiles: Models and

Experiments in Information Retrieval," *Information Processing and Management*, vol. 26, pp. 719-738 (1990). This article is attached hereto as Exhibit AR-4.

41. One consequence since the 1990s has been a growing interest in methods for "profiling" different users, to represent what sort of thing each is looking for in a way that information retrieval can make use of. User profiles—the form that user models take in information retrieval—have become an active subject of research in the field of personalized information retrieval, where the twin challenges are obtaining a profile for any particular user and using it in search to give that user the sort of document he or she really wants in response to a query. In 1998, when I participated in a workshop about personalization and published a paper titled "Personalization and users' semantic expectations," there were a significant number of people already working in this area. This article is attached hereto as Exhibit AR-5.

42. Techniques for constructing user profiles include determining what items the user has shown an interest in previously, and identifying features that might discriminate those and potentially related items from other items in which the user would not be interested. Many ways of doing this have been explored, among them a number involving natural language processing. One attraction of constructing user profiles through natural language processing is that similar processing can be done on stored documents that are candidates for information retrieval.

IV. OVERVIEW OF THE '067 PATENT

43. The '067 Patent was filed on October 21, 1999 and issued on March 6, 2001. It claims a provisional application date of January 20, 1999. Broadly speaking, the '067 Patent covers the use of linguistic patterns to form user profiles to retrieve, in response to a query, documents whose characteristics match a user's background. More specifically, "[t]he invention relates to use of linguistic patterns of documents to assist a user in locating requested data that, in

addition to matching the user's specific request, also corresponds to the user's cultural, educational, professional, and social backgrounds as well as to the user's psychological profile, and thus addresses the user's 'unexpressed' requests." (Ex. C, 3:26-33).

44. "[P]articular linguistic patterns and their frequencies of occurrence are extracted from the texts provided by a user of the system of the present invention and stored in a user profile data file. The user profile data file is thus representative of the user's overall linguistic patterns and their respective frequencies." (Ex. C, 3:61-66). Document and search profiles are formed in the same way except that frequencies of linguistic patterns are disregarded in the search profile. (Ex. C, 3:66-4:6). "The user profile is then cross matched with the search profile and the document profiles to determine whether any linguistic patterns match in all three profiles and to determine the magnitude of the match based on relative frequencies of matching patterns." (Ex. C, 4:6:11). Finally, the documents with profiles "having the highest matching magnitudes are presented to the user as not only matching the subject of the search string, but also as corresponding to the user's cultural, educational, and social backgrounds as well as the user's psychological profile." (Ex. C, 4:11:16).

45. Independent claims 1 and 45 of the '067 Patent have been asserted in this case. Plaintiff has also asserted claims 3, 4, 6, 43, and 61, which depend from claim 1, and claims 47 and 56, which both depend from claim 45.

Claim 1 reads:

1. A data processing method for enabling a user utilizing a local computer system having a local data storage system to locate desired data from a plurality of data items stored in a remote data storage system in a remote computer system, the remote computer system being linked to the local computer system by a telecommunication link, the method comprising the steps of:

> (a) extracting, by one of the local computer system and the remote computer system, a user profile from user linguistic data previously provided by the user, said user data profile being representative of a first linguistic pattern of the said user linguistic data;

(b) constructing, by the remote computer system, a plurality of data item profiles, each plural data item profile corresponding to a different one of each plural data item stored in the remote data storage system, each of said plural data item profiles being representative of a second linguistic pattern of a corresponding plural data item, each said plural second linguistic pattern being substantially unique to each corresponding plural data item;

(c) providing, by the user to the local computer system, search request data representative of the user's expressed desire to locate data substantially pertaining to said search request data;

(d) extracting, by one of the local computer system and the remote computer system, a search request profile from said search request data, said search request profile being representative of a third linguistic pattern of said search request data;

(e) determining, by one of the local computer system and the remote computer system, a first similarity factor representative of a first correlation between said search request profile and said user profile by comparing said search request profile to said user profile;

(f) determining, by one of the local computer system and the remote computer system, a plurality of second similarity factors, each said plural second similarity factor being representative of a second correlation between said search request profile and a different one of said plural data item profiles, by comparing said search request profile to each of said plural data item profiles;

(g) calculating, by one of the local computer system and the remote computer system, a final match factor for each of said plural data item profiles, by adding said first similarity factor to at least one of said plural second similarity factors in accordance with at least one intersection between said first correlation and said second correlation;

(h) selecting, by one of the local computer system and the remote computer system, one of said plural data items corresponding to a plural data item profile having a highest final match factor; and

(i) retrieving, by one of the local computer system and the remote computer system from the remote data storage system, said selected data item for display to the user, such that the user is presented with a data item having linguistic characteristics that substantially correspond to linguistic characteristics of the linguistic data generated by the user, whereby the linguistic characteristics of the data item correspond to the user's social, cultural, educational, economic background as well as to the user's psychological profile.

Claim 45 reads:

45. A data processing method for generating a user data profile representative of a user's social, cultural, educational, economic background and of the user's psychological profile, the

method being implemented in a computer system having a storage system, comprising the steps of:

(a) retrieving, by the computer system, user linguistic data previously provided by the user, said user linguistic data comprising at least one text item, each said at least one text item comprising at least one sentence;

(b) generating, by the computer system, an empty user data profile;

(c) retrieving, by the computer system, a text item from said user linguistic data;

(d) separating, by the computer system, said text item into at least one sentence;

(e) extracting, from each of said at least one sentence, by the computer system, at least one segment representative of a linguistic pattern of each sentence of said at least one sentence;

(f) adding, by the computer system, at least one segment extracted at said step (e) to said user data profile;

(g) repeating, by the computer system, said steps (c) to (f) for each text item of said at least one text item in said user linguistic data;

(h) generating at least one user segment group, by the computer system, by grouping together identical segments of said at least one segment;

(i) determining a user segment count, by the computer system, for each user segment group of said at least one user segment group, each said user segment count being representative of a number of identical segments in the corresponding user segment group of said at least one user segment group, and linking each said user segment count to the corresponding user segment group of said at least one user segment group.

(j) sorting the user segment groups of said at least one user segment group, by the computer system, in an descending order of user segment counts starting from a user segment group having a highest user segment count, and recording said user segment groups and corresponding user segment counts in said user data profile; and

(k) storing, by the computer system, said user data profile, representative of an overall linguistic pattern of the user, in the data storage system, said overall linguistic pattern substantially corresponding to the user's social, cultural, educational, economic background and to the user's psychological profile.

Dependent Claims

Where applicable, I will also point out where the prior art contains one or more of the following dependent claim steps:

46. Claim 3: The user's linguistic data includes either textual data generated by the user or textual data generated by another source and adopted as a favorite by the user.

47. Claim 4: The user's linguistic data includes at least one text item, which is at least one sentence.

48. Claim 6: The system will use an existing user profile if such a profile is already stored on the data storage system.

49. Claim 43: The system will retrieve a given number greater than one of data items for a user that have linguistic characteristics that correspond to the user's social, cultural, educational, economic background and psychological profile.

50. Claim 47: The user's linguistic data includes either textual data generated by the user or textual data generated by another source and adopted as a favorite by the user.

51. Claim 56: The user data profile can be encrypted.

52. Claim 61: The world wide web may be used as part of this process.

Characteristics of the System Claimed by the '067 Patent

I will discuss the steps/elements of the claims below:

Claim 1:

Use of natural language processing to rank for personalized interest (Claims 1(a), (b), (d), 1(i))

53. Steps 1(a), 1(b), 1(d), and 1(i) require the method to use natural language processing in creating rankings for personalized interest.

Creation of a user profile (Claims 1(a), 3, 4)

54. Step 1(a) requires that the method create a "user profile." I understand that the Court has construed "user profile" in the '067 Patent to mean "electronic information representative of one or more linguistic patterns associated with a user and the frequencies with

which the linguistic patterns recur." (Claim Construction Order, p. 32, attached hereto as Exhibit D). I understand that the Court has construed "linguistic pattern" in the '067 Patent to mean "a combination of various parts of speech (nouns, verbs, adjectives, etc.)." (Ex. D, p. 16).

Creation of corresponding profiles for stored data (Claim 1(b), 61)

55. Step 1(b) requires that the method create a profile, in a similar manner to the user profile, for each data item that is stored on the system. I understand that the Court has construed "data item profile" in the '067 Patent to mean "electronic information containing a data item address, at least one linguistic pattern of a data item, and the frequency with which that linguistic pattern recurs." (Ex. D, p. 12).

Creation of corresponding profiles for search queries (Claims 1(c), (d))

56. Steps 1(c) and 1(d) require that the method also create a profile, in a similar manner to the user profile and the data profile, for the search query entered by the user. I understand that the Court has construed "search request profile" in the '067 Patent to mean "electronic information representative of linguistic patterns in search request data." (Ex. D, p. 21-22).

Method for computing similarities (Claim 1(e), (f), (g), 6)

57. Steps 1(e), 1(f), and 1(g) require that the method compute a quantitative measure of similarities between the user profile, the search request profile, and each data item profile.

Ranking retrieved documents so that the highest-ranked documents correspond to the user's social, cultural, educational and economic background and psychological profile (Claims 1(h), 43)

58. Step 1(h) requires the method to rank the documents so that the highest-ranked documents correspond to the user's social, cultural, educational and economic background and psychological profile. I understand that the Court has construed "psychological profile" to mean

"information regarding characteristic traits of personality, mental processes, or both." (Ex. D, p. 18).

Claim 45:

Creation of a user profile from text items (Claims 45(a), (b), (c), (f), (g), (k), 47, 56)

59. Steps 45(a), 45(c), 45(d), 45(e), 45(f), 45(g), and 45(k) require that the method create a user profile through the use of text items. I understand that the Court has construed the term "text item" in the '067 Patent to mean "a series of words that can be split into at least one sentence." (Ex. D, p. 28).

Use of natural language processing to extract linguistic patterns from the texts (Claim 45(d), (e), (h))

60. Steps 45(d), 45(e) and 45(h) require that the method use natural language processing in order to extract linguistic patterns from texts.

Use of frequency of patterns (Claim 45(i), (j))

61. Steps 45(i) and 45(j) require that the method use frequency of occurrence of patterns in order to determine the user profile.

Person of Ordinary Skill in the Art

62. I understand that factors that may be considered in determining level of ordinary skill in the art include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.

63. The '067 Patent is in the field of computational and mathematical linguistics, and information retrieval.

64. In my opinion, a person of ordinary skill in the art in this field at the time the '067 Patent was filed would have had an undergraduate degree in computer science, or its equivalent,

and either additional graduate education or one to two years of work experience in the field of natural language processing, i.e., the use of computers to process human language for some useful purpose, and information retrieval.

65. I was and am familiar with the knowledge and understandings of those of ordinary skill in this art at the relevant times, e.g., 1998-2001, due to my research and experience, as well as my teaching and supervision of students in the field, many of which would meet my definition of a person of ordinary skill in the art.

V. THE SCOPE AND CONTENT OF THE PRIOR ART

66. The primary pieces of prior art that, in different combinations, render the '067 Patent obvious are described briefly below. I more fully explain their application to the claims of the '067 Patent in Section V, below. While I have provided this analysis, the claim charts contained in the Appendix of Claim Charts are also a part of the basis for my opinion that the '067 Patent is obvious in light of the prior art. These charts show each limitation of the claims, and how the prior art renders each claim obvious under the Court's claim construction. Thus, the section below summarizes and simplifies my analysis such that is easier to understand, but this analysis does not replace the information shown in the claim charts.

Prior Art References

67. Braden-Harder: On July 22, 1997, Braden-Harder filed an application that later became U.S. Patent 5,933,822, entitled, "Apparatus and Methods for an Information Retrieval System that Employs Natural Language Processing of Search Results to Improve Overall Precision." This patent discloses scoring documents using natural language processing in order to properly rank documents for retrieval. Geller did not disclose this patent to the USPTO during

prosecution of the ’067 patent and, consequently, the examiner had no opportunity to review it before issuing the ’067 patent. This patent is attached hereto as Exhibit AR-6.

68. Brookes: On September 13, 1994, Brookes filed an application that later became U.S. Patent 5,428,778, entitled, “Selective Dissemination of Information.” It discloses the creation of a user profile that is indicative of categories of information that are of interest to the user. These user profiles are then compared to data profiles that are created for items in a database. Geller did not disclose this patent to the USPTO during prosecution of the ‘067 patent and, consequently, the examiner had no opportunity to review it before issuing the ‘067 patent. This patent is attached hereto as Exhibit AR-7.

69. Chislenko: On January 28, 1997, Chislenko filed an application that later became U. S. Patent 6,041,311, entitled, “Method and Apparatus for Item Recommendation Using Automated Collaborative Filtering.” It discloses the creation of a user profile based on user ratings of items. Geller did not disclose this patent to the USPTO during prosecution of the ‘067 patent and, consequently, the examiner had no opportunity to review it before issuing the ‘067 patent. This patent is attached hereto as Exhibit AR-8.

70. Culliss: On March 1, 1999, Culliss filed an application that was a continuation-in-part of application No. 08/904,795 filed on August 1, 1997, and a continuation-in-part of application No. 08/960,140 filed on October 29, 1997, and a continuation-in-part of application No. 09/041,411 filed on March 12, 1998. This application later became U.S. Patent 6,182,068, entitled, “Personalized Search Methods.” It discloses the creation of a user profile either through user’s specifying their own data for by inferring profiles through a user’s search history. Geller did not disclose this patent to the USPTO during prosecution of the ‘067 patent and,

consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-9.

71. Dasan: On May 8, 1997, Dasan filed an application that later became U.S. Patent 5,761,662, entitled, "Personalized Information Retrieval using User-Defined Profile." It discloses the use of user profiles to retrieve personalized search results. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-10.

72. Dedrick: On March 29, 1995, Dedrick filed an application that later became U.S. Patent 5,710,884, entitled, "System for Automatically Updating Personal Profile Server with Updates to Additional User Information Gathered from Monitoring User's Electronic Consuming Habits Generated on Computer During Use." It discloses the automatic updating of user profiles in order to include personal information such as demographic and psychographic information. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-11.

73. Eichstaedt: On January 8, 1999, Eichstaedt filed an application that later became U.S. Patent 6,385,619, entitled, "Automatic User Interest Profile Generation From Structured Document Access Information." It discloses the automatic generation of user profiles through an analysis of the content of documents viewed by a user, and the comparison of those user profiles to documents that have been categorized based on their content. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had

no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-12.

74. Herz: On October 31, 1995, Herz filed an application that later became U.S. Patent 5,835,087, entitled, "System for Generation of Object Profiles for a System for Customized Electronic Identification of Desirable Objects." It discloses the creation of a user profile, a data profile, and a search query profile and the comparison of those profiles in order to return the best results to a user. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-13.

75. Krishnan: On January 29, 1997, Krishnan filed an application that later became U.S. Patent 6,366,956, entitled, "Relevance Access of Internet Information Services." It discloses automatically updating user profiles through monitoring information needs and interests. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-14.

76. Kupiec: On June 24, 1993, Kupiec filed an application that later became U.S. Patent 5,519,608, entitled, "Method for Extracting from a Text Corpus Answers to Questions Stated in Natural Language by Using Linguistic Analysis and Hypothesis Generation." It discloses the use of natural language processing and part-of-speech tagging in order to answer questions posed in a query. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-15.

77. Kurtzman, II: On April 24, 1997, Kurtzman, II filed an application that later became U.S. Patent 6,044,376, entitled, "Content Stream Analysis." It discloses the use of natural language processing to select advertisements that relate to a user, based on that user's profile. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-16.

78. Rapaport: On September 9, 1996, Rapaport filed an application that later became U.S. Patent 5,890,152, entitled, "Personal Feedback Browser for Obtaining Media Files." It discloses the use of user profiles, including personal characteristics such as educational background, to retrieve information from a system. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-17.

79. Reese: On December 24, 1996, Reese filed an application that later became U.S. Patent 6,374,237, entitled, "Data Set Selection Based Upon User Profile." It discloses matching search requests to user profiles that contain information about the user such as the user's educational and religious background. Geller did not disclose this patent to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This patent is attached hereto as Exhibit AR-18.

80. Sheena: On March 14, 1997, Sheena filed an application that later became U.S. Patent 6,049,777, entitled, "Computer-Implemented Collaborative Filtering Based Method for Recommending an Item to a User." It discloses the creation of user profiles based on web sites that the user has visited. Geller did not disclose this patent to the USPTO during prosecution of

the ‘067 patent and, consequently, the examiner had no opportunity to review it before issuing the ‘067 patent. This patent is attached hereto as Exhibit AR-19.

81. Siefert: On April 9, 1997, Siefert filed an application that later became U.S. Patent 5,778,380, entitled, “Intelligent Resource Transformation Engine for Translating Files.” It discloses the use of user profiles to load files according to a user’s preferences, including preferred language. Geller did not disclose this patent to the USPTO during prosecution of the ‘067 patent and, consequently, the examiner had no opportunity to review it before issuing the ‘067 patent. This patent is attached hereto as Exhibit AR-20.

82. Salton, *Automatic Information Organization and Retrieval* (Richard Hamming and Edward Feigenbaum eds., McGraw-Hill, Inc. 1968). This is an early book by one of the pioneers in the field of computational linguistics and information retrieval. This book discloses processing text based on the semantic characteristics of the text; it further discloses creating user, query, and document profiles, and finally it discloses combining the information in those profiles to return documents to a user. Geller did not disclose this book to the USPTO during prosecution of the ‘067 patent and, consequently, the examiner had no opportunity to review it before issuing the ‘067 patent. This book is attached hereto as Exhibit AR-21.

83. Salton, *Automatic Text Processing: The Transformation, Analysis, and Retrieval of Information by Computer* (Michael Harrison ed., Addison-Wesley Publishing Company 1989). This is one of the foundational books in the field of information retrieval. Like Salton’s 1968 book, this one teaches processing text on the basis of the text’s semantic characteristics. It further teaches creating user, query, and document profiles; and it also teaches combining the information in these profiles to return documents to a user. In fact, an expert advisor to the National Science Foundation cited this book as discussing similar related work to the ‘067

Patent. *See* Exhibit AR-22. Geller did not disclose this book to the USPTO during prosecution of the '067 patent and, consequently, the examiner had no opportunity to review it before issuing the '067 patent. This book is attached hereto as Exhibit AR-23.

VI. OBVIOUSNESS

84. I have been informed that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007). Where there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it is obvious to pursue the options known to one of ordinary skill.

85. In determining whether a claimed invention is obvious, I have been informed that one should consider the scope and content of the prior art, the level of ordinary skill in the relevant art, the differences between the claimed invention and the prior art, and whether the claimed invention would have been obvious to one of ordinary skill in the art in light of those differences.

86. I also understand that the Supreme Court stated that "when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under sec. 103."

87. I understand that a reference is reasonably relevant if, even though it may be in a different field from that of the inventor's, it is one which logically would have come to an inventor's attention in considering his problem.

88. I have been informed that certain objective factors, sometimes known as "secondary considerations" may also be taken into account in determining whether a claimed invention would have been obvious. Such secondary considerations as commercial success, long felt but unsolved needs, and failure of others may be evidence of non-obviousness. If such factors are present, they must be considered in determining obviousness.

89. I have been told that all U.S. patents, including the '067 patent-in-suit, are presumptively valid. 35 U.S.C. § 282. To overcome this statutory presumption, Defendants must show, by clear and convincing evidence, that the patent is invalid.

90. In my opinion, the claims of the '067 Patent are invalid as obvious because at the time of filing—either January or October 1999[1]—the subject matter of each claim as a whole would have been obvious to a person having ordinary skill in the art. Each claim merely combines in an obvious way steps that were already established in prior art, as will be seen from an examination of where each step was antecedently taught.

A. The Claims of the '067 Patent Existed in the Prior Art

91. I believe that Claim 1 of the '067 Patent consists of six different general concepts, while Claim 45 consists of three additional general concepts, each of which I discuss in this section. Prior art existed for each concept of the '067 Patent at the time it was filed. I have also identified which claim limitations from the '067 Patent correspond to each concept.

1. Use of natural language processing to rank for personalized interest (Claims 1(a)(b)(d)(i), 61)

92. Natural language processing is the use of computers to process human language for some useful purpose. As described in Section II, above, natural language processing has

[1] My opinion does not change whether the '067 patent is entitled to a filing date of January 1999 (the filing date for the provisional application) or October 1999.

existed since at least the 1960s. The more specialized field of using natural language processing in order to rank documents based on personalized interests was known for at least a decade prior to the filing of the ’067 Patent. For example, Salton (1989) teaches the use of natural language processing (“NLP”) in information retrieval. (AR-23, pp. 415-418). The ‘067 patent’s reference to “linguistic patterns” to generate profiles for data retrieval is a form of natural language processing. As described in this report, the use of linguistic patterns and user profiles for personalization was well known in the art.

93. Advances in algorithms for NLP, computer hardware, and software engineering in the early 1990s overcame the practical difficulties of using sophisticated NLP in an information retrieval system if desired, opening up the possibility of implementing methods that had been proposed and discussed earlier but set aside as too costly. By the late 1990s, incorporating NLP into information retrieval was an obvious idea to try, and several inventors employed it around that time. For example, Braden-Harder teaches “that precision of a retrieval engine can be significantly enhanced by employing natural language processing to process, i.e., specifically filter and rank, the records, i.e., ultimately the documents, provided by a search engine” (AR-6, 7:19-23). The use of NLP does not make an invention novel.

94. Kurtzman discloses using a form of NLP referred to as stemming with respect to information retrieval. Specifically, Kurtzman discloses the analysis of content such as web pages selected and viewed by a user together with the frequencies of words/word-stems in that content to select advertisements, entertainment, or education and instructional materials for presentation to the user according to the similarity of their profile with the user’s profile (AR-16, Claims 1-9).

95. The analysis of parts of speech in order to rank documents is a related concept to—and is, in fact, a form of—NLP, and similarly existed in the prior art. For example, Braden-Harder uses quite sophisticated NLP in which the words of each sentence are stemmed, the sentence is syntactically analyzed (parsed) to a tree structure in which each word-stem is assigned a part of speech and each phrase a syntactic category, then a set of logical forms (triples) is produced from the syntactic structure. Each logical form triple consists of a word-stem in the sentence, a deep case (semantic relation), and another word-stem to which the first stands in that semantic relation. For instance, the sentence "The octopus has three hearts" yields the set {have-Dsub-octopus, have-Dobj-heart, heart-Ops-three} by this process (AR-6, 11:62 - 14:61). The use of parts of speech in the '067 Patent is far less sophisticated, and correspondingly more obvious, than the methods disclosed by Braden-Harder.

96. It would have been obvious to a person of ordinary skill in the art to use part of speech tagging as part of a method for personalized information retrieval, especially because part of speech tagging was already in wide use for related purposes. For example, Kupiec teaches "the input string is linguistically analyzed to detect noun phrases in the string. Additional kinds of phrases can be detected as well" (AR-15, 4:27-29) and "in an embodiment of the method that uses shallow linguistic analysis … the input string is analyzed to determine what part of speech each word of the string is. Each word of the string is tagged to indicate whether it is a noun, verb, adjective, etc. Tagging can be accomplished, for example, by a tagger that uses a hidden Markov model" (AR-15, 11:19-24).

97. As explained in detail in the attached charts, the '067 Patent's claims 1(a), 1(b), 1(d) and 1(i) are not novel by virtue of their use of natural language processing, and specifically part-of-speech tagging, to form linguistic patterns and aid in information retrieval. The use of

part-of-speech tagging and other, more advanced forms of natural language processing, were well known at the time the ’067 Patent was filed.

2. Creation of a user profile (Claims 1(a), 3, 4)

98. Creation and storage of profiles for individual users was introduced to the field of information retrieval in the 1960s. (*See, e.g.*, Salton 1968, AR-21, p. 9, Fig. 1-3; p. 414, Fig. 10-4.) By the late 1980s, Myaeng and Korfhage, among others, had published research showing that combining an individual’s profile with a query presented by that individual enabled retrieval of documents that were more useful to the individual than documents that were retrieved without use of the user’s profile.

99. Many patents prior to Geller’s disclosed constructing user profiles as claimed in the ’067 Patent’s claim 1(a). For example, Culliss teaches “[u]sers can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits” (AR-9, 3:46-48), teaching further that “[p]ersonal data includes but is not limited to demographic data, psychographic data, personal interest data, personal activity data or other data about users” (AR-9, 3:13-16).

100. Chislenko also teaches “[e]ach user profile associates items with the ratings given to those items by the user” (AR-8, 3:38:39). “For example, the system may assume that Web sites for which the user has created ‘bookmarks’ are liked by that user and may use those sites as initial entries in the user’s profile” (AR-8, 4:15-18). Chislenko explains further that the system can infer ratings from the user’s usage by monitoring how long the user views a particular web page or observing that the user mails a certain item to many people, and inferring how much the user likes that item or web page (AR-8, 4:40-50).

101. Herz also discloses the use of user profiles. Herz teaches “[a]s in any application involving search profiles, they can be initially determined for a new user (or explicitly altered by

an existing user) by . . . using copies of the profiles of target objects . . . that the user indicates are representative of his or her interest" (AR-13, 56:19-27) in generating search profiles for users "based on such attributes as the relative frequency of occurrence of words in the articles read by the users. . . . The methods [sic] is characterized by passive monitoring … and use of elements of the search profiles which are automatically determined from the data" (AR-13, 79:47-56).

102. Eichstaedt teaches "a profiling technique that generates user profiles by monitoring and analyzing a user's access to a variety of hierarchical levels within a set of structured documents, e.g., documents available at a web site. … The user interest profiles are automatically generated based on the type of content viewed by the user" (AR-12, 1:34-43).

103. Brookes discloses "creating and storing an interest profile for each database user indicative of categories of information of interest … said interest profile comprising (i) a list of keywords … and (ii) an associated priority level value for each keyword" (AR-7, 12:38-43).

104. Dasan discloses "[a] computer-implemented method of retrieving information" using a "user-defined profile." (AR-10, 8:53-67).

105. Siefert also discloses the use of a user profile in information retrieval, teaching "means for storing a user profile which indicates preferences of a user. . . ." (AR-20, 12:47-55).

106. In addition to generating an initial user profile, the art when Geller filed for the '067 Patent in 1999 already taught updating a user's profile through implicit feedback by monitoring the user's use of a system. Besides Culliss and Chislenko, Herz teaches "Each user's target profile interest summary is automatically updated on a continuing basis to reflect the user's changing interests" (AR-13, 6:58-60). This is done "by noting which [of the] articles [selected by the system and presented to the user as likely to be of interest] the user [actually]

reads … This information is then used to update the user's target profile interest summary" (AR-13, 7:26-29).

107. Sheena teaches that "[r]atings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page, assuming that the longer the user views the page, the more the user likes the page. Alternatively, a system may monitor the user's actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user's profile an indication that the user likes that item" (AR-19, 4:40-49).

108. Dedrick similarly describes automatic profile updating, teaching that "[d]ata is collected for [the user's] personal profile database … by [the] client activity monitor … monitoring the end user's activity. … For example, if … the end user selects [a particular option], then this choice … is stored in [the] personal profile database … for this end user" (AR-11, 7:28-38).

109. Eichstaedt teaches "[t]he profile generation algorithm in the present embodiment learns from positive feedback. Each view of a document signifies an interest level in the content of the document" (AR-12, 3:28-31).

110. Krishnan teaches "[t]he information access monitor computes user/group profiles to identify information needs and interests within the organization and can then automatically associate users/groups with information of relevance" (AR-14, 2:37-41).

111. Thus, as explained in detail in the attached charts, neither the '067 Patent's Claim 1(a), nor its teaching of automatically updating the user profile (Ex. C, 11:55-12:61), contains anything that is not obvious from prior art, as the creation and storage of user profiles, including

the automatic updating of those profiles, had been well known in the field since long before the ’067 Patent was filed.

3. Creation of corresponding profiles for stored data (Claim 1(b), 61)

112. It was well-known in the prior art to create profiles of documents stored for information retrieval, since practically the earliest beginnings of the field of information retrieval. (*See, e.g.*, Salton 1968, AR-21, p. 9, Fig. 1-3; p. 414, Fig. 10-4.) Determining which stored documents are relevant to a query requires comparing the query with documents or their metadata or other representation(s). Accordingly, information retrieval methods and systems generally profile documents and queries with attributes applicable to both, such as words or other linguistic features, the frequency or rate of occurrence of these features, and/or combinations of many such features and their numerical values. When a subjective concept of relevance is involved, as in personalized information retrieval, documents must also be compared with characteristics of users who provide queries. Accordingly, in personalized information retrieval, the attributes employed for users are generally closely related or identical to those employed for queries and documents—facilitating comparison across queries, users, and documents.

113. The Applicant’s Patent adds nothing to this widespread practice in the art, which was taught in several earlier patents and publications. Prior patents profiling documents by means of weighing various terms, as the ’067 Patent teaches, include Brookes, which discloses “storing in association with each information item in the database system a plurality of parameters including (i) at least one keyword indicative of the subject matter of said information item, and (ii) a priority level value for each information item …” (AR-7, 12:27-37).

114. Eichstaedt also describes profiling documents, teaching that “documents must already be assigned to at least one category of a known taxonomy tree for the database. …

[M]ost Web search engines … provide a taxonomy that categorizes popular web pages" (AR-12, 2:42-55).

115. Herz discloses "[a] method for cataloging a plurality of target objects that are stored on an electronic storage media [sic] …from the contents of … said target objects" (AR-13, 79:11-22). Herz teaches further that "a first module … automatically constructs a "target profile" for each target object in the electronic media based on various descriptive attributes of the target object" (AR-13, 6:43-46). For example, text documents may be profiled in terms of term frequency, inverse document frequency ("TFIDF") scores for words or word-sequences they contain (AR-13, 12:54-13:53).

116. Thus, as explained in detail in the attached charts, just as creating profiles for stored data was widely used prior to the filing of the '067 Patent, the '067 Patent's Claim 1(b) contains nothing that is not obvious from prior art with respect to creating document profiles.

4. Creation of corresponding profiles for search queries (Claim 1(c), (d))

117. Comparison of stored documents with a query is facilitated by profiling both with similar or identical attributes, as mentioned above. As Salton (1989) stated, "it is advisable first to characterize record [i.e., stored document] and query content by assigning special content descriptions, or profiles, identifying the items and representing text content. The text profiles can be used as short-form descriptions; they also serve as document or query surrogates during the text-search and -retrieval operations" (AR-23, p. 275). He further teaches the value of using natural language processing to determine attributes (content descriptions) in the profiles. "Syntactic class indicators [i.e., parts of speech] (adjective, noun, adverb, etc.) are assigned to the terms . . . . A simple syntactic analysis process can also be used to recognize basic syntactic sentence units such as subject phrase, object phrase, verb phrase" (AR-23, p. 296).

118. The ’067 Patent and earlier patents follow this teaching in a fairly elementary fashion. The ’067 Patent teaches the use of linguistic patterns, specifically combinations of parts of speech, in order to determine a profile.

119. Similarly, Herz teaches that “the user optionally provides a query consisting of textual and/or other attributes, from which query the system constructs a profile … similar to the search profiles in a user’s search profile set” (AR-13, 66:52-58).

120. Further, Culliss teaches “One way to determine which personal data characteristics result in different query rankings is to compare the previous-user relevancy scores, or ranking determined at least in part by the previous user relevancy scores, of queries, key terms or key term groupings in which a particular personal data characteristic is different” (AR-9, 8:40-45).

121. Information retrieval has involved users providing a search request since its inception. It has involved user profiles at least since the 1980s. In my opinion, as explained in detail in the attached charts, the ’067 Patent’s Claims 1(c) and 1(d) contain nothing that is not obvious from prior art, as such methods for creating search query profiles were already widely known and practiced.

5. Method for computing similarities (Claim 1(e), (f), (g), 6)

122. The central task in personalized information retrieval—identifying documents that are subjectively relevant to a query for the user who provided it—involves measuring similarities among the profiles that are available for the user, documents, and query. Utilizing numerical valued attributes in these profiles facilitates the measurement of similarity, by allowing an information retrieval method or system to compare the three values each attribute takes in the user profile, document profile, and query profile, and then aggregate the results for those attributes that are present in all three profiles. All of this would have been apparent to one

skilled in the art at the time of Geller's claimed invention, as similar methods were already employed at that time.

123. Salton (1968) depicted "[a] typical [on-line] information [retrieval] system … in Fig. 10-4" (AR-21, p. 412), reproduced here.

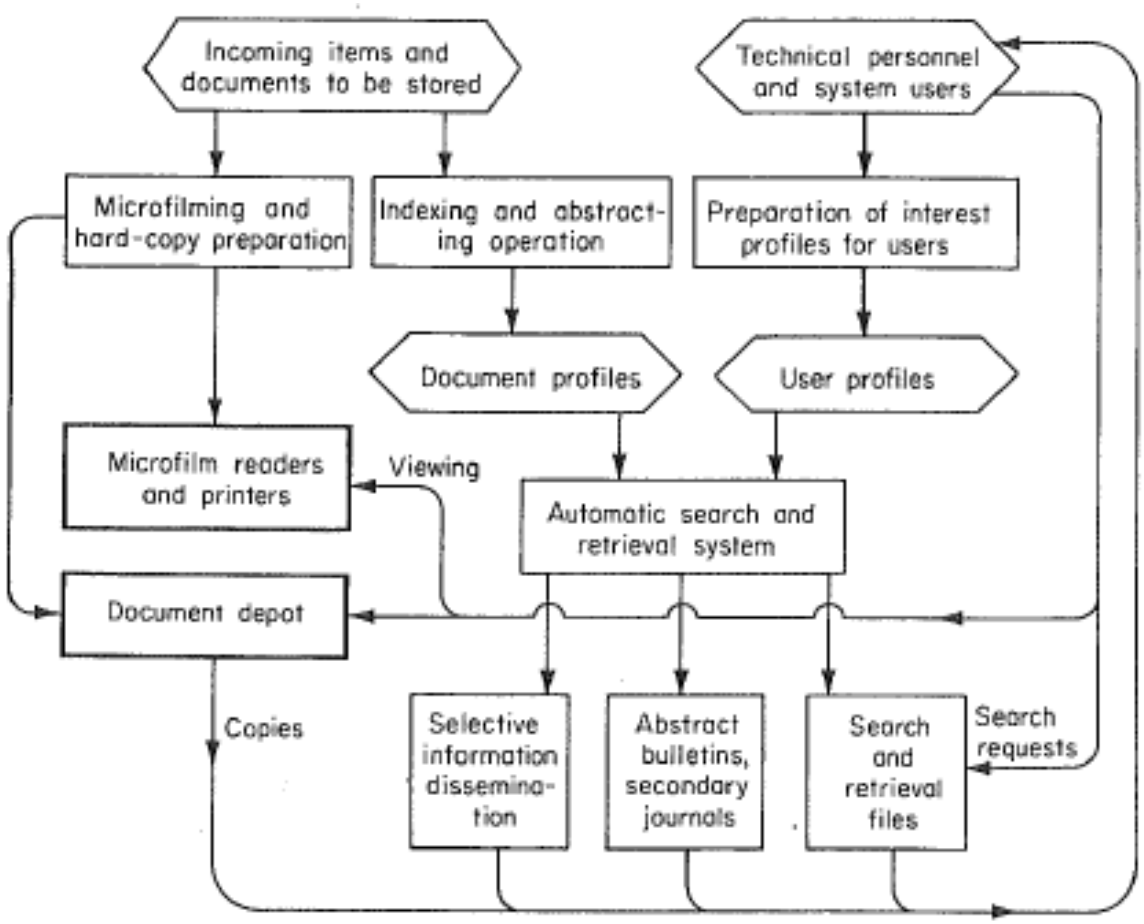

Fig. 10-4 Typical technical information center.

124. The above diagram shows a user profile being compared with document profiles and the result further compared with a search request [profile] to enable the system to provide the user with documents whose profile matches both the user's profile and the query profile. Salton (1989) also presents extensive detail in chapter 10 regarding methods for quantitative calculation of aggregate similarity between the various profiles. (AR-23, Table 16).

125. These methods were well known in the art at the time, and their employment in a variety of combinations would have been obvious to a person with ordinary skill in the art of personalized information retrieval, as such a person would have known about the different methods for computing similarities.

126. For example, Culliss teaches presenting "personalized search results to a particular person searching with a particular term or query" by "display[ing] a number of articles from a number of the narrower related key term groupings or queries which are ranked by their respective previous-user relevancy scores [i.e., aggregate similarity across shared attributes]" (AR-9, 10:47-52), adding that additional attributes can be utilized (AR-9, 11:11-20).

127. Herz teaches measuring the similarity of profiles using the angular distance (e.g., the cosine) between vectors representing profiles (e.g., TFIDF scores of words or word sequences in texts), as well as alternative similarity measures such as Dice's measure (AR-13, 14:40-15:13), both discussed in Salton (1989).

128. Braden-Harder teaches "A score for a document is illustratively a numeric sum of the weights of all uniquely matching triples in that document. … An illustrative ranking of the relative weightings of the different types of relations that can occur in a triple, in descending order from their largest to smallest weightings are: first, verb-object combinations (Dobj); verb-subject combinations (Dsub); prepositions and operators (e.g. Ops), and finally modifiers (e.g. Nadj)" (AR-6, 17:44-53).

129. As explained in detail in the attached charts, the '067 Patent's claims 1(e), 1(f), and 1(g) calculate and aggregate similarities ("similarity factors" and a "final match factor") in a manner that is obvious from prior art, as other patents already taught similar methods for comparing similarity factors.

6. Ranking retrieved documents so that the highest-ranked documents correspond to the user's social, cultural, educational and economic background and psychological profile (Claims 1(h), 43)

130. An important purpose of ranking documents according to either uniform or personalized relevance to a query is to present the most relevant documents to the user first, and to ensure that the most relevant documents are presented if the total number of documents that can be presented is limited. At the time when Applicant's Patent was filed, other patents already filed and issued taught that the most relevant data items would correspond to the user's religion, politics, education, employer and job title, business and personal areas of interest, lifestyle, personality traits, or, in general, psychological, psychographic and demographic profiles.

131. For example, Culliss teaches "Personal data includes but is not limited to demographic data, psychographic data, personal interest data, personal activity data or other data about users" (AR-9, 3:13-16). Such data would include age, gender, geographic location, political orientation, education level, attitudes, values, lifestyles and opinions (AR-9, 3:19-25).

132. Dedrick also discloses "a content adapter coupled to the personal profile database which customizes the received electronic information units to the individual user according to the user information stored in the personal profile database" (AR-11, 22:49-53), teaching that the stored user profile data may relate to "Consumer variables[, which] refer to demographic, psychographic and other profile information. . . . Psychographic information refers to the lifestyle and behavioral characteristics of individuals, such as like and dislikes, color preferences and personality traits that show consumer behavioral characteristics. Thus the consumer variables refer to information such as … preferred learning modes, employer, job title, personal and business areas of interest, … along with various lifestyle information" (AR-11, 3:56 - 4:3).

133. Reese also discusses the use of these characteristics, teaching a "matching server [that] receives a search request that includes a user profile from a client. … the matching server

compares the data in the aggregate database to the user profile … then delivers the matching data to the client" (AR-18, 7:47-51). "Other user profiles include, but are not limited to, areas of interest, business, politics, religion, education, etc." (AR-18, 4:51-53).

132. Siefert teaches the use of "learning profiles," which correspond to the user's educational level, in order to return the correct resources to the user. (AR-20, 11:41-53).

133. Rapaport teaches retrieving search results that are appropriate to a particular user's education level. "For example, a particular user may be a nine-year-old child wanting to learn about butterflies" while another user maybe be "a post-graduate entomology student. Both users are interested in the same subject, but each desires different levels of sophistication in information retrieval." (AR-17, 1:32-38).

134. From these citations, and as explained in detail in the attached charts, it can be seen that claims 1(h) and 43 of the '067 Patent, which teach displaying to the user data items that correspond to the user's social, cultural, educational, economic background as well as the user's psychological profile are not novel, as this concept was already taught by several patents.

CLAIM 45

1. Creation of a user profile from text items (Claims 45(a), (b), (c), (f), (g), (k), 47, 56)

135. The use of user profiles in information retrieval was taught in Salton (1968), at which time a user profile was understood as recording search requests and subject categories typifying a user's interests, and this profile was updated through explicit feedback from the user (p. 381). In addition, with the development of probabilistic indexing in the 1970s, the possibility arose of computing a profile automatically from text—in particular, computing a user profile from the user's own writings or other documents in which the user is interested.

136. Patents filed prior to Applicant's Patent teach the automatic generation of a user profile from such text. Chislenko teaches: "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user and may use those sites as initial entries in the user's profile" (AR-8, 4:15-18) and explains that "[r]atings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page … the system may infer that a user likes an item which the user mails to many people and enter in the user's profile and [sic] indication that the user likes that item" (AR-8, 4:40-50).

137. Culliss teaches "[u]sers can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits" (AR-9, 3:46-48).

138. Herz teaches "[a]s in any application involving search profiles, they can be initially determined for a new user (or explicitly altered by an existing user) by . . . using copies of the profiles of target objects . . . that the user indicates are representative of his or her interest" (56:19-27) in generating search profiles for users "based on such attributes as the relative frequency of occurrence of words in the articles read by the users. . . . The methods [sic] is characterized by passive monitoring … and use of elements of the search profiles which are automatically determined from the data" (AR-13, 79:47-56).

139. Thus, as explained in detail in the attached charts, the '067 Patent's creation of user profiles from text is not novel in any of claims 45(a), 45(b), 45(c), 45(f), 45(g), and 45(k).

2. Use of natural language processing to extract linguistic patterns from the texts (Claim 45(d), (e), (h))

140. As we saw in the discussion of claims 1(a), 1(b), 1(c), 1(d), and 1(i), above, Salton (1989) teaches the use of natural language processing ("NLP") in information retrieval. Advances in NLP algorithms, computer hardware, and software engineering in the 1990s

overcame the practical difficulties of using rather sophisticated NLP in information retrieval systems if desired, opening up the possibility of implementing methods that had been proposed and discussed earlier but set aside as impractical. By the late 1990s, incorporating some amount of NLP into information retrieval was an obvious thing to try and several inventors employed it around that time. Using NLP is not sufficient to make an invention novel, as mentioned earlier. (See ¶¶ 92-93).

141. Patented art prior to Applicant's Patent used NLP to extract linguistic patterns from text in generating document profiles and query profiles. For example, Braden-Harder teaches "each of the documents in the [retrieved] set is subjected to natural language processing, specifically morphological, syntactic, and logical form" (AR-6, 7:47-49). In particular, the words of each sentence are stemmed, the sentence is syntactically analyzed (parsed) to a tree structure representing the part of speech of each word and the category of each phrase; then a set of logical forms (triples) is produced from the syntactic structure. Each logical form triple consists of a word-stem in the sentence, a deep case (semantic relation), and another word-stem to which the first stands in that semantic relation (AR-6, 11:62 - 14:61). Braden-Harder further teaches that the method "also … analyzes the query to produce its corresponding logical form triples" (AR-6, 11:2-4).

142. Kupiec teaches "the input string is linguistically analyzed to detect noun phrases in the string. Additional kinds of phrases can be detected as well" (AR-15, 4:27-29) and "in an embodiment of the method that uses shallow linguistic analysis … the input string is analyzed to determine what part of speech each word of the string is. Each word of the string is tagged to indicate whether it is a noun, verb, adjective, etc. Tagging can be accomplished, for example, by a tagger that uses a hidden Markov model" (AR-15, 11:19-24). Just as the '067 Patent extracts

segments, which the Court has construed as "one or more parts of speech arranged in an order," (Ex. D, 26), from a sentence, Kupiec also teaches extracting and storing segments in profiling a user request. (AR-15, Cols. 11-12). Kupiec teaches "the tagged input string is analyzed to detect noun phrases. … the tagged input string is further analyzed to detect main verbs" (AR-15, 11:28-30) and that sentences in documents retrieved from a stored collection "are analyzed in substantially the same manner as the input string … The phrases detected in the match sentences are called preliminary hypotheses" (AR-15, 13:15-21). Kupiec continues "Hypotheses are verified … through lexico-syntactic analysis[, which] comprises analysis of linguistic relations implied by lexico-syntactic patterns in the input string" (AR-15, 14:45-48).

143. Kurtzman teaches analysis of retrieved text such that "the individual words are passed through a stemming procedure to obtain words and word-stems" (AR-16, 4:38-39).

144. Thus, the use of natural language processing to extract linguistic patterns such as parts of speech from stored text documents and search request texts was known in the art of information retrieval at the time of Applicant's filing for the '067 Patent. Combining the known art of using natural language processing to extract linguistic patterns from text with the known art of generating user profiles from text associated with the user does no more than yield predictable results in this case. Consequently, it would have been obvious to a person of ordinary skill in the art to use natural language processing to extract linguistic patterns from text in generating a user profile.

145. Because these methods were already widely known, as explained in detail in the attached charts, the '067 Patent's claims 45(d) and 45(e) are not novel in their use of natural language processing to extract linguistic patterns.

3. Use of frequency of patterns (Claim 45(i), (j))

146. The importance of the frequency with which terms occur in documents has been known since the 1960s, and is discussed extensively in Salton's (1968) and (1989) textbooks. The foundation of both vector space and probabilistic information retrieval since the 1970s rests upon frequency and concepts defined in part from frequency.

147. Salton (1968) describes assigning weights, stating, "[t]he number of occurrences of a phrase in a given sentence determines the weight assigned to that phrase and is initially defined as the minimum number of occurrences of each of the phrase components in the sentence." (AR-21, p. 95).

148. Salton (1989) uses weighting frequencies, stating "[f]or each remaining word stem T_j in document D_i, compute a weighting factor W_{ij} composed in part of the term frequency and in part of the inverse document-frequency factor for the term." (AR-23, p. 304).

149. Numerous patents teach the use of frequency. For example, Kurtzman teaches "After the stemming procedure, the frequencies of each word and word-stem are determined … Finally, these frequencies are paired with the words and word-stems to create a multi-dimensional vector" (AR-16, 4:56-59).

150. Herz teaches "The method generates sets of search profiles for the users based on such attributes as the relative frequency of occurrence of words in the articles read by the users" (AR-13, 78:47-50).

151. As explained in detail in the attached charts, combining frequency with use of linguistic patterns rather than words/word-stems would be obvious to any person of ordinary skill in the art, because it would be natural to try different ways to match documents. As such, Claims 45(i) and 45(j) of the '067 Patent are obvious.

Claim 56

Encryption of user profile (Claim 56)

152. Fast and efficient encryption/decryption has been known in the art since the 1970s and was used in a wide range of applications by the 1990s. Its use in information retrieval to protect sensitive information is obvious, and Salton (1989) devotes the entirety of chapter 6 to it. Encryption is also taught in patents prior to Applicant's Patent.

153. Dedrick teaches "The personal profile database **27** maintains the user profile data for the end user(s) … In one embodiment, the information in personal profile database **27** is protected from access by anyone other than the individual who is associated with the information. For example, the information may be protected on a computer by encrypting the profile when it is not in use" (AR-11, 5:50-6:8).

154. Herz teaches "The disclosed system provides a solution to the privacy problem … by the use of cryptographic techniques. The proxy server also permits users to control access to their target profile interest summaries" (AR-13, 5:52-59).

155. Claim 56 of the '067 Patent is obvious and in no respect novel.

Claim 61

Searching the world wide web (Claim 61)

156. From the mid-1990s the importance of searching the world wide web was widely known, and was the subject of much research directed at adapting classical information retrieval or developing novel approaches to web search. Rapid, exponential growth of the world wide web stimulated much invention and commercialization (e.g., by Lycos, Infoseek, AltaVista, and Inktomi, among others).

157. Among the patents cited here as prior art, all of the following explicitly address the potential of using their inventions in searching the world wide web: Braden-Harder, Chislenko, Dasan, Eichstaedt, Herz, Kurtzman, Reese, and Sheena.

158. The '067 Patent's Claim 61 is therefore obvious and in no respect novel.

B. <u>One Skilled In The Art Would Have Been Motivated To Pursue The Claimed Combinations Through Market Forces and Trends</u>

159. I understand that the Supreme Court observed that "when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under sec. 103." *KSR* at 421.

160. As the '067 Patent itself concedes, "[b]ecause of the vastness of the Internet and the WWW, locating specific information desired by the user can be very difficult. To facilitate search for information a number of 'search engines' have been developed and implemented." (Ex. C, 2:15-18). There was accordingly a design need or market pressure to "improve the performance and accuracy of typical key word searches." (Ex. C, 2:44-45). Numerous pieces of prior art can be combined in order to demonstrate the obviousness of the invention. For example, Claim 1 is obvious in light of Salton (1989) in combination with Culliss. (ACC-1). Claim 1 is also obvious in light of Herz in combination with Braden-Harder. (ACC-2). Further, Claim 45 is obvious in light of Salton (1968) in combination with Herz (ACC-11), and also in light of Braden-Harder in combination with Kurtzman. (ACC-12). The '067 Patent involves nothing more than taking the already widely-known use of natural language processing and user profiles, and using them to obtain personalized results that may be specific to a user's social,

cultural, educational, economic characteristics and psychological profiles, which was already being done in information retrieval. Taking these related and widely-known concepts and combining them in the manner set forth in the claims of the '067 Patent would have been obvious to a person of ordinary skill in the art at the time of the invention.

C. The Combinations in the Asserted '067 Patent Claims are Predictable and Do Not Yield Any Unpredictable Results

161. I understand that the Supreme Court has stated that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR* at 416.

162. In addition, I understand that relevant legal standard also provides that "[c]ommon sense has long been recognized to inform the analysis of obviousness if explained with sufficient reasoning."

163. In my opinion, the '067 Patent combines elements of familiar art that appear in other patents to accomplish Geller's purpose of "tailor[ing] results [of searches] based on [the user's] background and unexpressed interests"—that is, of presenting an information retrieval user with documents that correspond to the user's cultural, educational, social backgrounds and psychological profile, in addition to being relevant to a search request provided by the user (Ex. C, 3:1-7). In the specification, Geller asserts that linguistic patterns that recur in a person's written expression correlate with that person's background (Ex. C, 3:53-55), and that the frequency with which these patterns occur in the person's expression correlates with the person's psychological profile as well as the person's background (Ex. C, 3:55-60).

164. Starting from this premise, Geller seeks to identify the linguistic patterns and the frequency thereof that are representative of a given user's expression, and to employ these particular patterns and their frequencies to rank documents according to how closely each

document corresponds to the user's background and psychological profile. Geller's method is to use linguistic patterns for profiling the user-provided text, search string, and stored documents. He selected combinations of parts of speech of the words in the sentences that make up the various texts. However, at the time of Geller's invention, parts of speech and part-of-speech tagging were already well-known and being used in a variety of ways. As evidenced by the history of the relevant fields described in Section III, as well as the prior art analyzed in Section V.A. and the attached claim charts, the '067 Patent merely attempted to fit together prior art methods of user profiles based on linguistic patterns to retrieve personalized results, making obvious use of some familiar items in predictable ways.

165. Combining natural language processing and the creation of user profiles: Kupiec teaches part-of-speech tagging in information retrieval to improve accuracy in matching up information needs expressed by a query with sentences extracted from stored documents (AR-15, 15:3-34). A person of ordinary skill in the art, looking for ways to improve search results, would have recognized that part-of-speech tagging might improve the matching of retrieved documents with linguistic characteristics of user-provided text in the same way. Such a person would have had the skill required to apply part-of-speech tagging in the domain of user profiling/personalization. The '067 Patent even states that "[a]utomatic identification of parts of speech in a sentence is well known in the art and need not be described herein." (Ex. C, 14:32-34). Thus, the rationale for combining these known elements in the way that the '067 Patent does would have been apparent to a person of ordinary skill in the art, and would have been within such a person's technical grasp. Each of these elements was well-known in the prior art, as described above in Section V.A. and in the attached claim charts. Therefore, in my opinion it was common sense for Geller or a person of ordinary skill in the art to apply part-of-speech

tagging, according to its established function of identifying linguistic patterns, in combination with other familiar user profiling and personalized information retrieval art to improve information retrieval in a way in which it was ripe for improvement: by automatically constructing user profiles that can be used in locating requested data that corresponds to the user's background and psychological profile in addition to being relevant to the search request. Every aspect of this combination would have been obvious to a person of ordinary skill in the art at the time.

166. Combining user profiles and ranking results based on a user's social, cultural, educational, economic background and psychological profile: The demand for retrieving documents appropriate to the educational level or attitudes of the user was known to the information retrieval design community. Patents such as Rapaport teach a system that enables a user to specify his or her interests, attitudes and aptitudes, personality characteristics, media comprehension ability, and other personal characteristics by means such as responding to a series of questions, as well as the storage of these profiles as keywords with numerical weights. Other inventors such as Eichstaedt teach methods for automatically constructing a user profile of keywords with values, so the user does not need to specify this profile explicitly himself or herself. A practitioner having ordinary skill in the art of information retrieval would know of the desirability of automatic construction of user profiles representative of users' educational level, attitudes, etc., and would have attempted to combine those concepts. Culliss, Chislenko and Herz taught that documents returned by personalized information retrieval could, to be more relevant to a user's query, both be particular to the query and also correspond to the user's profile. Geller, desiring to present query-relevant documents that correspond to the user's background and psychological profile, attempted to combine these known arts by limiting

attention to linguistic patterns that appear in the query with the predictable result that the documents presented would be relevant to the specific query and not merely to the user's general interests. The use of linguistic patterns, including parts of speech, was taught in Braden-Harder and Kurtzman. As each of these ideas was already used in the field of information retrieval, every aspect of this combination would have been obvious to a person of ordinary skill in the art at the time.

167. Combining the use of frequency patterns to match user profiles, data profiles and search query profiles: For a user's identity to influence what documents are returned by personalized information retrieval, the ranking among documents relevant to the query needs to be 'biased' to accord with characteristics of the user. Brookes, Herz, and Kurtzman teach ranking by weights, typically calculated from frequencies. Herz and Kurtzman also teach 'biasing' these weights through an arithmetical calculation involving other weights found in the user profile. Geller, desiring to rank most highly documents that correspond best to the user's background and psychological profile, attempts to combine these known arts with the predictable result that higher ranked documents have higher frequencies of the linguistic patterns that occur in all three of the query, the user profile, and the document. Every aspect of this combination would have been obvious to a person of ordinary skill at the time.

168. In my opinion, there is nothing unpredictable that results from attempting to combine the elements of the '067 Patent. The '067 Patent has merely taken the ideas of user profiles and natural language processing, and presents the result of returning results related to a user's social, cultural, educational, economic background and psychological profile.

D. The Graham Factors Indicate Obviousness

169. I understand that the Supreme Court recently instructed that the factors in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), for applying the statutory language of 35 U.S.C. § 103 are as follows:

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined.

Graham also set forth a broad inquiry and invited courts, where appropriate, to look at any secondary considerations that would prove instructive:

> Such secondary considerations as commercial success, long felt but unresolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

1. Scope and Content of the Prior Art

170. The first factor is the scope and content of the art. As detailed previously, every element of the alleged invention can be found in the prior art. Some examples of art that render each element of the '067 Patent obvious are listed below; more detailed combinations of prior art that make the '067 Patent obvious can be found in the claim charts attached in the Appendix of Claim Charts.

171. Use of natural language processing to rank for personalized interest (Claims 1(a), (b), (d), (i), 61): This is taught by Salton (1989), Braden-Harder, Kurtzman, and Kupiec.

172. Creation of a user profile (Claims 1(a), 3, 4): This is taught by Culliss, Chislenko, Dasan, Herz, Eichstaedt, Brookes, Sheena, Siefert, Dedrick, and Krishnan.

173. Creation of corresponding profiles for stored data (Claims 1(b), 61): This is taught by Brookes, Eichstaedt and Herz.

174. Creation of corresponding profiles for search queries (Claim 1(c), (d)): This is taught by Salton (1989), Herz and Culliss.

175. Method for computing similarities (Claims 1(e), (f), (g), 6): This is taught by Salton (1968), Salton (1989), Culliss, Herz and Braden-Harder.

176. Ranking retrieved documents so that the highest-ranked documents correspond to the user's social, cultural, educational and economic background and psychological profile (Claims 1(h), 43): This is taught by Culliss, Dedrick, Siefert, Rapaport and Reese.

177. Creation of a user profile from text items (Claims 45(a), (b), (c), (f), (g), (k), 47, 56): This is taught by Salton (1968), Chislenko, Culliss and Sheena.

178. Use of natural language processing to extract linguistic patterns from texts (Claim 45(d), (e), (h)): This is taught by Salton (1989), Braden-Harder and Kupiec.

179. Use of frequency patterns (Claim 45(i), (j)): This is taught by Salton (1968), Salton (1989), Kurtzman and Herz.

2. Differences Between Prior Art and Claims

180. The second *Graham* factor is the differences between the prior art and the claims at issue. As detailed above, all of the elements of the claims are contained in the prior art. Accordingly, the relevant question is whether it would have been obvious to add any missing elements to a given prior art reference. As stated above in Sections III and V.A., the fields of information retrieval and natural language processing were significantly interrelated, and all of the concepts described in the '067 Patent were well-known to a person of ordinary skill in the art at the time the '067 Patent was filed. The numerous pieces of prior art that teach the elements of the '067 Patent are described fully in the attached claim charts.

3. Level of Skill in the Art

181. From a reading of the specification, I conclude that a person of ordinary skill in the art at the time the ’067 Patent was filed would be an individual with the equivalent of an undergraduate degree in computer science and either additional graduate education or one to two years of work experience in the field of natural language processing and information retrieval.

182. An individual with this background would be aware of the scope and content of the prior art, which describes natural language processing, user profiles and search results relating to a user’s social, cultural, educational, economic background and psychological profile. As described in Sections V.C. and V.D., an individual with this background would also have been aware of the combinations of these elements that already existed, and had the knowledge and technical ability to attempt to create new combinations of these elements.

E. Secondary Considerations Do Not Alter the Conclusion of Obviousness

183. In this case, there are no secondary considerations that overcome the obviousness determination described above. In fact, the secondary considerations demonstrate that the invention is obvious.

1. Acclaim, Recognition, or Skepticism

184. I understand that Plaintiff may argue that Google’s and Yahoo!’s products have garnered acclaim and/or recognition. While this may be true, it is my understanding that Plaintiff has not shown how any recognition they have received relates to the matter claimed and Plaintiff has not shown a nexus between any recognition that the accused products may have received and the claims of the ‘067 Patent. It is highly doubtful that Google or Yahoo! would have received “acclaim” or “recognition” if they had employed a part-of-speech tagger in order to try to return search results related to a user’s social, cultural, educational and economic background and psychological profile, as, in my opinion, such a functionality would not work.

185. I also understand that Plaintiff has not established any acclaim or recognition awarded to Ilya Geller, the named inventor of the ’067 Patent, nor any of the companies that have owned the ’067 Patent.

186. I am not aware of any acclaim that Ilya Geller has received for this patent or for any work he has published.

2. Commercial Success

187. This factor demonstrates the obviousness of the claimed invention in 1999. I understand that Mr. Geller tried continuously from 1999 to 2007 to commercialize his patent and was unsuccessful. For instance, he formed a company and sought investment, but received little to no investment, despite the Internet bubble from 1999 to 2001. He also hired programmers to write software to carry out his invention, but he was never able to my knowledge to sell or license his software. He sent out hundreds of solicitations, all of which were unsuccessful. He hired a law firm to license his patent at least as early as 2005, and these efforts too were unsuccessful. (See, e.g., Deposition Transcript of Ilya Geller dated Aug. 19, 2009 84:19-85:20; 87:23-88:17; 92:6-93:23; 111:13-112:3; 116:20-117:3; 123:6-9; 140:5-7; 155:5-8; Deposition Transcript of Ilya Geller dated Dec. 16, 2009 185:9-20; 187:8-11).

188. I understand that Plaintiff may again argue here that Google and Yahoo! have enjoyed commercial success. However, again there is no evidence that Defendants have achieved commercial success as a result of any alleged infringement of the ’067 Patent.

189. I also understand that Ilya Geller was unable to find a single person to buy the product that he marketed that allegedly embodied the ’067 Patent, despite the fact that he sent thousands of letters requesting people to try his product.

3. Long-Felt Need and Failure of Others

190. As described previously in my analysis of the prior art in Section V.A., there was a need for personalized information retrieval. It was not the case, however, that others had failed in this regard at the time of the '067 Patent. Instead, a number of others were successfully personalizing search results using user profiles and a variety of approaches to natural language processing.

4. Unexpected Results, Synergies, Improved Results, and New Results:

191. It is my understanding that Plaintiff has not argued any unexpected results that occurred from the '067 Patent. As described above in Sections V.D., it is my opinion that this Patent did not cause any unexpected results, and therefore this factor does not support non-obviousness.

VII. MATERIALITY OF AHN, DASAN, AND SIEFERT PATENTS

192. I have been asked to determine whether the patents of Ahn, Dasan and Siefert, which were discovered by the European Patent Office but not submitted to the USPTO, are material art for the '067 Patent.

193. I understand that courts consider a piece of art to be "material" when a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. A reference is not material if it is merely cumulative to, or less relevant than, information already considered by the examiner.

194. In my opinion, the Dasan and Siefert patents each disclose elements of the '067 patent that were not disclosed by the prior art that was submitted to the United States Patent and Trademark Office for the '067 Patent, and are therefore material.

195. The prior art that was submitted by the United States Patent and Trademark Office ("USPTO") examiner for the '067 Patent discloses information retrieval, as well as the

use of natural language processing and frequency patterns. The prior art does not, however, discuss the use of user profiles or retrieving search results that reflect a user's social, cultural, educational, economic background or psychological profile. Only one patent cited by the USPTO, the Hoffberg patent, even contemplates the use of user profiles. (AR-24). Claims 20 and 21 of the Hoffberg patent disclose a system that accesses a database in response to a user input that defines a set of records in the database and processes members of that set selectively in terms of characteristics of the user. This patent does not teach profiling a user in terms of characteristics or features that apply to records in the database.

196. The Dasan patent discloses the utilization of user profiles in order to provide users with information of personal relevance. See, for example, Claim 1. (AR-10, Claim 1). This is a critical aspect of the '067 Patent, as disclosed in both Claims 1 and 45, and Geller did not provide any prior art relating to that element. Therefore, this is a material piece of prior art.

197. The Siefert patent discloses the display of documents to a user through the use of a user profile and a learning profile. The patent contemplates finding documents that correspond to user's learning history or educational background. See, for example, Claim 8 and 11:41-53. (AR-20, Claim 8 and 11:41-53). These, too, are critically important aspects of the '067 Patent, as described in both Claims 1 and 45. Therefore, this is also a material piece of prior art.

198. The prior art patents cited by the '067 Patent, in combination with the Dasan and Siefert patents, render the '067 Patent obvious. A person of ordinary skill in the art would have been able to combine the concepts of information retrieval, natural language processing, and user profiles that are taught by those patents in order to create the invention claimed in the '067 Patent.

VIII. 35 U.S.C. § 112

199. I understand that the law provides that the specification "shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention." 35 U.S.C. § 112. Further, I understand that it provides that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." *Id*. This has been interpreted to encompass a "written description" and an "enablement" requirement.

200. I understand that "written description" is satisfied only if persons of ordinary skill in the art at the time that the application was filed would recognize from the application that the inventor invented the full scope of the invention as claimed in the patent as of the filing date and was in possession of the invention. In other words, the description must allow a person of ordinary skill in the art to recognize that the inventor invented what is claimed.

201. I understand that "enablement" requires that the specification of a patent must enable a person of ordinary skill in the art to both make and use the invention without "undue experimentation."

202. I have been informed that factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative

skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

203. In my opinion, although it would have been obvious to construct the system set forth in the claims, the specification of the ‘067 patent does not meet the requirements for Section 112 and the patent is therefore invalid.

204. It is my belief that the ’067 Patent is not enabled, because it would require undue experimentation in order to make the invention work—if it could be made to work at all—as claimed. The ’067 Patent teaches in Claim 1 the use of linguistic patterns to create user profiles, data item profiles, and search request profiles. (Ex. C, Claim 1(a), (b), (c), (d)). Linguistic patterns are defined as “a combination of various parts of speech (nouns, verbs, adjectives, etc.).” (Ex. D, p. 16).

205. The ’067 Patent also provides in Claim 1 that, after determining a match factor for the three profiles described above, a user will be provided with search results that “correspond to the user’s social, cultural, educational, economic background as well as to the user’s psychological profile.” (Ex. C, Claim 1(e), (f), (g), (h), (i)).

206. Claim 45 also teaches the use of linguistic patterns to generate a user data profile that is representative of a user’s social, cultural, educational, economic background and of the user’s psychological profile (Ex. C, Claim 45).

207. The ’067 Patent, however, does not teach how to use the parts of speech that comprise the linguistic patterns in order to return search results that correspond to a user’s social background. The match factor, as described by the ’067 Patent, would merely return results that have similar combinations of nouns, verbs and adjectives. Although the ’067 Patent states that “[r]esearch has shown that most people have readily identifiable linguistic patterns in their

expression and that people with similar cultural, educational, and social backgrounds will have similar linguistic patterns," I am not aware of any such research in the field. (Ex. C, 3:50-55). If, however, this statement is true, the use of linguistic patterns to provide people with information corresponding to their background can only perform its stated purpose if people with dissimilar backgrounds have dissimilar linguistic patterns in their expression. Otherwise, people with different backgrounds could be presented with the same information as a result of it matching their similar linguistic patterns, despite the dissimilarity of their backgrounds. The '067 Patent gives no guidance on how to select linguistic patterns—combinations of parts of speech—that will be adequate to discriminating between people with varying backgrounds. In fact, it says "For the purpose of performing data searches, preferably each segment is a triad (i.e. N=3) of three POS arranged as follows: noun-verb-adjective. Thus, in accordance with this embodiment … the RCS control unit 34 only identifies and tags nouns, verbs, and adjectives" (Ex. C, 19:7-11). The '067 Patent does not teach or demonstrate how this embodiment of the method presents different information to people with different backgrounds, nor does it explain how another embodiment might do so.

208. A person of ordinary skill in the art at the time the '067 Patent was filed would not be able to determine how to use combinations of parts of speech to return results relating to a person's cultural and economic background without undue experimentation. There is no guidance presented in the '067 Patent as to how to do so, and there are no working examples that differentiate persons based upon their cultural and economic background.

209. In addition, if applicant were actually in possession of the invention, he would have realized that first assigning parts of speech to words in a sentence, then adding to each word all other parts of speech that the word can have in the language, even if it cannot have it in the

sentence at hand, makes the part-of-speech tagging step completely superfluous. (Ex. C, 14:44-56). One can more simply assign to each word from the outset all parts of speech that the language permits it to have. For example, the method as described in the '067 Patent will first tag the word "patient" in the sentence "The patient left the hospital" as a noun; but a subsequent step assigns it also the part of speech adjective since "patient" can also be an adjective in some sentences, although not this one. Clearly part-of-speech tagging is unnecessary; a simpler method would simply assign both noun and adjective to the word "patient" in this sentence from the outset. Since the '067 Patent shows no evidence of Applicant being aware of this fact, it is my opinion that one of ordinary skill would not consider that the Applicant was in possession of the invention as of the filing date. Therefore, in my opinion, the '067 Patent is invalid under 35 U.S.C. § 112.

IX. 35 U.S.C. § 101

210. It is my understanding that the utility requirement of 35 U.S.C. § 101 mandates that any patentable invention be useful and, that the subject matter of the claim must be operable. If a patent claim fails to meet the utility requirement because it is not useful or operative, then it also fails to meet the how-to-use aspect of the enablement requirement.

211. The utility requirement also prevents the patenting of a mere research proposal or an invention that is simply an object of research. Inventions do not meet the utility requirement if scientific research could be performed but there is no assurance that anything useful will be discovered in the end. Allowing ideas, research proposals, or objects only of research to be patented has the potential to give priority to the wrong party and to confer power to block off whole areas of scientific development.

212. In my opinion, the '067 Patent does not teach a useful invention. Returning search results to a user that contain similar combinations of nouns, verbs and adjectives as the user's search query and user profile does not have any ascertainable benefit. I do not believe that doing so will aid in any personalization of the search results. As I explained in section VI, if the method can be embodied with only a single linguistic pattern as Geller asserts, it cannot present different information to people with different backgrounds. As such, it is my belief that the '067 Patent is invalid for lack of utility under 35 U.S.C. § 101.

X. CONCLUSIONS

213. None of the Asserted Claims is valid.

214. All of the Asserted Claims are obvious.

215. The Asserted Claims are invalid for lack of enablement and/or written description.

216. The Asserted Claims are invalid for lack of utility.

Executed on December 30, 2009, in Menlo Park, CA

Stanley Peters