Christopher Kao (SBN 237716)
E-mail: CKao@perkinscoie.com
Brian Hennessy (SBN 226721)
E-mail: BHennessy@perkinscoie.com
PERKINS COIE LLP
101 Jefferson Drive
Menlo Park, CA 94025-1114
Telephone: (650) 838-4300
Facsimile: (650) 838-4350

Attorneys for Plaintiff
craigslist, Inc.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

craigslist, Inc., a Delaware corporation,

Plaintiff,

v.

GraphOn Corporation, a Delaware corporation,

Defendant.

Case No. CV 10 1156

COMPLAINT FOR DECLARATORY JUDGMENT

EMC

Plaintiff craigslist, Inc. ("craigslist") alleges as follows for its Complaint for Declaratory Relief against Defendant GraphOn Corporation ("GraphOn"):

PARTIES

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

2. Upon information and belief, GraphOn is a Delaware corporation, with its principal place of business in Santa Cruz, California.

JURISDICTION

3. This action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*, and the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§1331 and 1338(a).

4. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391(b) and (c), and 1400(b).

INTRADISTRICT ASSIGNMENT

5. This is an Intellectual Property Action to be assigned on a district-wide basis under Civil Local Rules 3-2(c) and 3-5.

BACKGROUND

6. craigslist operates the website, www.craigslist.org, which provides online localized classified ad placement and related online services.

7. GraphOn claims to be the owner of U.S. Patent Nos. 6,324,538 (the "'538 Patent"), which is attached hereto as Exhibit A, 6,850,940 (the "'940 Patent"), which is attached hereto as Exhibit B, 7,028,034 (the "'034 Patent"), which is attached hereto as Exhibit C, and 7,269,591 (the "'591 Patent"), which is attached hereto as Exhibit D. These patents are collectively referred to hereinafter as the "Patents-in-Suit."

8. On January 18, 2010, GraphOn, through its counsel Watson Rounds, sent a letter to craigslist, a copy of which is attached hereto as Exhibit E.

9. The letter stated that Watson Rounds had "reviewed the [c]raigslist website in detail" and that it "believe[d] that there may be interest on the part of [c]raigslist in licensing four of GraphOn's patents, U.S. Patent No.'s. 6,324,538, 6,850,940, 7,028,034 and 7,269,591."

10. The letter further stated that: "To date, GraphOn has licensed its portfolio to AutoTrader.com, Classified Ventures (Cars.com), Careerbuilder.com, Google, Yahoo!, eBay and others, and it would appreciate the opportunity to add [c]raigslist to this growing list without time-consuming and costly litigation for both parties."

11. GraphOn has previously commenced litigation against numerous other parties alleging infringement of some or all of the Patents-in-Suit:

a. On August 24, 2007, GraphOn filed a complaint alleging infringement of the '538 and '940 Patents against AutoTrader.com, Inc. in the U.S. District Court for the Eastern District of Texas. At the time of that suit, the '591 and '034 patents had not yet issued.

b. On March 6, 2008, GraphOn filed a complaint alleging infringement of the Patents-in-Suit against Classified Ventures, LLC, IAC/InterActiveCorp., Match.com, LLC, Yahoo! Inc., eHarmony.com, and CareerBuilder, LLC in the U.S. District Court for the Eastern District of Texas.

c. On August 13, 2008, GraphOn filed a complaint alleging infringement of the Patents-in-Suit against Google Inc. in the U.S. District Court for the Eastern District of Texas.

12. In addition, GraphOn's predecessor-in-interest, Network Engineering Software, Inc. filed a complaint against eBay, Inc. in the U.S. District Court for the Northern District of California on March 23, 1999, alleging infringement of U.S. Patent No. 5,778,367, which contains an identical specification to the Patents-in-Suit, and of which the Patents-in-Suit patents are continuations.

13. On February 10, 2010, MySpace, Inc. ("MySpace")—after having received a letter from GraphOn similar to the one received by craigslist—filed a complaint for declaratory judgment of non-infringement, invalidity and unenforceability of the Patents-in-Suit in the U.S. District Court for the Northern District of California, *MySpace, Inc. v. GraphOn Corporation*, 10 CV 604 (EDL).

14. In view of the foregoing, and specifically that (a) GraphOn has asserted that craigslist infringes the Patents-in-Suit and should enter into a license agreement with GraphOn or else face litigation, (b) craigslist believes that it does not infringe the Patents-in-Suit, and (c) craigslist does not believe that all of the claims of the Patents-in-Suit are valid and enforceable, there exists an actual and justiciable controversy between the parties. On that basis, craigslist brings this action for declaratory judgment.

COUNT I

DECLARATORY JUDGMENT OF NON-INFRINGEMENT

15. craigslist incorporates and realleges the allegations of Paragraphs 1-14 as if fully set forth herein.

16. craigslist has not infringed, nor is it presently infringing, any valid claims of the Patents-in-Suit.

17. An actual controversy exists between GraphOn and craigslist with respect to whether craigslist infringes the Patents-in-Suit.

18. craigslist seeks a declaratory judgment that it does not infringe any claims of the Patents-in-Suit.

COUNT II

DECLARATORY JUDGMENT OF INVALIDITY

19. craigslist incorporates and realleges the allegations of Paragraphs 1-18 as if set forth fully herein.

20. An actual controversy exists between GraphOn and craigslist with respect to the validity of the Patents-in-Suit.

21. The Patents-in-Suit are invalid for failure to comply with one or more of the requirements of the patent laws of the United States, including, but not limited to, those codified at 35 U.S.C. §§ 101, 102, 103 and 112.

22. craigslist seeks a declaration that the Patents-in-Suit are invalid.

REQUEST FOR RELIEF

WHEREFORE, craigslist requests the following relief:

(1) A declaration that craigslist does not infringe the '538 patent;

(2) A declaration that the '538 patent is invalid;

(3) A declaration that craigslist does not infringe the '940 patent;

(4) A declaration that the '940 patent is invalid;

(5) A declaration that craigslist does not infringe the '034 patent;

(6) A declaration that the '034 patent is invalid;

(7) A declaration that craigslist does not infringe the '591 patent;

(8) A declaration that the '591 patent is invalid;

(9) A declaration that this is an exceptional case under 35 U.S.C. § 285 and awarding craigslist its reasonable attorneys' fees in this action;

(10) An award to craigslist of its costs and expenses in this action; and

(11) A judgment granting craigslist such other and further relief as the Court may deem just and proper.

DATED: March 18, 2010

PERKINS COIE LLP

By: _____

Christopher Kao (SBN 237716)
CKao@perkinscoie.com
Brian Hennessy (SBN 226721)
BHennessy@perkinscoie.com

Attorneys for Plaintiff
craigslist, Inc.

EXHIBIT A

US006324538B1

(12) **United States Patent**
Wesinger, Jr. et al.

(10) **Patent No.: US 6,324,538 B1**
(45) **Date of Patent: *Nov. 27, 2001**

(54) **AUTOMATED ON-LINE INFORMATION SERVICE AND DIRECTORY, PARTICULARLY FOR THE WORLD WIDE WEB**

(76) Inventors: **Ralph E. Wesinger, Jr.**, 1714 Ringwood Ave., San Jose, CA (US) 95131; **Christopher D. Coley**, 16730 Sorrel Way, Morgan Hill, CA (US) 95037

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/110,708**

(22) Filed: **Jul. 7, 1998**

Related U.S. Application Data

(63) Continuation of application No. 08/572,543, filed on Dec. 14, 1995, now Pat. No. 5,778,367.

(51) **Int. Cl.**[7] **G06F 17/30**

(52) **U.S. Cl.** **707/10**; 395/200.48; 395/200.47; 395/200.33; 395/200.34

(58) **Field of Search** 707/10, 200.48, 707/200.47, 200.34, 200.33; 395/200.48, 200.47, 200.34, 200.33

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,325,297	6/1967	Bird et al.	707/530
3,581,072	5/1971	Nymeyer	705/37
3,956,615	5/1976	Anderson et al.	705/72

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

95/12176 *	5/1995	(WO)	17/20
95/17733 *	6/1995	(WO)	17/20

OTHER PUBLICATIONS

Cinkosky et al, A new design for the genome sequence database, IEEE, pp. 725–729, Nov. 1995.*

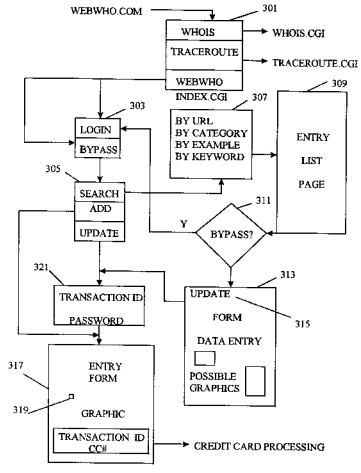
(List continued on next page.)

Primary Examiner—Thomas Black
Assistant Examiner—Frantz Coby

(57) **ABSTRACT**

A computer network and a database are used to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password. Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made and in the future after the entry has been made. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

8 Claims, 25 Drawing Sheets



U.S. PATENT DOCUMENTS

4,027,605		6/1977	Legille	110/182.5
4,074,816		2/1978	Legille	414/21
4,074,835		2/1978	Legille et al.	222/558
4,754,428		6/1988	Schultz et al.	709/246
4,799,156		1/1989	Shavit et al.	705/26
4,805,099		2/1989	Huber	707/102
4,805,134		2/1989	Calo et al.	707/10
4,962,475		10/1990	Hernandez et al.	707/515
4,989,141		1/1991	Lyons et al.	705/36
4,992,940		2/1991	Dworkin	705/26
5,063,507		11/1991	Lindsey et al.	705/26
5,107,443		4/1992	Smith et al.	345/751
5,136,501		8/1992	Silverman et al.	705/37
5,164,897		11/1992	Clark et al.	705/1
5,168,446		12/1992	Wiseman	705/37
5,189,608		2/1993	Lyons et al.	705/30
5,197,004		3/1993	Sobotka et al.	705/8
5,197,005		3/1993	Shwartz et al.	707/2
5,204,947		4/1993	Bernstein et al.	345/854
5,235,680		8/1993	Bijnagte	707/10
5,243,515		9/1993	Lee	705/37
5,257,366		10/1993	Adair et al.	707/104.1
5,261,102		11/1993	Hoffman	707/4
5,262,943		11/1993	Thibado et al.	600/300
5,263,157		11/1993	Janis	707/9
5,263,158		11/1993	Janis	707/1
5,283,731		2/1994	Lalonde et al.	705/1
5,297,249		3/1994	Bernstein et al.	345/854
5,299,123		3/1994	Wang et al.	707/2
5,301,105		4/1994	Cummings, Jr.	705/2
5,309,437		5/1994	Perlman et al.	370/401
5,319,542		6/1994	King, Jr. et al.	705/27
5,335,346		8/1994	Fabbio	711/163
5,347,632		9/1994	Filepp et al.	709/202
5,355,474		10/1994	Thuraisingham et al.	707/9
5,367,621		11/1994	Cohen et al.	707/501.1
5,386,525		1/1995	Noack	707/100
5,394,471		2/1995	Ganesan et al.	713/183
5,408,655		4/1995	Oren et al.	707/501.1
5,410,693		4/1995	Yu et al.	707/100
5,412,774		5/1995	Agrawal et al.	345/804
5,416,694		5/1995	Parrish et al.	705/8
5,418,942		5/1995	Krawchuk et al.	707/3
5,426,780		6/1995	Gerull et al.	707/3
5,448,724	*	9/1995	Hayashi	395/182.02
5,455,945		10/1995	Vanderdrift	707/2
5,459,863		10/1995	Taylor	707/10
5,471,617		11/1995	Farrand et al.	709/100
5,483,586		1/1996	Sussman	379/218.01
5,495,412		2/1996	Thiessen	705/1
5,502,637		3/1996	Beaulieu et al.	705/36
5,506,984		4/1996	Miller	707/10
5,513,126		4/1996	Harkins et al.	709/228
5,530,852	*	6/1996	Meske, Jr. et al.	707/10
5,537,546		7/1996	Sauter	709/230
5,537,590		7/1996	Amado	707/2
5,542,024		7/1996	Balient et al.	345/853
5,544,255		8/1996	Smithies et al.	382/119
5,544,360		8/1996	Lewak et al.	707/1
5,553,239	*	9/1996	Heath et al.	395/187.01
5,557,518		9/1996	Rosen	705/69
5,559,958		9/1996	Farrand et al.	714/27
5,564,119		10/1996	Krawchuk et al.	707/4
5,572,643	*	11/1996	Judson	395/793
5,592,375		1/1997	Salmon et al.	705/7
5,608,903	*	3/1997	Prasad et al.	707/10
5,623,601	*	4/1997	Vu	395/187.01
5,623,652	*	4/1997	Vora et al.	707/10
5,625,781	*	4/1997	Cline et al.	395/33
5,630,125	*	5/1997	Zellweger	707/103
5,633,910		5/1997	Cohen et al.	379/38
5,638,457		6/1997	Deaton et al.	382/100
5,649,192		7/1997	Stucky	707/103
5,655,077		8/1997	Jones et al.	713/201
5,659,741		8/1997	Eberhardt	707/104.1
5,659,742		8/1997	Beattie et al.	707/104.1
5,664,115		9/1997	Fraser	705/37
5,664,207		9/1997	Crumpler et al.	707/505
5,675,507		10/1997	Bobo, II	709/206
5,677,953		10/1997	Dolphin	705/51
5,678,041	*	10/1997	Baker et al.	707/9
5,682,525		10/1997	Bouve et al.	707/104.1
5,684,951		11/1997	Goldman et al.	713/202
5,694,546		12/1997	Reisman	705/26
5,699,526		12/1997	Siefert	705/27
5,706,507		1/1998	Schloss	707/104.1
5,708,780		1/1998	Levergood et al.	709/229
5,710,887		1/1998	Chelliah et al.	705/26
5,710,918		1/1998	Lagarde et al.	707/10
5,715,314		2/1998	Payne et al.	705/78
5,715,402		2/1998	Popolo	705/37
5,717,923		2/1998	Dedrick	707/102
5,721,827		2/1998	Logan et al.	709/217
5,721,906		2/1998	Siefert	707/9
5,721,908		2/1998	Lagarde et al.	707/10
5,724,424		3/1998	Gifford	705/79
5,727,156		3/1998	Herr-Hoyman et al.	709/219
5,729,682		3/1998	Marquis et al.	709/229
5,732,219		3/1998	Blumer et al.	428/411.1
5,734,718		3/1998	Prafullchandra	713/183
5,734,823		3/1998	Saigh et al.	709/229
5,737,395		4/1998	Irribarren	379/88.18
5,737,592		4/1998	Nguyen et al.	707/4
5,742,769		4/1998	Lee et al.	709/206
5,742,845		4/1998	Wagner	710/11
5,745,556		4/1998	Ronen	379/127.05
5,748,188		5/1998	Hu et al.	345/853
5,748,740		5/1998	Curry et al.	705/65
5,748,783		5/1998	Rhoads	382/232
5,754,939		5/1998	Herz	455/3
5,754,981		5/1998	Veeneman et al.	705/26
5,757,917		5/1998	Rose et al.	705/79
5,758,324		5/1998	Hartman et al.	705/1
5,761,649		6/1998	Hill	705/27
5,761,656		6/1998	Ben-Shachar	707/4
5,761,661		6/1998	Coussens et al.	707/9
5,761,662		6/1998	Dasan	707/10
5,761,673		6/1998	Bookman et al.	709/311
5,778,367	*	7/1998	Wesinger, Jr. et al.	707/10
5,790,793		8/1998	Higley	709/218
5,802,299		10/1998	Logan et al.	709/218
5,802,497		10/1998	Manasse	705/27
5,812,776		10/1998	Gifford	709/217
5,813,006		10/1998	Polnerow et al.	707/10
5,819,285		10/1998	Damico et al.	707/104.1
5,822,745		10/1998	Hekmatpour	706/59
5,826,241		10/1998	Stein et al.	705/26
5,832,497		11/1998	Taylor	707/104.1
5,835,712		11/1998	Dufresne	709/203
5,835,896		11/1998	Fisher et al.	705/37
5,842,173		11/1998	Strum et al.	705/1
5,850,446		12/1998	Berger et al.	705/79
5,870,552		2/1999	Dozier et al.	709/219
5,878,141		3/1999	Daly et al.	705/78
5,884,309		3/1999	Vanechanos, Jr.	707/10

OTHER PUBLICATIONS

James, Media and Hypermedia, IEEE, pp. 1–2, Jun. 1990.*

Born, A knowledge based Hypertext system for document generation and checking, IEEE, pp. 1–4, Nov. 1990.*

Rosenking et al, A generic system for directory pagination, IEEE, pp. 166–169, Sep. 1991.*

Story et al, The righ pages image–based electronic library for alerting and browsing, IEEE, pp. 17–26, Sep. 1992.*

Barclay et al, Vitual Blood, Real Sweat, no tears: lessons learned from making a publication about electronic publications, IEEE, pp. 106–109, Sep. 1995.*

Fernandez, E.B., Summers, R.C., Wood, C.; *Database Security and Integrity*, (c) 1981 Addison–Wesley Publishing Company.

A book from the *Systems Programming Series* entitled "Database Security and Integrity" [Authors Fernandez, Summers and Wood, dated 1981, pp. 1–320].

A world wide web document entitled "A Multimedia Bulletin Board in WWW Environment" [Authors Frega and Volpentesta, not dated, pp. 1–4].

A world wide web document entitled "Mosaicforms Database Access ?: A Palaeobotanic Case Study" [Author David A. Gee, not dated, pp. 1–5].

A conference paper entitled "An Interactive Electronic Bulletin Board Implementation for Mosaic and HTTP Server" [Authors J. Halama et al., dated Oct. 1994].

A conference paper entitled "WDB—A Web Interface to Sybase" [Author B. F. Rasmussen, dated 1995, pp. 72–75].

A journal article from *Doctor Dobb's* entitled "World Wide Web and HTML" [Author Douglas McArthur, dated Dec. 1994, pp. 18–26].

A book entitled "Teach Yourself Web Publishing With HTML in a Week" [Author Laura Lemay, dated 1995, pp. 272–289].

A magazine article from *Windows Sources* entitled "Setting up Shop on the Internet" [Authors Frentzen, Garfinkel, Seltzer and Sullivan, dated Feb. 1995, pp. 64–143].

A world wide web document entitled "Serving Information to the web with Hyper–G" [Authors Andrews, Kappe and Maurer, not dated, pp. 1–6].

A world wide web document entitled "A Protocol for Scalable Group and Public Annotations" [Authors LaLiberte and Braverman, not dated, pp. 1–9].

A world wide web document entitled "An Interactive Relational Database Gateway with Load Balancing" [Author Michael Bjorn, not dated, pp. 1–7].

A textbook entitled "Internet–Draft," Hypertext Transfer Protocol—HTTP/1.0 [Authors Berners–Lee, Fielding, and Frystyk Nielsen, dated Dec. 19, 1994, pp. 2–43].

A report entitled "MINI SQL: A Lightweight Database Engine" [Author David J. Hughes, dated Jan. 1995, pp. 1–19].

A world wide web document entitled "World Yellow Pages Network Yellow White Pages", [Author unknown, dated 1995, pp. 1–2, 1–3].

A world wide web document entitled "Application Development with Database Repositories", [Author unknown, not dated, pp. 1–10].

A world wide web document entitled "GSQL—A Mosaic–SQL Gateway" [Author Jason Ng, dated Dec. 1993, pp. 1–2].

A world wide web document entitled "GSQL in Detail", [Author Jason Ng, dated Dec. 1993, pp. 1–3].

A world wide web document entitled "The Oracle World Wide Web Interface Kit" [Author unknown, not dated, pp. 1–51].

A document entitled "Using the Web to Provide Private Information" [Author Bjorn Freeman–Benson, not dated, pp. 1–5].

A paper entitled "Towards Better Integration of Dynamic Search Technology and the World Wide Web" [Author Douglas McKee, not dated, pp. 1–7].

A paper entitled "Integrating Structured Databases into the Web: The More System", [Authors Eichmann, McGregor and Danley, not dated, pp. 1–9].

A book excerpt entitled "Pocket Guides to the Internet: vol. 2: Transferring Files With File Transfer Protocol" [Authors Veljkov and Hartnell, dated 1994, pp. 1–6].

A world wide web document entitled "AMAYA—W3C'S Browser/Editor" [Author Irene Vatton, dated 1998, pp. 1–24].

A paper entitled "Entering The World–Wide Web: A Guide To Cyberspace" [Author Kevin Hughes, dated May 1994, pp. 1–28].

A *Communications of the* ACM journal article entitled "The World Wide Web; Includes Glossary of Terms; Special Issue: Internet Technology" [Authors Berners–Lee, Cailliau, Luotonen, Nielsen and Secret, dated Sep. 1994, pp. 48–57].

A *Unix Review* journal article entitled "Hypertext Browsing on the Internet; World–Web Project; Net Worth; Column" [Author Steven Baker, dated Oct. 1994, pp. 43–47].

A *Computer Shopper* journal article entitled "Power In Pictures: A Web–Page Primer: Easier Than it Looks; World–Wide Web; Includes Related Article on How to Read Uniform Resource Locators", [Author Angela Gunn, dated Nov. 1994, pp. 34–39].

A *Dr. Dobb's Journal of Software Tools* journal article entitled "Business Technology: Prodigy Leads Its Peers Onto The World Wide Web" [Author Peter H. Lewis, dated Jan. 18, 1995, pp. 16–18].

A *New York Times* article entitled "The Executive Computer: Browsers Make Navigating The World Wide Web A Snap", [Author Laurie Flynn, dated Jan. 29, 1995, pp. 11–14].

A world wide web document entitled "World Wide Web Frequently Asked Questions", [Author unknown, dated Jan. 23, 1995, pp. 1–38].

A *PC Magazine* article entitled "Publish Without Paper" [Author Lori Grunin, dated Feb. 7, 1995, pp. 110–179].

A *Business Week* magazine article entitled "Cyberspace: The Software That Will Take You There", [Authors Cortese and Holland, dated Feb. 27, 1995, pp. 1–9].

An instruction manual entitled "Claris Macproject II", [Author unknown, not dated, pp. 1–139].

A paper entitled "Publishing On The Web", [Author B. Rousseau, dated Oct. 25, 1995, pp. 279–293].

An *PC Week* article entitled "Vendors To Push Multimedia Wares at CD Rom Show", [Author Kristina B. Sullivan, dated Oct. 7, 1991, p. 1].

A *Computer Graphics World* magazine article entitled "The USA at Your Fingertips", [Author Martin L. Ramsay, dated Jun. 1993].

A *Database* magazine article entitled "TOP U.S. Sources For An Online Job Search",[Authors Dolan and Schumacher, dated Nov. 1994, pp. 34–43].

An article from *The Riley Guide* entitled "Resume Databases On The Internet" [Author *Margaret F. Riley*, dated 1995, pp. unknown].

An article from *InformationWeek* entitled "Online Employment" [Author Eric R. Chabrow, dated Jan. 1995, p. 38].

A conference paper from *The 11th Conference on Artificial Intelligence for Applications* entitled "An Object–Oriented Implementation of an Adaptive Classification Of Job Openings" [Authors Clyde, Zhang, Yao, dated Feb. 1995, p. 9].

An article from *Edge: Work–Group Computing Report* entitled "Resume: Resumix Announces. . ." [Author Harry Newton, dated Jun. 1995, p. 16].

An article from *InformationWeek* entitled "Help Wanted? Find It Online. . ." [Author Marianne K. McGee, dated Jun. 1995, p. 84].

An article of NaviSoft Corporation entitled "Navipress And Naviserver: A Client Server Publishing System For The World Wide Web" [Author Linda T. Dozier, dated Mar. 1995, p. unknown].

An article of Sybase Corporation entitled "Sybase SQL SERVER 11: Performance Optimized For Real World Results" [Author unknown, dated unknown, p. unknown].

An article from *Computer* magazine entitled "Basar : A Framework For Integrating Agents In The WWW" [Author Christoph G. Thomas, dated unknown, p. 84].

An article from *University of Houston –Clear Lake* entitled "Integrating Structured Databases Into The Web: The More System" [Authors McGregor and Danley, dated unknown, p. unknown].

An article from *Computer* magazine entitled "Interactive Graphics Teleconferencing" [Authors Pferd,Peralta and Prendergast, dated Nov. 1979, p. 61].

An magazine article from *Computer Networks* entitled "The Shared Graphic Workspace. . ." [Author L. Scott Randall, Jun. 1982, p. 535].

An article from *Proceedings of IEEE* entitled "The OSI Reference Model" [Authors Day Zimmermann, dated Dec. 1983, p. 1334].

An article from *IEEE Spectrum* entitled "Teleconferencing Comes of Age" [Author Gordon Heffron, dated Oct. 1984, p. 61].

An article presented at the 13th *International Conference on Research and Development in Information Retrievel* entitled "A Direct Manipulation Interface For Boolean Information Retrievel Via Natural Language Query" [Authors Anick, Brennan, Flynn, and Hanssen, p. 135].

An article from *IEEE Spectrum* entitled "User–Interface Developments For The Nineties" [Authors Marcus and van Dam, Sep. 1991, p. 49].

An article from *Electronic Networking* entitled "World–Wide Web: Information Universe." [Authors Berners–Lee, Calliau, Groff and Pollermann, dated Spring 1992, p. 52].

An article from *The Economist* entitled "The Fruitful, Tangled Trees of Knowledge" [Author unknown. dated Jun. 1992 p. 85.].

An article from *Physics World* entitled "Electronic Publishing and Visions of Hypertext" [Author Tim Berners–Lee, dated Jun. 1992, p. 14].

An article from *IEEE Journal on Selected Areas in Communications* entitled BroadBand Multimedia Applications Using ATM Networks. . . [Authors Armbruster and Wimmer dated Dec. 1992, p. 1382].

An article by *ACM Press* entitled "A State Of The Art Distributed System: Computing With Bob" [Author Michael D. Schroeder, dated 1993, p. unknown].

An article from *IEEE* entitled "Standard Generalized Markup Language (SGML). . ." [Author Jamie Haycox, dated 1993 p. 1017].

An article from *IEEE* entitled "Dynamically Selecting Protocols For Socket Applications" [Authors Ogle, Tracy, Floyd and Bollella, dated May 1993, p. 48].

An article from *The American Soceity of Information Science* entitled "A Graphical Filter/Flow Representaion of Boolean Queries: Prototype Implementaion And" [Authors Young and Shneiderman, dated Jul. 1993, p. 327].

An article from *IEEE* entitled "Benefits of Automating Data Translation" [Authors Mamrak, Barnes and O'Connell, dated Jul. 1993, p. 82].

An article from *IEEE* entitled "Secure Access To Data Over The Internet" [Authors Bina, McCool, Jones and Winslett dated May 1993, p. 48].

A world wide web document entitled "More Technology Transfer" [Author unknown, dated Jan. 9, 1996, pp. 1–7, with two additional pages attached].

A world wide web document entitled "Implementation of The Information System" [Author Bernd Mueller, not dated, pp. 1–5].

A world wide web document entitled "Providing Access to a Data Library: SQL and Full–Text IR Methods of Automatically Generating Web Structure" [Authors Jacobsen, Millman and Bourne, not dated, pp. 1–4].

A world wide web document entitled "How To Present Lots of Volatile Information on The World Wide Web" [Authors Jennings, Damon, Good and Pisarski, not dated, pp. 1–7].

A world wide web document entitled "Tops On–Line—Automating The Construction and Maintenance of HTML Pages" [Author Kennie H. Jones, dated Oct. 15, 1994, pp. 1–6].

A world wide web entitled "HTML and Mosaic: A Taste For More" [Author Peter L. Linde, not dated, pp. 212–1 through 212–7].

A world wide wide web document entitled "Using The World Wide Web as an Information System to Reduce The Average Period of Study by Better Information Providing and to Relieve Administration" [Author Bernd Muller, not dated, pp. 1–2].

An untitled world wide web document with the following web address appearing in the top right corner of the page: http://www.ncsa.uiuc.edu/SDG/IT94/...ngs/Educ/mueller/Introduction.html [Author Bernd Muller, not dated, pp. 1–2].

A world wide web document entitled "ZELIG: Schema–Based Generation of Soft WWW Database Applications" [Authors Varela and Hayes, not dated, pp. 1–8].

A world wide web document entitled "Auto–Faq: An Experiment in Cyberspace Leveraging" [Author Steven D. Whitehead, not dated, pp. 1–10].

A world wide web documents entitled "W3 Based Medical Information System vs. Custom Client Server Applications" [Authors Willard, Hallgren and Connelly, not dated, pp. 1–5].

A *Database* magazine article entitled "Adventures With The World Wide Web: Creating A Hypertext Library Information System" [Author James Powell, dated Feb. 1994, pp. 59–66].

A memo entitled "White Pages Meeting Report" [Authors Postel and Anderson, dated Feb. 1994, pp. 1994, pp. 1–29].

A magazine article from *Communications of the ACM* entitled, "The Dexter Hypertext Reference" [Authors Schwartz and Halasz, dated Feb. 1994, pp. 30–39].

A world wide web document entitled "State of The Art Review on Hypermedia Issues and Applications" [Author V. Balasubramanian, dated Mar. 1994, pp. 1–39].

A conference paper entitled Interactive Information Services Using World–Wide Web Hypertext' [Author Steve Putz, dated Apr. 20, 1994, pp. 1–9].
A conference paper entitled "Digital's World–Wide Web Server: A Case Study" [Author Russ Jones, dated May 1994, pp. 1–10].
A journal article from *Communications of the ACM* entitled "The World Wide Web" [Authors Berners–Lee, Caillian, Luotonen, Nielsen and Secret, dated Sep. 1994, pp. 76–82].
A technical report entitled "Harvest: A Scalable, Customizable Discovery and Access System" [Authors Bowman, Danzig, Hardy, Manber and Schwartz, dated Sep. 26, 1994, pp. 1–27].
A magazine article from *Beam Line* entitled "Spinning the World Wide Web" [Author Tony Johnson, dated FALL 1994, pp. 2–9].
A world wide web document entitled "An Architecture For Scholarly Publishing on The World Wide Web" [Authors Weibel, Miller, Godby and LeVan, not dated, pp. 1–7].
A world wide web document entitled "An Interactive Forum For Convection–Diffusion Problems" [Authors Beck and Baptista, not dated, pp. 1–4].
A world wide web document entitled "Drop–In Publishing With The World Wide Web" [Authors Davis and Lagoze, not dated, pp. 1–9].
A world wide web document entitled "Extending WWW For Synchronous Collaboration" [Authors Frivold, Lang and Fong, not dated, pp. 1–8].
A world wide web document entitled "Mosaic as Corporate Data Collector and Dispenser" [Authors Prah and DiGiovanni, not dated, pp. 1–5].
A world wide web document entitled "Providing Customers Information Using the Web and Cobra" [Authors Hastings and Kumar, not dated, pp. 1–10].
A world wide web document entitled "Review–Based Information Services: Lessons Learned From The Boston Restaurant List" [Author Ellis S. Cohen, not dated, pp. 1–12].
A world wide web document entitled "Providing Data on The Web: From Examples to Programs" [Authors Varela and Hayes, not dated, pp. 1–10].
A world wide web document entitled "Techniques For Server–Side Dynamic Document Generation" [Authors Boutell and Latter, not dated, pp. 1–5].
A world wide web document entitled "Using Mosaic For Remote Test System Control Supports Distributed Engineering" [Authors Scharf, Hartmann and Wolz, not dated, pp. 1–8].
A magazine article from *Business Week* entitled "The Internet: How It Will Change The Way You Do Business" [Author John W. Verity, dated Nov. 14, 1994, pp. 80–88].
A paper entitled "Locking In Oodbms Client Supporting Nested Transactions" [Authors Daynes, Gruber and Valduriez, dated 1995, pp. 316–323].
A newspaper article from *PC Week* entitled "ATM Carriers Outpace Demand For Fast Data Links" [Author Anne Knowles, dated Feb. 6, 1995, pp. 1, 125–126].
A newspaper article from *PC Week* entitled "SQL Databases, Web Servers Make Connection" [Author Jeff Frentzen, dated Mar. 6, 1995, pp. 2].
A world wide web document entitled "Cooperative Work On The Network: Edit The WWW!" [Author Jean Paoli, not dated, pp. 1–9].
A journal article from *Computer Networks And ISDN Systems* entitled "Crystalweb—A Distributed Authoring Environment For The World–Wide Web" [Authors Peters and Neuss, dated 1995, pp. 861–870].
A magazine article from *PC Magazine* entitled "Setting Up A Web Server" [Author Ray Duncan, dated May 16, 1995, pp. 273–280].
A newspaper article from *PC Week* entitled "The Mystery of Common Gateway Interface" [Author Jeff Frentzen, dated May 22, 1995, p. 13].
A magazine article from *Searcher* entitled "Internet World '95 In San Jose" [Author Aggi Raeder, dated June 1995, pp. 10–18].
A journal article from *Dr. Dobb's* entitled "Coding With HTML Forms" [Author Andrew Davison, dated May 1995, pp. 71–75].
A magazine article *Data Based Advisor* entitled "Data Entry On The World Wide Web: Part 2" [Author Kenn Nesbitt, dated Sep. 1995, pp. 84–93].
A magazine article *Data Based Advisor* entitled "Link The Web With Your Relational Databases" [Author Dan Gutierrez, dated Sep. 1995, pp. 94–95].
A *PC Magazine* article entitled "Publishing Databases On The World Wide Web" [Author Ray Duncan, dated Sep. 1995, pp. 403–412].
A world wide web document from *DBMS Online* entitled "Database And The Internet" [Author Maurice Frank, not dated, pp. 1–13].
A *PC Magazine* article entitled "Publishing HTML Forms On The Web" [Author Ray Duncan, dated Dec. 5, 1995, pp. 391–403].
A paper entitled, "On–Line Images From The History Of Medicine" [Authors Rodgers and Srinivasan, not dated, pp. 1–9].

* cited by examiner

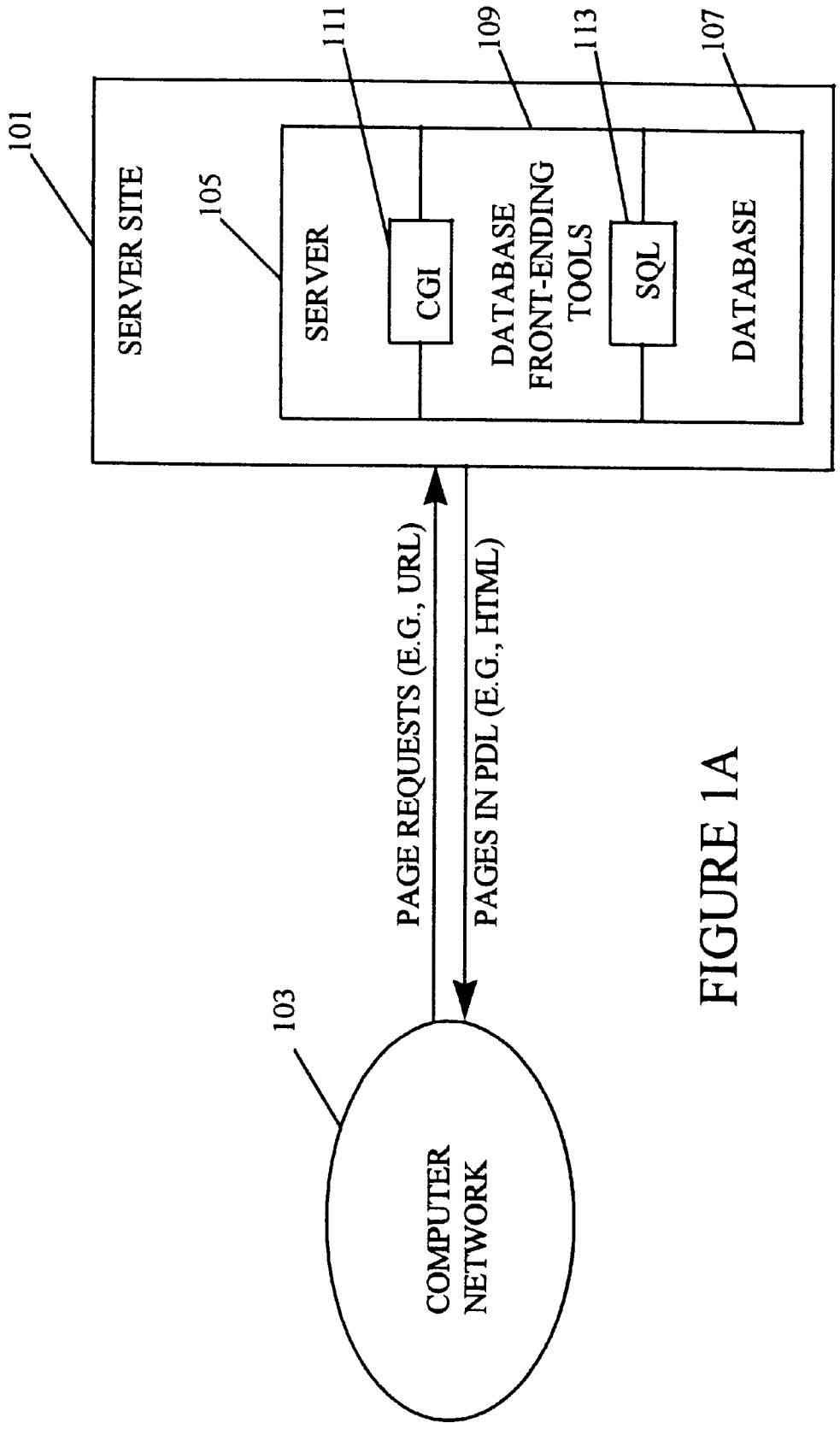

101
SERVER SITE
105
SERVER
111
CGI
109
DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1A

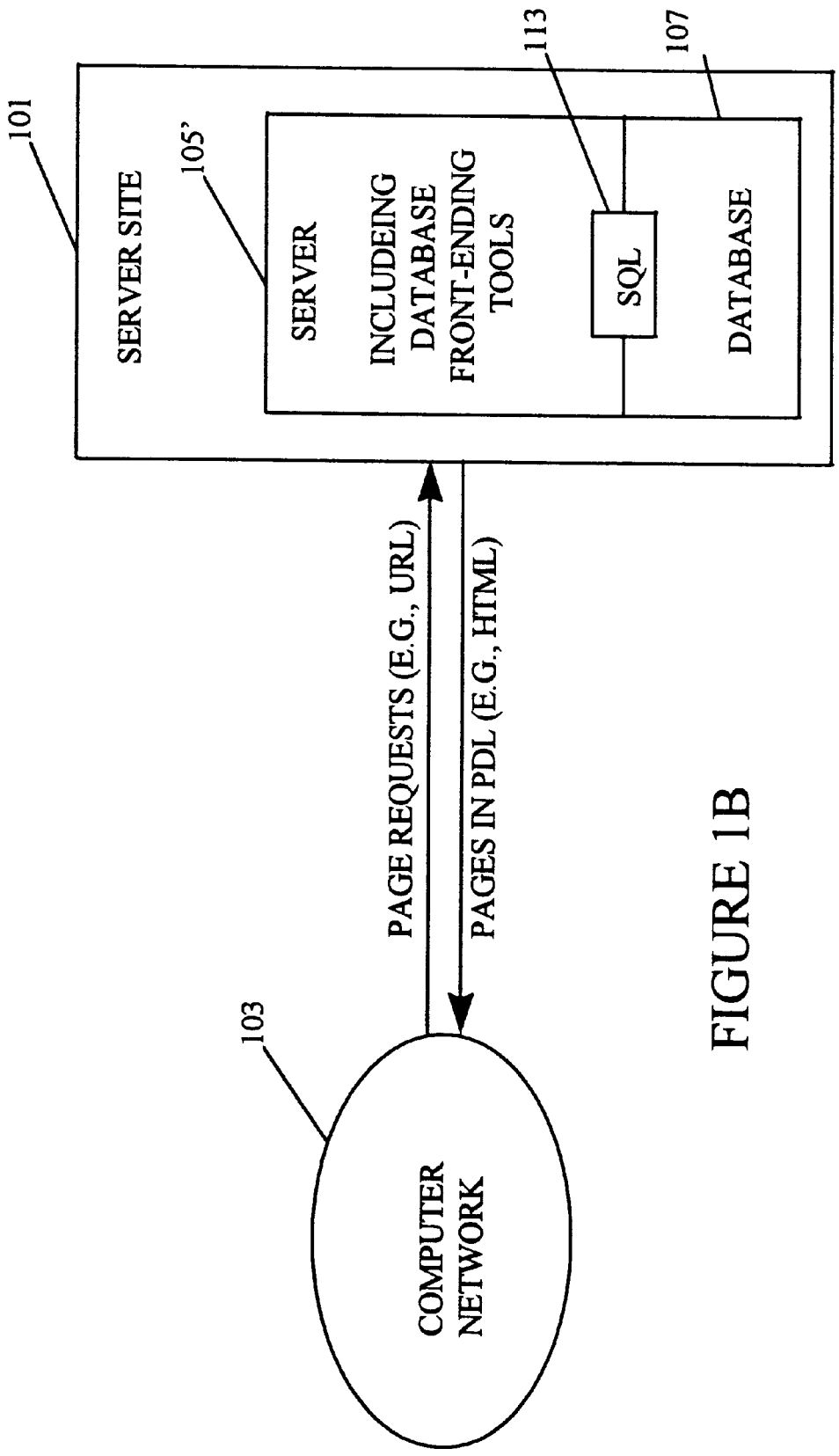

101
SERVER SITE
105'
SERVER
INCLUDEING DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1B

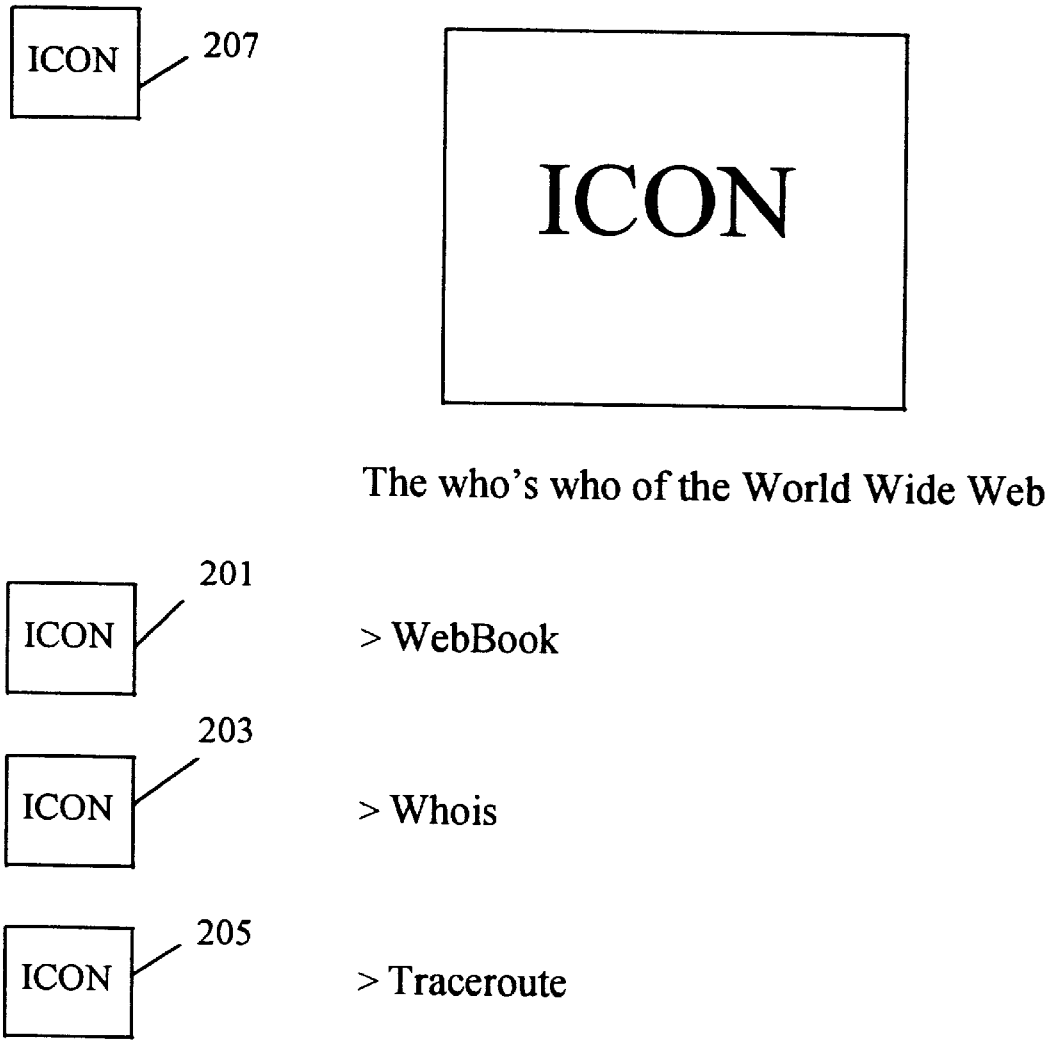

ICON
207
ICON
The who's who of the World Wide Web
201
ICON
> WebBook
203
ICON
> Whois
205
ICON
> Traceroute
This page is brought to you by the guys from _____ . Intelligent Computing for the Internet from The Internet Solution Provider.
(C)1995 SRMC.

FIGURE 2A

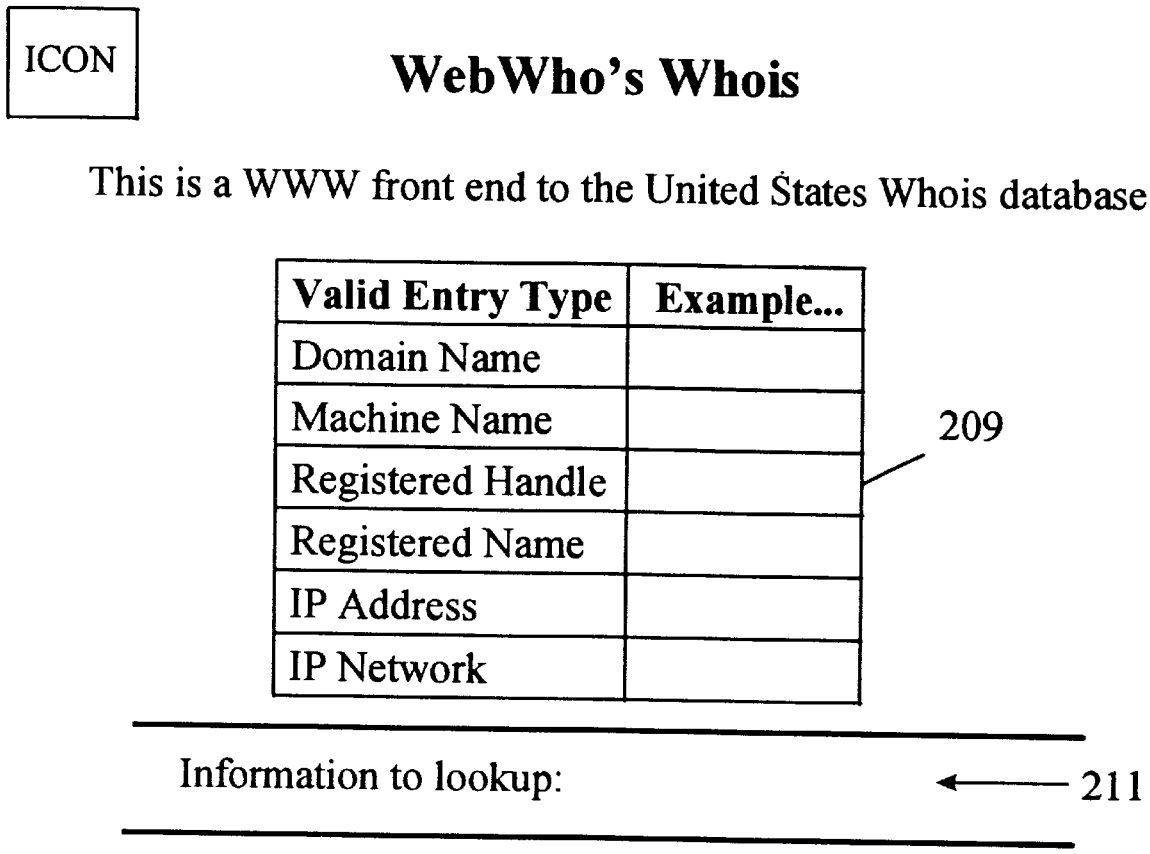

ICON
WebWho's Whois
This is a WWW front end to the United States Whois database
Valid Entry Type
Example...
Domain Name
Machine Name
Registered Handle
Registered Name
IP Address
IP Network
209
Information to lookup:
211

FIGURE 2B

Scientific Research Management Corp. (SRMC-DOM)
1714 Ringwood Avenue
San Jose, CA 95131

Domain Name: SRMC.COM

Administrative Contact:
Lyke, Howie (HL39) (No mailbox)
408 437-1800
Technical Contact, Zone contact:
Coley, Chris (CC339) ccoley@SRMC.COM
408 437-1800

215

213

Record last update on 04-Jun-95
Record created on 13-Dec-94

Domain servers in listed order:

NS.SRMC.COM	205.138.192.10
CASD.SRMC.COM	205.138.192.252
SWEB.SRMC.COM	205.138.192.253
SMAIL.SRMC.COM	205.138.192.254

The InterNIC Registration Services Host contains ONLY Internet information (Networks, ASN's, Domains, and POC's). Please use the whois server at nic.ddn.mil for MILNET Information.

FIGURE 2C

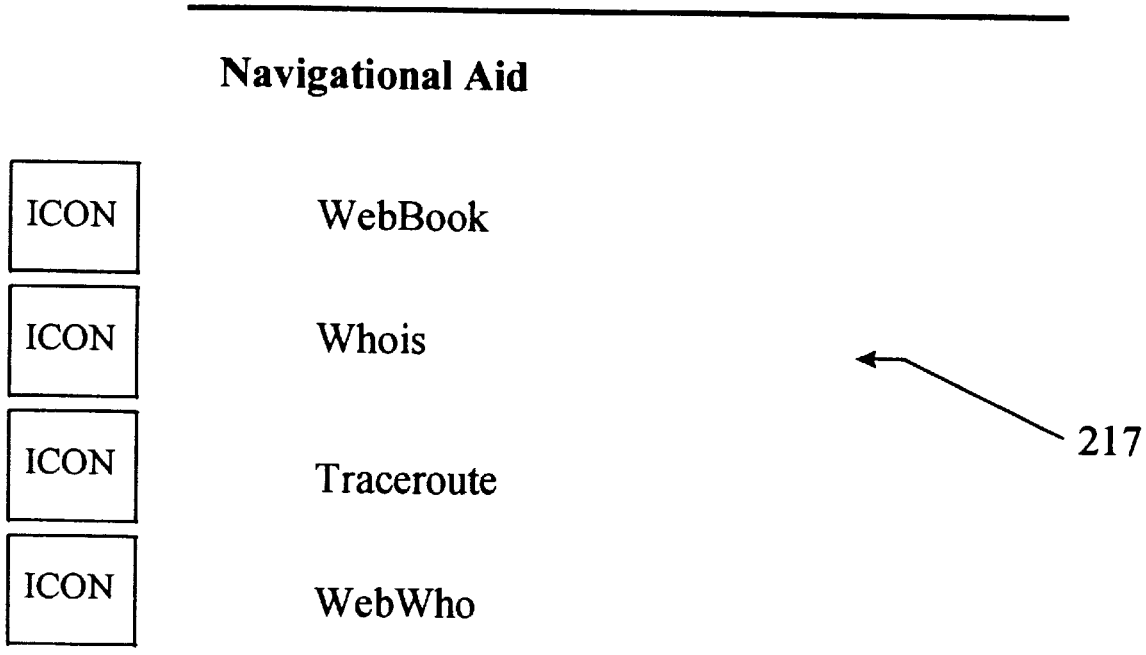

Navigational Aid
ICON
WebBook
ICON
Whois
ICON
Traceroute
ICON
WebWho
217
This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The Internet Solution Provider.
(C) 1995 SRMC.

FIGURE 2D

ICON

WebWho's Traceroute

This is a WWW front end to the Traceroute utility
Enter the hostname or an address to trace a route to.

Host to traceroute to: 219

tracerpite to rs.internic.net (198.41.0.6), 30 hops max, 40 byte packets

1 r001-t3.srmc.com (205.138.192..1) 2ms 2ms 1ms
2 204.70.48.49 (204.70.48.49) 20ms 116ms 83 ms
3 core-fddi-0.Bloomington.mci.net (204.70.2.129) 186 ms 27 ms 268ms
4 core1-hssi-2.LosAngeles.mci.net (204.70.1.141) 19ms 26ms 19ms
5 core-hssi-3.Washington.mci.net (204.70.1.178) 335ms 245ms 348ms
6 border1-fddi-0.Washington.mci.net (204.70.2.2) 87ms 87ms 86ms
7 suranet-wtn-ds3.Washington.mci.net (204.70.56.6) 87ms 88ms 87ms
8 wtn9-wtn8-cf.sura.net (128.167.7.9) 88ms 87ms 88ms
9 netsol-wtn9-cl.sura.net (192.221.63.90) 92ms 93ms 90ms
10 rs1.internic.net (198.41.0.6) 90ms 90ms 94ms

FIGURE 2E

Navigational Aid

ICON	WebBook
ICON	Whois
ICON	Traceroute
ICON	WebWho

This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The Internet Solution Provider.

FIGURE 2F

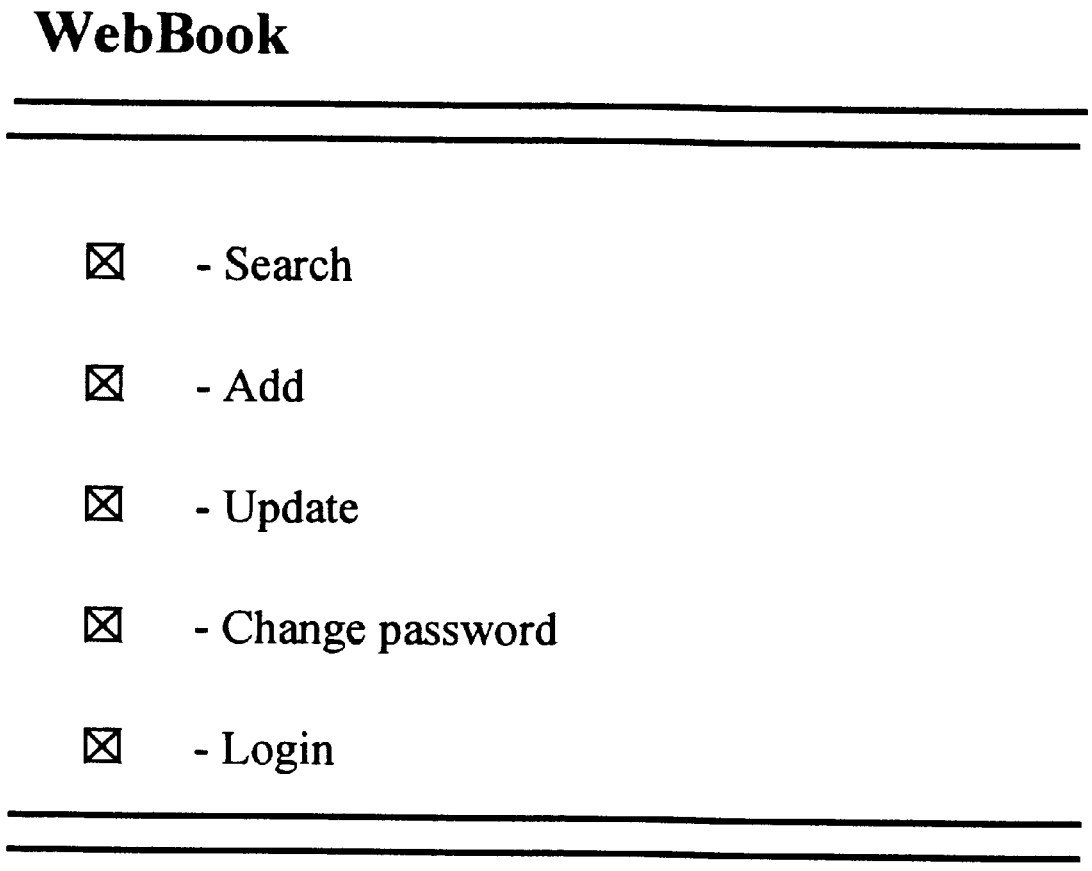


FIGURE 2G

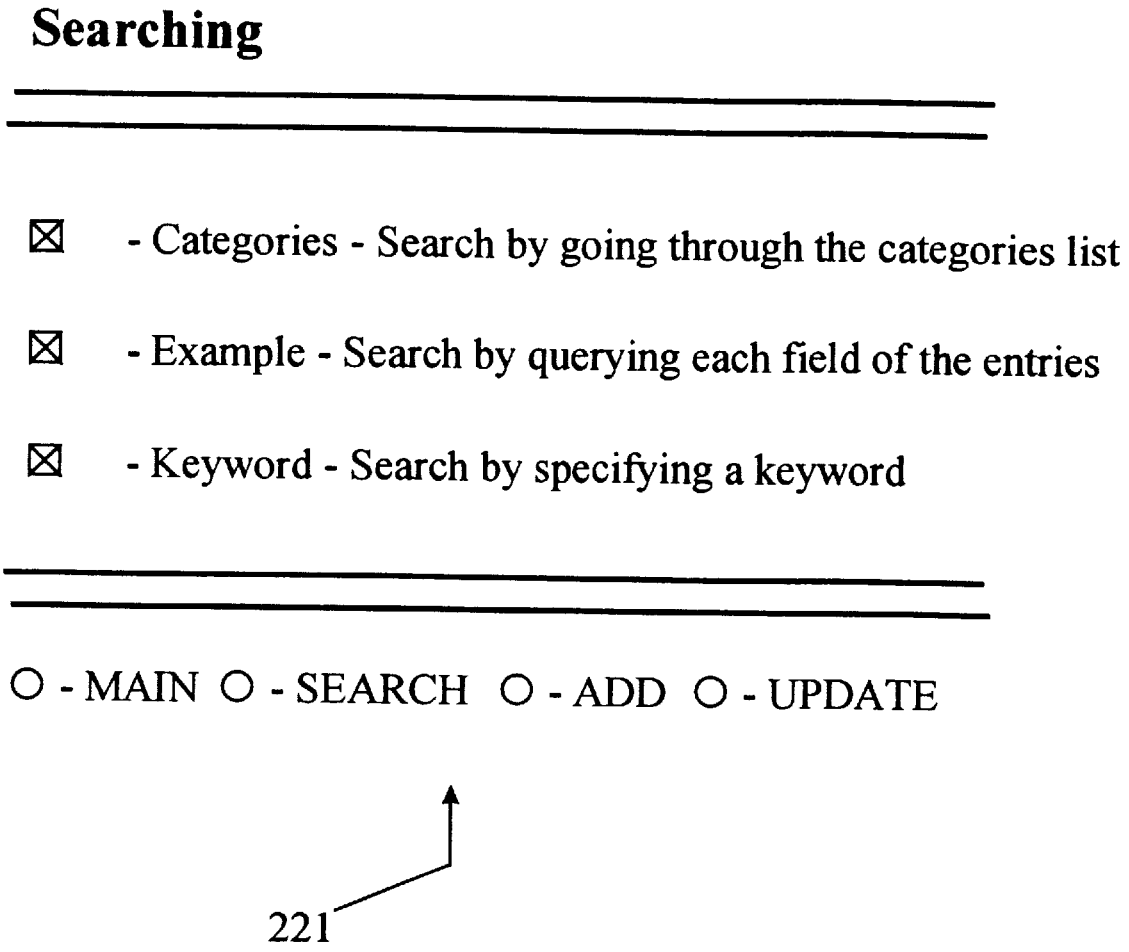

Searching
☒ - Categories - Search by going through the categories list
☒ - Example - Search by querying each field of the entries
☒ - Keyword - Search by specifying a keyword
○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE
221

FIGURE 2H

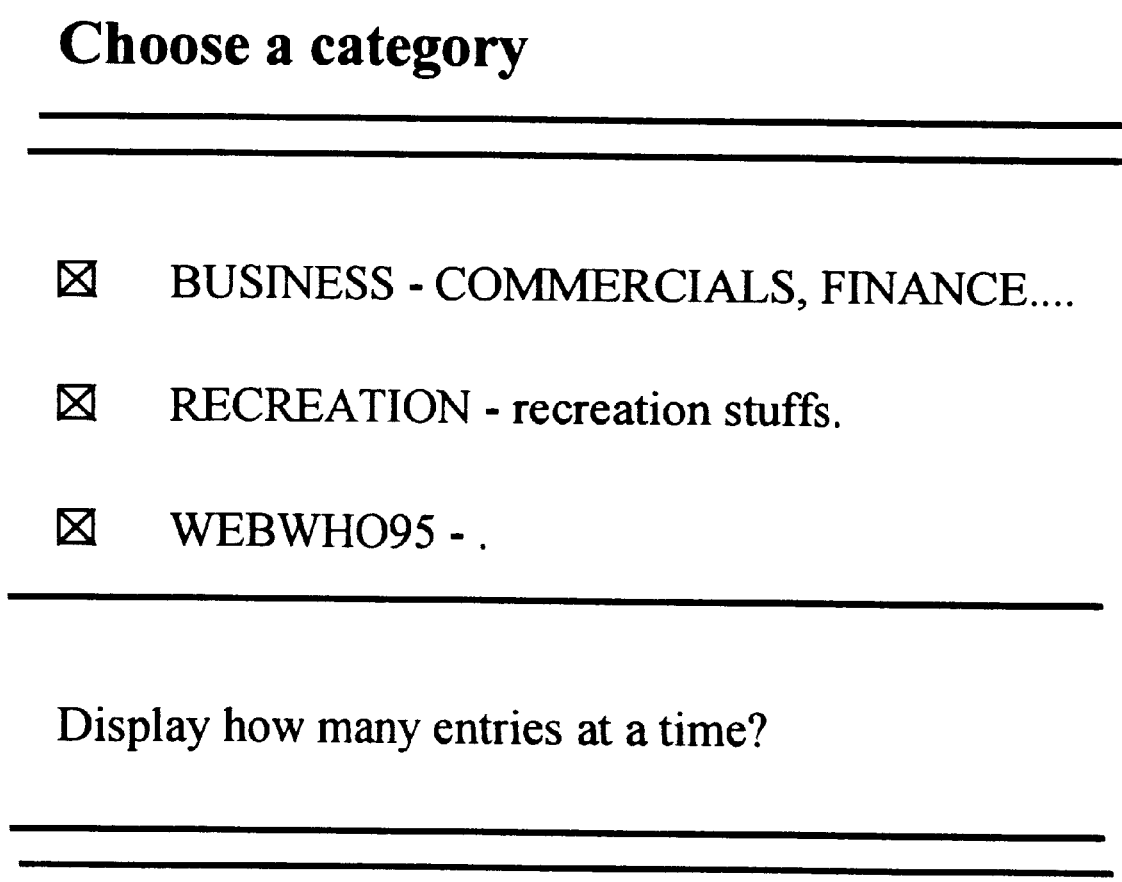

Choose a category
☒ BUSINESS - COMMERCIALS, FINANCE....
☒ RECREATION - recreation stuffs.
☒ WEBWHO95 - .
Display how many entries at a time?
○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2I

Choose a category

WEBWHO95

Sub-categories:

☒ INDEX - .

Display how many entries at a time?

9250 entries available!

9240 entries more

- ○ -Topographical Pictures
- ○ -Xtoys
- ○ -Index - The SoftSource Files
- ○ -Computer ESP
- ○ -Against Computer/Video Games
- ○ -Arrgh! The Entertainment Page
- ○ -CD-ROM Network
- ○ -Complete Gaming HeadQuarters
- ○ -Digital Nostalgia
- ○ -EINet's Gaming Resource

○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2J

Enter any field you want to search

Title:

First Name: Last Name:

Middle Name: (optional)

Phone#:

Address:

City: State:

Zipcode: Country:

Email:

URL:

Display how many entries at a time?

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2K

Submit a new entry to WebWho

Title: (The way you want your entry to appear in WebWho)
Name: (The way it appears on your credit card)
First Name: Last Name:
Middle Name:(optional)
Phone#1:
Phone#2(optional): Fax:(optional)
Address:
City: State:
Zipcode: Country:
Email:
URL#1:(optional)
URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2L

Choose a category

BUSINESS

- ☒ BOOKSTORE -STORE THAT SELLS BOOKS
- ☒ COMPUTER -COMPUTER COMPANIES.
- ☒ REAL ESTATE -BUYING AND SELLING PROPERTIES.
- ☒ WEDDING DESIGN -PLAN AND CORRDINATE WEDDINGS.

Or define your own

Category:

Description:

○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2M

ANNE HOGAN PERRY REALTOR

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

Name: Perry, Anne H

Phone#1: 8087352411

Phone#2:

Fax:

Address: 4211 WALALAE AVENUE SUITE 100

City: HONOLULU State: HI

Zipcode:96816 Country: USA

FIGURE 2N

Email: aperry@warrall.com

URL#1: http://www.worrall.com/estate/estate.shtml

URL#2: http://www.worrall.com/estate/estate.shtml

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2O

Edit your post, then press UPDATE

Title: (The way you want your entry to appear in WebWho)
Name: (The way it appears on your credit card)
First Name: Last Name:
Middle Name:(optional)
Phone#1:
Phone#2(optional): Fax:(optional)
Address:
City: State:
Zipcode: Country:
Email:
URL#1:(optional)
URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2P

Press BACK to edit the keywords and comments again. Otherwise, press the change button if you want to change category, or press the done button to update your entry.

The keywords you have entered are:

keyword1: HAWAII
keyword2: REALTOR
keyword3: HONOLULU
keyword4: REALESTATE
keyword5: OCEAN
keyword6: FRONT
keyword7: BROKER
keyword8: PROPERTIES
keyword9:
keyword10:
keyword11:
keyword12:
keyword13:
keyword14:
keyword15:
keyword16:
keyword17:
keyword18:
keyword19:
keyword20:

FIGURE 2Q

The following description will be displayed with your entry

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

O - Change categories O - Done update

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2R

Please enter the identification number of this post

identification number:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2S

Your post has been updated. Thank you!

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2T

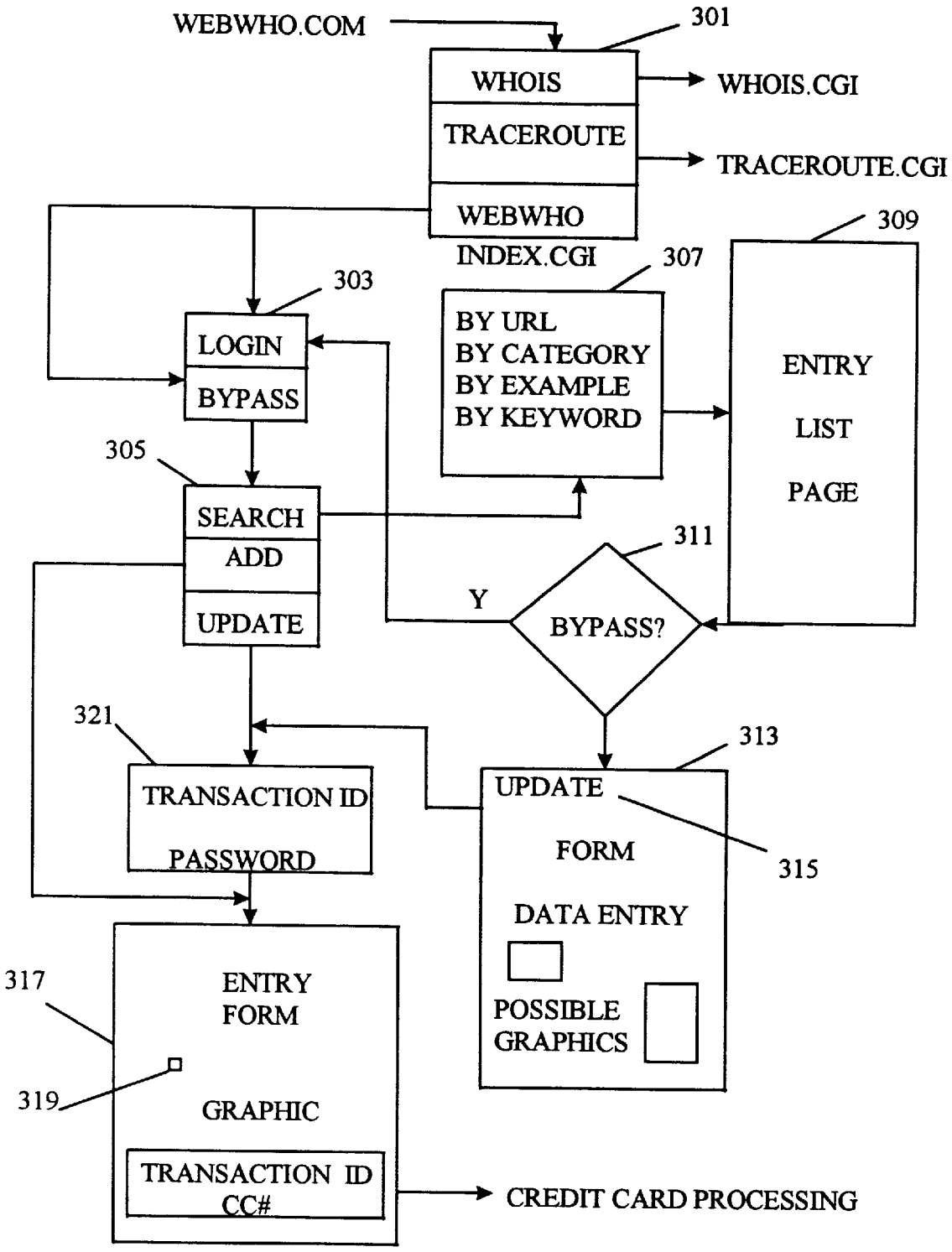

WEBWHO.COM
301
WHOIS
WHOIS.CGI
TRACEROUTE
TRACEROUTE.CGI
WEBWHO
INDEX.CGI
309
307
303
LOGIN
BYPASS
BY URL
BY CATEGORY
BY EXAMPLE
BY KEYWORD
ENTRY
LIST
PAGE
305
SEARCH
ADD
UPDATE
311
Y
BYPASS?
321
313
TRANSACTION ID
PASSWORD
UPDATE
FORM
DATA ENTRY
315
POSSIBLE
GRAPHICS
317
ENTRY
FORM
319
GRAPHIC
TRANSACTION ID
CC#
CREDIT CARD PROCESSING

FIGURE 3

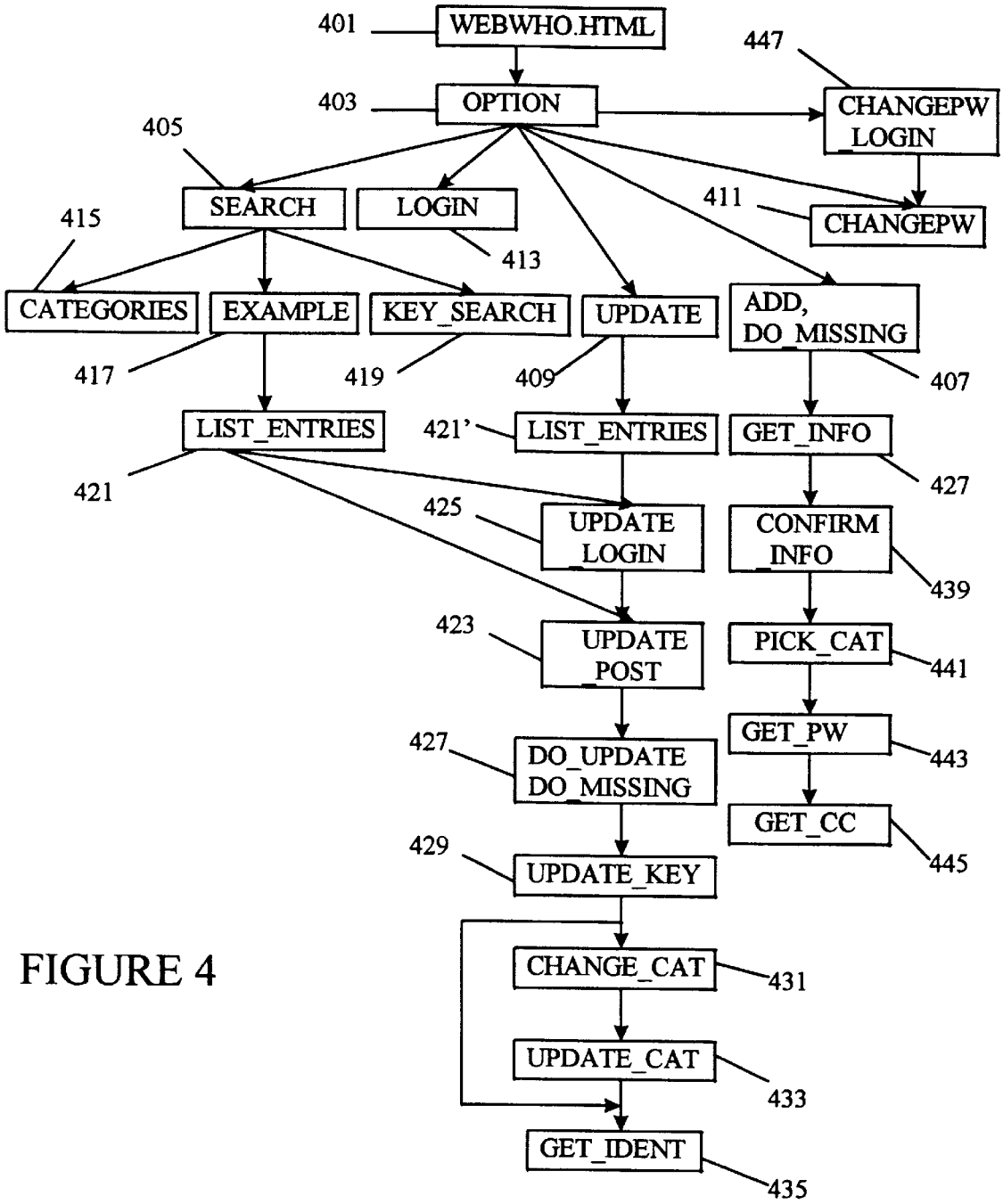

401
WEBWHO.HTML
447
403
OPTION
CHANGEPW_LOGIN
405
SEARCH
LOGIN
411
CHANGEPW
415
413
CATEGORIES
EXAMPLE
KEY_SEARCH
UPDATE
ADD, DO_MISSING
417
419
409
407
LIST_ENTRIES
421'
LIST_ENTRIES
GET_INFO
421
427
425
UPDATE_LOGIN
CONFIRM_INFO
439
423
UPDATE_POST
PICK_CAT
441
GET_PW
427
DO_UPDATE DO_MISSING
443
GET_CC
429
UPDATE_KEY
445
CHANGE_CAT
431
UPDATE_CAT
433
GET_IDENT
435

FIGURE 4

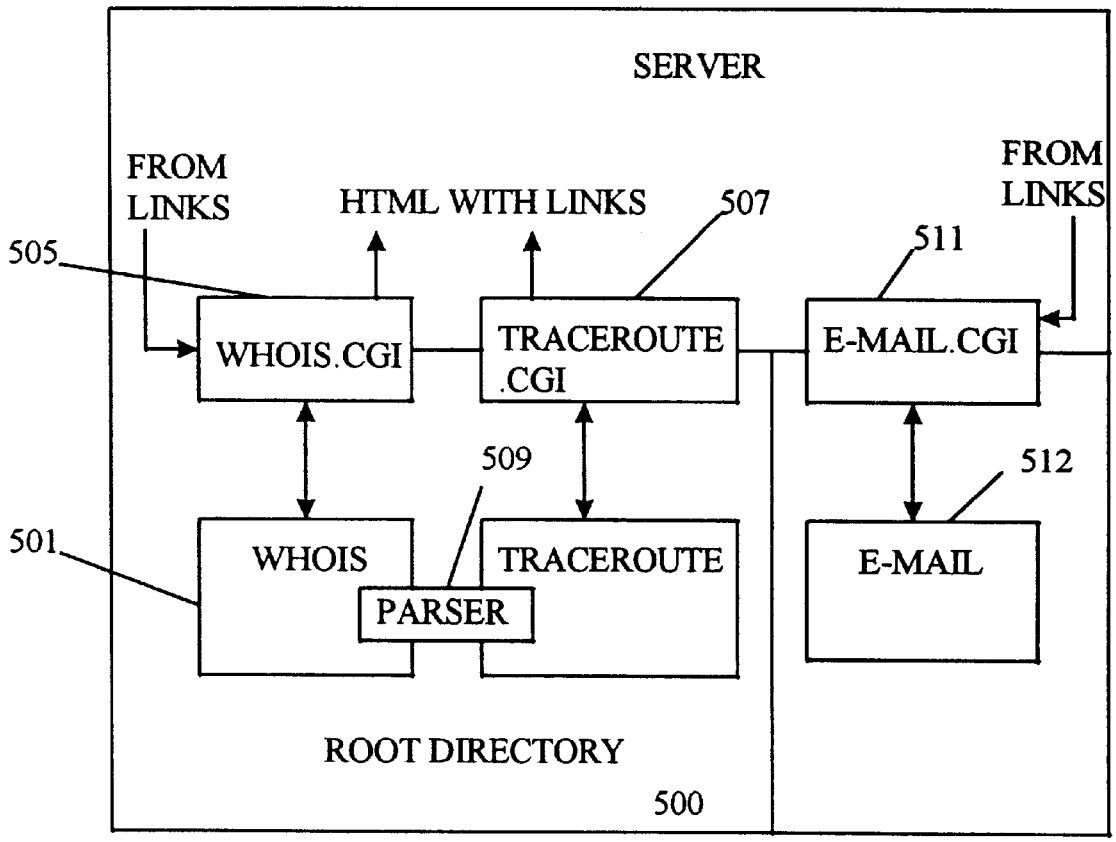

SERVER
FROM LINKS
HTML WITH LINKS
507
FROM LINKS
505
511
WHOIS.CGI
TRACEROUTE .CGI
E-MAIL.CGI
509
512
501
WHOIS
TRACEROUTE
PARSER
E-MAIL
ROOT DIRECTORY
500

FIGURE 5

AUTOMATED ON-LINE INFORMATION SERVICE AND DIRECTORY, PARTICULARLY FOR THE WORLD WIDE WEB

RELATED APPLICATION DATA

This is a continuation of application Ser. No. 08/572,543, filed Dec. 14, 1995, now U.S. Pat. No. 5,778,367, issued Jul. 7, 1998.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to on-line services, particularly to services for the World Wide Web.

2. State of the Art

The Internet, and in particular the content-rich World Wide Web ("the Web"), have experienced and continue to experience explosive growth. The Web is an Internet service that organizes information using hypermedia. Each document can contain embedded reference to images, audio, or other documents. A user browses for information by following references. Web documents are specified in HyperText Markup Language (HTML), a computer language used to specify the contents and format of a hypermedia document (e.g., a homepage). HyperText Transfer Protocol (HTTP) is the protocol used to access a Web document

Part of the beauty of the Web is that it allows for the definition of device-, system-, and application-independent electronic content. The details of how to display or play back that content on a particular machine within a particular software environment are left to individual web browsers. The content itself, however, need only be specified once. In some sense, then, the Web offers the ultimate in cross-platform capability.

Pre-existing collections of information, however, such as databases of various kinds, can rarely be placed directly on the Web. Rather, gateway programs are used to provide access to a wide variety of information and services that would otherwise be inaccessible to Web clients and servers. The Common Gateway Interface (CGI) specification has emerged as a standard way to extend the services and capabilities of a Web server having a defined core functionality. CGI "scripts" are used for this purpose. CGI provides an Application Program Interface, supported by CGI-capable Web servers, to which programmers can write to extend the functionality of the server. CGI scripts in large part produce from non-HTTP objects HTTP objects that a Web client can render, and also produce from HTTP objects non-HTTP input to be passed on to another program or a separate server, e.g., a conventional database server. More information concerning the CGI specification may be accessed using the following Universal Resource Locator (URL): http://hoohoo.ncsaiuiuc.edu/cgi/interfac.html

With the explosive growth of the Web, fueled in part by the extensibility provided by CGI scripts, the need for "finding aids" for the Web, i.e., tools to allow one to find information concerning a topic of interest, has grown acute. Many hard-copy volumes are presently available that are represented to be "White Pages" or "Yellow Pages" for the Web. Of course, hard copy information becomes rapidly out of date, and in the case of the Web, is out of date before it is even printed (let alone distributed), in the sense of failing to list many interesting resources newly made available on the Web.

The only effective solution is to have such finding aids be on-line, available on the Web itself. One such finding aid is

a class of software tools called search engines. Search engines rely on automated Web-traversing programs called robots or spiders that follow link after link around the Web, cataloging documents and storing the information for transmission to a parent database, where the information is sifted, categorized, and stored. When a search engine is run, the database compiled through the efforts of the robots and spiders is searched using a database management system. Using keywords or search terms provided by the user, the database locates matches and possibly near-matches as well.

An example of one such search engine is known as Yahoo, offered by Yahoo! Corporation of Mountain View, Calif., and may be accessed at the URL http://www.yahoo.com. Persons having pages on the Web, rather than simply waiting to have their Web page be found by a robot or spider, can also have their Web page listed in the Yahoo database by providing information concerning the resource they wish to list and paying a fee. The result is an on-line-searchable directory of Web resources that is regularly updated.

While such services are indeed extremely useful, nevertheless, from the standpoint of a person wishing to publicize their Web site, they are typically attended by a number of drawbacks. In particular, the person wishing to publicize their Web site typically has very limited control of the content of the resulting listing. Submissions, including textual description and suggested categories, are often subjected to editorial control that may range from strict to arbitrary. As a result, a listing may be placed under an entirely different category from the category intended by the person making the submission. Furthermore, the textual description may be heavily edited (in some instances almost beyond recognition)—or even deleted—depending on the exaction of the editor. Because of this editorial process, posting of the listing is not immediate. Furthermore, once the listing has been posted to the database, if the person making the listing later wishes to change the listing in some respect, the change must again pass through the same laborious channel. Hence, the process of adding and updating listings is inconvenient and unsatisfactory.

Moreover, the nature of the listing is rather prosaic. The listing is in title/brief-description format and does not include graphical elements or otherwise appeal to the artistic sensibilities of the viewer. In this sense, the listing is comparable to the standard telephone book listing, which appears in plain text, nothing added, as compared, say, to a quarter-page advertisement with custom artwork and the like.

To use the foregoing service, one is required have a Web homepage. If a user has no Web presence but wishes to establish one, the foregoing service is entirely unavailable. The typical user must first establish a Web presence by paying a Web consultant to produce a homepage and then paying an Internet Service Provider to house that homepage on the Web. This undertaking can prove to be quite costly for an individual or a small business.

What is needed, then, is an information service that overcomes the foregoing disadvantages.

SUMMARY OF THE INVENTION

The present invention, generally speaking, uses a computer network and a database to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing

the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password.

Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made at any time thereafter. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

Because the user controls both the content of an entry and the manner in which it is classified, the database functions as a directory to allow the Web public to quickly and precisely find current and accurate data about the user, the user's products and services, etc., without requiring the user to have a conventional Web homepage. The user's mini homepage can be included in many different categories, with the user having the flexibility to change the categories or the descriptive content of the page at any time. Preferably, hyperlink services are also provided, by including within the page links to an E-mail address or to one or more other conventional homepages (or other mini homepages). The E-mail address may be a private E-mail address established on the host machine, avoiding the need to obtain a conventional E-mail address. An inexpensive way is therefore provided to set up a Web site with key information that might otherwise be very costly to widely distribute, and to achieve an Internet presence with a minimum of effort and expense.

BRIEF DESCRIPTION OF THE DRAWING

The present invention may be further understood from the following description in conjunction with the appended drawing. In the drawing:

FIGS. **1**A and **1**B are simplified block diagrams of alternative embodiments of the system of the present invention;

FIG. **2**A through FIG. **2**T are screen shots showing use of the system and method of the present invention;

FIG. **3** is a flowchart of the operational steps involved in the present system and method;

FIG. **4** is a block diagram showing various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships; and

FIG. **5** is a simplified block diagram showing the manner in which whois and traceroute services are made readily available through HTML front-ending and augmented with hyperlink services.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. **1**A, there is shown a simplified block diagram of the system of the present invention. A server site **101** is connected to the a computer network **103** such as the Web or a Wide Area Network (WAN) other than the Web. At the server site, server software runs on a suitable server platform. In the case of the Web, for example, the server of FIG. **1**A might be a server available from the National Center for Supercomputing Applications (NCSA), or a secure server package of a known, commercially-available type, running on a super-minicomputer such as a SunServer machine available from Sun Microsystems of Menlo Park, Calif., or on any of a wide variety of suitable UNIX platforms. Also running, either on the same machine or a network-accessible machine, is a database management system **107**. Preferably, the database management system **107** supports Standard Query Language, or SQL. One suitable database management system is MiniSQL, which is also commercially available.

SQL databases, however, are not inherently "Web-friendly." Accordingly, a variety of HTML front-ending tools **109** are provided which run as extensions to the server software, allowing computer network users to each add entries to a database, search entries in the database, and update entries by that particular user, all using the Web (or a Web-like) graphical user interface. The server software and the HTML front-ending tools communicate through the Common Gateway Interface **111**. In accordance with another embodiment, shown in FIG. **1**B, the HTML front-ending tools may be fully integrated with the server software. The HTML front-ending tools and the database communicate through SQL (**113**).

When a network user visits the server site, the user is served a main page in a page description language such as HTML. The user interacts with the page, making selections or requests. These selections or requests, although they may not appears as such to the user, are in effect page requests, e.g., URLs that access a page directly or that call a CGI script to perform some sort of processing. The result of the selection or request may be a page eliciting a further selection or request, or may be contain the desired information itself.

In order to convey the manner in which the automated information service and directory is used, screen displays of the graphical user interface will now be described.

When a user first visits the site, he or she is presented with a main page as shown in FIG. **2**A. Along the side of the page are icons that may be clicked on to select different services. An icon **201** selects a "WebBook" service in which database entries may be searched, viewed and updated. An icon **203** selects a "WebWho Whois" service, providing a graphical front end to the United States Whois database, with additional hypertext link integration. An icon **205** selects the "WebWho Traceroute" service, providing a graphical front end to the Traceroute utility, again with additional hypertext link integration. An icon **207** in the top left shows the current page's icon and is not linked.

When the icon **201** is selected, the user is presented with a page like that shown in FIGS. **2**B, **2**C, and **2**D. At the top of the page appears a table **209** presenting examples of valid entry types for Whois, i.e., Domain Name, Machine Name, Registered Handle, Registered Name, IP Address and IP Network Next appears a text input field **211** to receive the information to be looked up. Next appears an example of the results of a specific lookup. The user has input his or her request, and results have been received back and displayed in a results area **213**. As described more fully below, links are embedded in the results such that, by clicking on an area **215** displaying ccoley@SRMC.COM, for example, an E-mail utility will be invoked showing a blank E-mail addressed to ccoley@SRMC.COM. Similarly, domain

names, IP addresses, etc. may be clicked on, with the result that Whois is queried once again with respect to the selected information.

At the bottom of the page appears a Navigational Aid **217** used throughout the user interface where appropriate to allow the user to return directly to a particular entry point in the program flow without having to follow numerous links as is typical of the prior art

When the icon 203 is selected, the user is presented with a page for the Traceroute utility like that shown in FIG. **2**E and **2**F. The various features of the page will be evident from the preceding description. One feature, however, bears particular mention. That is, just as clicking a domain name or the like in Whois produces a further query, bringing up additional information, similarly, clicking on names or addresses in FIG. **2**C also produces a further query, not of Traceroute but of Whois. For example, if one wanted to find additional information about the machine on line number of 1 of FIG. **2**C, one could simply click on the IP address 205.138.192.1 displayed in the area **219**. This action would produce the same result as if the user had copied down the IP address, navigated to Whois and entered the IP address in the lookup field.

When the icon **205** is selected, the user is presented with a page like that shown in FIG. **2**G. The navigation aid previously described, although not shown in FIG. **2**G, may also be included if desired. The user is given the options of searching the database, adding a new entry, updating an existing entry, changing the user's password, or logging in. As described below, login is typically not required to view a listing of entries satisfying a particular search request, although login may be required to view an actual entry itself and is required to update an entry.

When the Search option is selected, the user is presented with a page like that shown in FIG. **2**H. Within WebBook, a different type of navigational aid **221** is included that allows the user to quickly move about within WebBook, between Search, Add and Update, or to go to the main page of FIG. **2**A. The screen of FIG. **2**H allows the user to select between different searching methods, including searching by Categories (going through a categories list), by Example (querying each field of the entries), and by Keyword (specifying a keyword).

When Categories is selected, the user is presented with a page like that shown in FIG. **2**I. In the example shown, three root-level categories are presented, BUSINESS, RECREATION, and WEBWHO95. The user selects one of these categories to show further subcategories, as seen in FIG. **2**J, which is displayed in response to the user selecting WEBWHO95. A single subcategory is shown—INDEX, having 9250 entries. The entries are listed by title within the lower part of the page. The user may select how many entries are to be displayed at a time in order to quicken response time. Also, presorts are used in order to quickly display the results of a category or keyword search.

When Example is selected, the user is presented with a page like that shown in FIG. **2**K. The user enters t he information to be searched in any field or combination of fields to be searched.

To add a new entry to the database, the user is presented with a page like that shown in FIG. **2**L. Each information item in the upper portion of the form is required, unless otherwise indicated. If a required item is not provided, the program will redisplay the form and request the user to complete all required items. Optional items include middle name, alternate phone number, fax number, URL#1, and URL#2.

The remainder of the form is used to enter up to twenty keywords and a description of the user's entry, to be displayed with the entry.

Following entry of keywords and a description of the entry, the user is requested to choose a category for the entry by presenting the user with a page like that shown in FIG. **2**M. The user can navigate the category tree until he or she has located the desired category and then select that category. If none of the categories is adequate, then the user may define his or her own category, by entering the name of the category and a short description of the category. The new category will then be added to the category tree.

A sample mini homepage is shown in FIG. **2**N and **2**O. The mini homepage may be located by searching the database and then selecting the corresponding entry, or may be retrieved directly by URL. The URL of the mini homepage itself should not be confused with URL#1 and URL#2 listed on the mini homepage. The latter refer to independent resources. The URL of the mini homepage itself is, for example, based on a unique transaction ID assigned to each entry and may be entered into a browser program to view the mini homepage directly without searching.

When Update is selected (FIG. **2**G), the user, having entered the correct transaction ID and password, is presented with a page like that shown in FIG. **2**P. The corresponding mini homepage is displayed, and the user is requested to update the mini homepage (the "post"). When the user has edited the entry to his or her satisfaction, the user presses UPDATE. The user is then presented with a further page like that shown in FIG. **2**Q and **2**R, giving him or her the opportunity to review one final time the comments and keywords. To change the comments or keywords, the user presses BACK. The user can also change the category of the entry by pressing the Change category button. To accept and complete the update, the user presses a Done update button.

A page like that shown in FIG. **2**S is then presented. The user is required to enter the identification number of the post. If the identification number is entered correctly, the post is updated, and a page like that shown in FIG. **2**T is presented to the user, confirming the update.

Referring now to FIG. **3**, the operational steps involved in the present system and method are represented. The system is accessed either directly by the user or by following a link to the server site, for example the URL WebWho.com. The name WebWho™ is a trademark of the present assignee.

The user is first presented with a page **301** (indexshtml) allowing the user to select from different services, including whois and traceroute. As described previously, whois is an Internet service that looks up information about a user in a database. Traceroute is a program that permits a user to find the path a packet will take as it crosses the Internet to a specific destination. Whois and traceroute are known services. Previously, however, use of these services has typically required "root-user access" on a UNIX host In accordance with one aspect of the present invention, these services are HTML front-ended and made available to all users, together with further hyperlink services that greatly increase the utility of the underlying whois and traceroute services.

Referring to FIG. **5**, whois and traceroute are made readily available to all network users through HTML front-ending using CGI scripts. The actual whois code **501** and traceroute code **503** remains within the root directory **500** on a UNIX host. Respective CGI scripts are provided, namely whois.cgi (**505**) and traceroute.cgi (**507**), that have root user privileges and that provide HTML front-ending between the

user and their respective services. For example, when a user selects the WebWho Whois service from the main page of FIG. **2A**, the whois.cgi script **505** is invoked to pass the user input to the root directory whois service **501** and cause it to service the user's request. Output from the root directory whois service **501** is passed back from the whois.cgi script **505** in HTML format. The same description applies equally to the traceroute.cgi script and the root directory traceroute service.

To further augment the whois and traceroute services, hyperlink services are provided. The root directory whois and traceroute services are provided with a parsing routine **509** that parses the output of these services to identify E-mail addresses, domain names, IP names, etc.—character strings containing period separators and/or the character "@." The parser then passes back this information to the CGI scripts in the form of links, links to the whois.cgi script **505** in the case of names and links to an E-mail.cgi script **511** in the case of E-mail addresses. The E-mail.cgi script **511** controls an E-mail utility **513** that may be located in the root directory or in a different directory.

Whois and traceroute, as implemented as part of the present invention, provide powerful new tools for serious Internet tools. Using whois, the user may type in any address with a ".com", ".edu" or ".net" extension and find the physical address, phone number and the individual(s) that the address represents. This ability may be used as a powerful marketing tool to find a wealth of information about people on the Internet. Also, whois can be used to instantly check a domain name.

Traceroute may be used by System Administers to obtain information to make their jobs much easier. Previously, System Administrators have not been allowed to use traceroute on a PC running any operating system other than UNIX.

Whereas whois and traceroute are more technically oriented, "WebBook" allows non-technical users to take advantage of the capabilities of the Web with a minimum of effort. WebBook allows a user to have HTML-front-ended access to a database of mini homepages in order to search, add entries to, or update previous entries in the database.

Referring again to FIG. **3**, if WebBook is chosen, a login routine **303** may request the to enter identifying information of the type that would normally be found on a business card, for example. Presently, although Web sites are able to track the user's access point to the Web (for example, a particular slip connection through an Internet Service Provider), this information often gives no indication who the user really is. Such information is important in order to evaluate the extent to which a target audience is being reached.

The user may choose an options that allows the user to bypass the login request. The request for information as to the identity of the user therefore may or may not be complied with; moreover, the information provided may or may not be accurate. As an incentive to provide the requested information (and, it is hoped, the correct information), users providing the requested information may be given more complete access to the database than users who do not provide the requested information. Users providing the requested information are assigned a user ID to be used during subsequent accesses and are requested to choose a password. The password may be required to access some system services. To further encourage voluntary login, users that have complied with the login request and have been assigned a user ID may be afforded the ability to customize the user interface and maintain the resulting look and feel between uses. This customization is performed in a known manner by storing on the host a user preferences file and accessing the file to restore user preferences when a valid user ID is provided.

For a period during the initial stages of the service, while the database is still being built up, it may be desirable to allow all users complete access to the database regardless of whether or not they have identified themselves.

Following the login procedure, the user is provided with a page **305** presenting the different ways that the user may interact with the database. For example, a user may search the database, add a new entry to the database, or update a previous entry to the database by that user. Each of these options will be described in turn.

If the user chooses to search the database, the user is provided with a page **307** concerning different search options. A search may be performed on one or more of a number of different database fields, depending on the organization of the database entries. For example, in a preferred embodiment, the database entries include the following defined fields:

uid	country
fname	email
lname	url
mname	keywords
title	comment
ident	category
phone 1	active
phone 2	start_date
fax	expire_date
addr	info1 (Reserved)
city	info2 (Reserved)
state	info3 (Reserved)
zipcode	info4 (Reserved)

In one embodiment, searches may be performed by category, by keyword, by URL, or by example. To facilitate rapid retrieval of information, presorted listings may be stored for each category and keyword or for some number of the most common categories and keywords. To search by example, the user is provided with a form having the same organization as the database entries. The user fills in information in the fields of interest. The search then returns information concerning entries having matching information in those fields. Entries are displayed in list fashion by title on a page 309.

The number of entries produced by a search may be very large. Therefore, instead of displaying a listing for all of the entries at once, the entries may be displayed ten at a time, for example. Alternatively, only the first 100 or 200 entries may be displayed.

While some sites may provide information and services free of charge, for example as a result of volunteerism or advertising subsidies, other sites may have a business model in which users are charged for information or services or both. For such a site, it becomes critical to protect the information stored in the database. Therefore, unlike some existing databases in which actual hypermedia links to Web homepages are stored in the listed items, in order to prevent effectual pirating of the database, links are embedded only in the full entry itself, not in the entry listings. Otherwise a user could simply store a voluminous listing or various different listings, with their accompanying hypermedia links, and thereby capture in large part the entire benefit of the database Instead, an item in a listing is intended only to give the user enough information to gauge the user's further

interest in an item. If the user is interested in an item, the user may select that item, causing the full-page entry to be provided. The full page entry includes links to any E-mail address or URL that the owner of the entry may have provided, thereby providing a link to that person's or organization's homepage (or to some other homepage).

If the user bypassed login, as determined in step **311**, he or she will normally be returned to the login procedure when attempting to select an entry to view it in its entirety. If the user has logged in, then the user may select an entry and the corresponding full page 313 will be served to the user.

The fill page entry **313** need not be limited to text alone but may be a complete hypermedia page, including possible graphics or other non-textual content. In this manner, for person's or organizations not having any independent Web homepage, the entry can function as a "mini-homepage," i.e., a single page hypermedia document. Furthermore, the mini-homepage may have its own URL, allowing it to be accessed directly without performing a search of the database. For example, a URL for a mini homepage might be http://webwho.com/view?id=xxxx, where xxxx represents a transaction ID assigned to each entry in a manner described below.

A link **315** is embedded in the mini-homepage to allow for the page to be updated. Prior to describing the manner in which the mini-homepage is updated, however, the manner of adding a new entry to the database will first be described.

In order to add an entry to the database, a user must login, during which the user chooses a password, or must have logged in during a previous visit to the site. When the user chooses to add a new entry to the database, a unique transaction ID is created for that entry, to be used throughout the life of the entry. A unique transaction ID may be created in any of many different ways. For example, the transaction ID might be the date (e.g., 951215) and the entry number for that date (e.g., 00215). Alternatively, the transaction ID might be the time of day (e.g., HHMMSS) and the process ID of the host machine process that is servicing the user's request. In one embodiment, the transaction ID is a 14digit hexadecimal number in which eight digits represent the number of seconds since an arbitrary date (e.g., Jan. 1, 1970), four digits represent the process ID running on the host machine, and two digits represent a portion of the machine IP address (to distinguish between different host machines).

Once a transaction ID has been assigned, the user is then provided with an entry form **317** having fields corresponding to the various fields of a database entry as described previously. The user fills out the form and presses a screen button when the entry is complete. The form may have one or more checkboxes **319** to indicate the desire to include with the entry one or more non-textual elements, such as a graphic image, etc. Also, if desired, different templates may be provided governing the appearance of the finished page, with the user selecting a desired template.

Non-textual content may be obtained from the user in any of a number of different ways. For example, the user may transfer to the site a file containing the non-textual content using the File Transfer Protocol (FTP) with the same user ID and password as when the entry was added.

During the entry process, the user is prompted to enter keywords to facilitate later searching of the database and location of the entry. Furthermore, the HTML front-end tools may assist in developing keywords for the entry. A pre-search/sort tool, for example, might take the 2000 top keywords found in the database within the keyword field and do a total text search throughout the database for these keywords. If one or more of these keywords appears in the description ("comment" field) of an entry but not in the keyword list, these keywords are then added to a keyword extension field for up to some number of keywords, e.g. five.

If the server site is based on a pay-for-service model, the form will also call for the user to enter a credit card number as the last piece of information. Secure, on-line credit card processing will then be performed to bill the user, either on a one-time basis, on a periodic basis, or on an occasional basis as future services may require. Although various methods of processing credit card transaction on-line have been proposed, with various degrees of attendant security, such processing is preferably performed in accordance with a proprietary method developed by the assignee to provide the highest level of security possible.

After an entry has been made, it may be updated at any time by one able to provide the transaction ID assigned to the entry and the user password, i.e., by the user or one acting on behalf of the user. The update option may be entered directly, or the entry to be updated may first be viewed as the result of a search and the update screen button **315** then pressed. The user is then prompted to supply the correct transaction ID and password (page 321), failing which the user will not be allowed to update the entry.

If the transaction ID and password are correctly supplied, then the equivalent of a new entry form will be provided to the user will the current information pertaining to the entry already filled in. The user may then modify the entry. If a charge is made for updating the entry, preferably the credit card information from the earlier creation of the entry will have been stored in a highly secure fashion, avoiding the need to reenter the information. Both security and convenience are thereby enhanced.

Nothing in the process of adding, searching and updating entries requires manual intervention. Rather, the entire process is automated and may be made available continuously, 24 hours a day, 365 days a year. Like a publicly-accessible bulletin board, the content that is posted on the database is entirely within the control of the user, both at the time the entry is posted and all times thereafter.

Referring now to FIG. **4**, various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships will now be described.

When a user visits the site and the WebWho option is selected, a page WebWho.html (**401**) is served to the user, offering the user various options, including, for example, options to search the database, add a new entry, update an existing entry, change the user's password, or to log in if the user has not previously done so. In an exemplary embodiment, the routines illustrated in FIG. **4** are standard C routines, called from a single CGI script In other embodiments, the routines may be called by separate scripts, and may be written other languages such as in a UNIX shell language, or in one of a number of emerging Internet computer languages such as Java.

The Options routine **403** reads in the user's choice and invokes one of the five following routines: Search (**405**), Add (**407**), Update (**409**), Changepw (**411**), and Login (**413**). Each of these options will be described in turn.

If Search is chosen, the Search routine **405** initiates one of several possible search functions. In a preferred embodiment, these functions include a categories search, an example search, and a keyword search. According to the search function chosen, the Search routine invokes one of the following routines: Categories (**415**), Example (**417**), and Key_Search (**419**).

Categories are represented in computer memory in the form of a tree structure. A categories search starts from the root level, with the Categories routine **415** displaying all the categories available at that level, and all the entries (or up to some number of entries) belonging to that level. The user can click on any category to go to the next level, and can click on any entry to bring up the mini page of the entry.

If Example is chosen, the Example routine **417** displays a form for the user to fill in any field he or she wants to search on. The Example routine **417** reads in the information and displays all the entries that match what has been specified.

If Keyword is chosen, the Key[]search routine **419** displays text boxes to read in up to a specified number of keywords (e.g., four) to search on. The Key_search routine **419** displays all the entries that match the specified keywords.

When a user clicks on one of the entries returned by a search function, the mini page is displayed by a List_entries routine **421**. List_entries displays the mini page for a particular entry and also contains an update button for the user to update that particular entry.

When a user specifies that he or she wants to edit the entry currently being displayed, the Update routine **409** performs a check to see if that page belongs to the user currently logged in. If so, updating is initiated by invoking an Update_post routine **423**. Otherwise, an Update_login routine **425** is called to allow the user to perform the correct login sequence. The Update_login routine **425** reads in a user ID and password and matches them against the database to determine if the user is the owner of the mini page currently being displayed. Updating is not allowed until the correct user ID and password are entered.

The Update_post routine **423** displays an entry form with values filled in from the information stored in the database. It invokes a Do_update routine **427** to process the new values being entered. The Do_update routine reads in the new information, makes sure that all the required information is filled. If not, a routine Do_missing is invoked. When all of the required information has been supplied, a Update_key routine **429** reads in the keywords and comments from the database entry, displays them, and asks the user to confirm. The user can go ahead and update the database or can change the category the entry currently belongs to.

If the user chooses to change the category, a Change_cat routine **431** displays all the categories at the root level. The user can click on one of the categories to go to the next level or can specify a new category on the current level. If the user chooses to go ahead and update the database, another form is displayed to read in the identification number of the entry. A Get_ident routine **435** is then invoked. If the user chooses to change the category, an Update_cat routine **433** handles navigation through the categories tree. It will keep displaying the categories on the current level until the user has decided on a category or has specified a new category.

The routine Get_ident **435** reads in the identification number and matches it against the identification number stored in the database for the current entry. If they match, the database is updated; otherwise, the program declines the update.

Entries may also be updated directly without searching, using the Update routine **409**. If a user is currently logged in, the Update routine **409** displays all the entries belonging to that user. Otherwise, the Update_login routine **425** performs a login and displays all the entries belonging to the newly logged-in user. The remaining update routines have already been described as a continuation of the search options and will therefore not be further described.

When Add is selected, the Add routine **407** displays an empty form to allow the user to fill in all the information. The Add routine **407** processes the information that has been entered, using the Do_missing routine to make sure that all the required information is entered. The Do_missing routine displays the form again until all the required information is entered.

After all the required information has been entered, a Get_info routine **437** displays another form to read in the keywords and comments. A Confirm_info routine **439** processes the keywords and comment being entered and displays them again, asking the user to confirm. After the user confirms the keywords and comments, a Pick_cat routine **441** acquires the category using the same mechanism previously described in relation to Update_cat. If the user is not logged, in he or she is logged in, and a new user ID is determined. A form is then displayed to read in the user's password. A Getpw routine **443** reads in the password and displays a form to read in credit card information. A Get_cc routine **445** verifies the credit card information. If the transaction is authorized, it adds the new entry into the database; otherwise, it rejects the entry.

The remaining routines are administrative in nature. The user may wish to change his or her password. If the user is not currently logged in, a login is performed by calling a Changepw_login routine **447**. Changepw_login reads in the user ID and password and matches them against the values in the database. A form is then displayed to read in the new password. The Changepw routine **411** actually updates the database with the new password.

The Login routine **413** reads in the user ID and password and checks them against the database. If the user D and password are correct, operation begins at the main page with the user logged in as the new user.

It will be appreciated by those of ordinary skill in the art that the invention can be embodied in other specific forms without departing from the spirit or essential character thereof. The foregoing description is therefore considered in all respects to be illustrative and not restrictive. The scope of the invention is indicated by the appended claims, and all changes which come within the meaning and range of equivalents thereof are intended to be embraced therein.

What is claimed is:

1. A method of publishing information on a computer network comprising the steps of:

creating a database entry containing information recieved from a user of the computer network, wherein the information includes data representing text, a universal resource locator, an image, and a user-selected category;

generating a transaction ID corresponding to the database entry;

password protecting the entries;

displaying the entries in accordance with the user-selected category;

presenting the information to a user in hyper text markup language in response to a user's request.

2. The method of claim **1**, wherein the user is charged for the creation of the database entry.

3. The method of claim **2**, wherein the charge is applied to a user's credit card.

4. The method of publishing information on a computer network comprising the steps of:

presenting a data entry form to a user with a plurality of categories, wherein the categories have subcategories;

creating a database entry containing the information submitted via the entry form, wherein the information includes data representing text, a universal resource locator, an image, and a user-selected category;

generating a transaction ID corresponding to the database entry;

password protecting the entry; and

making the entry accessible over the network to other users of the network.

5. The method of claim **4**, further comprising the steps of:

searching the entries in response to a user search criterion;

displaying search results in hyper text markup language as a sequence of universal resource locators directed to the database entries; and

presenting the information to be published from a database entry to the user in hyper text markup language in response to a user selecting one of the entries' universal resource locator.

6. The method of claim **5** wherein the entries' universal resource locator is a universal resource locator containing the transaction ID of the entry.

7. The method publishing information on a computer network comprising the steps of:

creating a database entry containing information accepted from a user of the computer network, wherein the accepted information includes data representing text, a universal resource locator, an image, and a user-selected category;

generating a unique transaction ID corresponding to the database entry;

password protecting the entry;

searching the entries in response to a user search criterion;

displaying search results in hyper text markup language as a sequence of universal resource locators directed to the database entries; and,

presenting a datbase entry to the user in hyper text markup language in response to a user selecting one of the entries' universal resource locator.

8. The method of claim **7** wherein the entries' universal resource locator is a universal resource locator containing the transaction ID of the entry.

* * * * *

EXHIBIT B

US006850940B2

(12) **United States Patent**
Wesinger, Jr. et al.

(10) **Patent No.: US 6,850,940 B2**
(45) **Date of Patent: Feb. 1, 2005**

(54) **AUTOMATED ON-LINE INFORMATION SERVICE AND DIRECTORY, PARTICULARLY FOR THE WORLD WIDE WEB**

(75) Inventors: **Ralph E. Wesinger, Jr.**, San Jose, CA (US); **Christopher D. Coley**, Morgan Hill, CA (US)

(73) Assignee: **Network Engineering Software, Inc.**, San Jose, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 246 days.

(21) Appl. No.: **09/952,985**

(22) Filed: **Sep. 14, 2001**

(65) **Prior Publication Data**

US 2002/0035564 A1 Mar. 21, 2002

Related U.S. Application Data

(63) Continuation of application No. 09/110,708, filed on Jul. 7, 1998, which is a continuation of application No. 08/572,543, filed on Dec. 14, 1995, now Pat. No. 5,778,367.

(51) **Int. Cl.**[7] **G06F 17/30**

(52) **U.S. Cl.** **707/10**; 707/104.1; 707/200; 709/217; 709/218; 709/219; 709/201; 715/513

(58) **Field of Search** 709/217, 218, 709/219, 201; 707/10, 104.1, 200; 715/513

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,032,989	A	7/1991	Tornetta
5,251,294	A	10/1993	Abelow
5,339,361	A	8/1994	Schwalm
5,339,392	A	8/1994	Risberg
5,359,508	A	10/1994	Rossides
5,406,475	A	4/1995	Kouchi
5,412,774	A	5/1995	Agrawal
5,414,809	A	5/1995	Hogan
5,428,606	A	6/1995	Moskowitz
5,428,778	A	6/1995	Brookes

OTHER PUBLICATIONS

Towsend et al., Microsoft Office/Access, 1994, QUE Computer Publishing, pp. 615–618, 646–658, 670–679.*
Liu et al., Description and Recognition of Form and Automated Form Data Entry, vol. 2, Aug. 14–16, 1995, pp. 579–582.*
Brown, Browsing the Web with a Mail/News Reader, ACM, Nov. 14–17, 1995, pp. 197–198.*

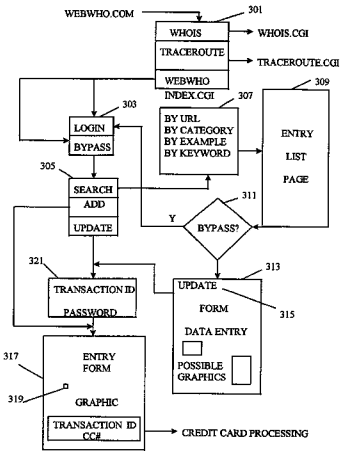
(List continued on next page.)

Primary Examiner—Frantz Coby
(74) *Attorney, Agent, or Firm*—Sierra Patent Group, Ltd.

(57) **ABSTRACT**

A computer network and a database are used to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password. Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made and in the future after the entry has been made. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

21 Claims, 25 Drawing Sheets



OTHER PUBLICATIONS

Preece, Survival of the Fittest: The Evolution of Multimedia User Interface, ACM Computing Surveys, vol. 27, No. 4, Dec. 1995, pp. 557–559.*

Arai et al., Retrieving Electronic Documents with Real–World Objects on InteractiveDESK, ACM Nov. 14–17, 1995, pp. 37–38.*

Welch et al., The Internet's World Wide Web and the Simulation Community A Surfing Lesson for Beginners, ACM, Winter 1995, pp. 1329–1332.*

Crane et al., Marine Data Entry, IEEE, 1983, pp. 124–128.*

CGI Resources, A Tour of HTML Form and CGI Scripts, 1995–1998, printed pp. 1–10.*

Google Groups, ©2002; Groups search results for "author:usx@spud.hyperion.com"; pp. 1–4.

Google Groups, ©2002; Group search results for "common gateway interface"; pp. 1–19.

CGI, The Common Gateway Interface; pp. 1–5.

Cailliau, R. (c.1995); W3C, "A Little History of the World Wide Web"; pp. 1–16.

CompuServe®, ©1991; "CompuServe Information Service for DOS Computers, Version 2, Users Guide"; pp. 1–15.

Baser, K., Cohen, S., Dayton, D., and Watkins, P. (1978). "On–Line Indexing Experiment at Chemical Abstracts Service: Algorithmic Generation of Articulated Index Entries from Natural Language Phrases". *J. Chem. Inf. Computer Science.* vol. 18, No. 1.

Berners–Lee, T. "The WorldWideWeb Browser"; pp. 1–4.

* cited by examiner-

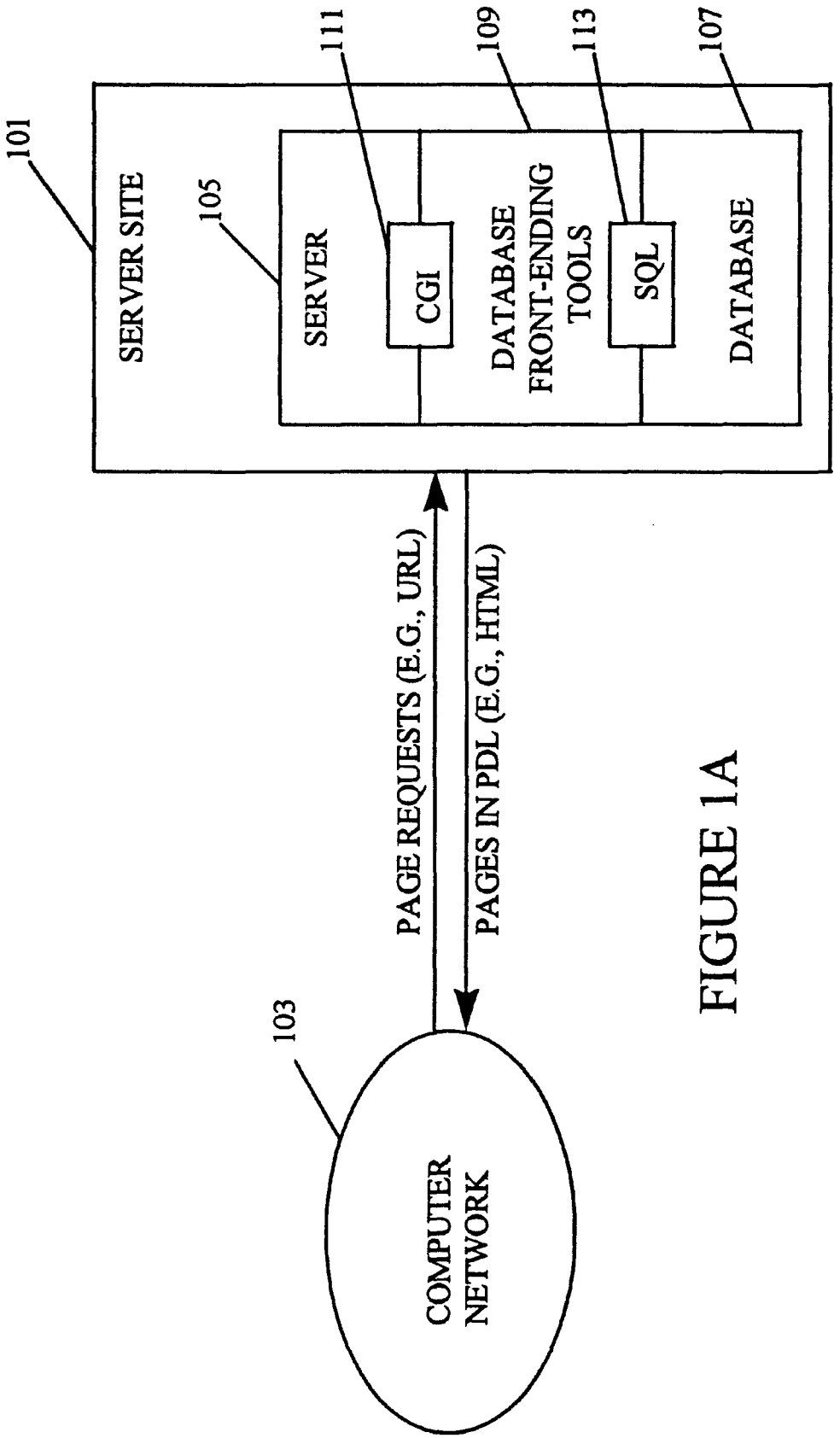

101
SERVER SITE
105
SERVER
111
CGI
109
DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1A

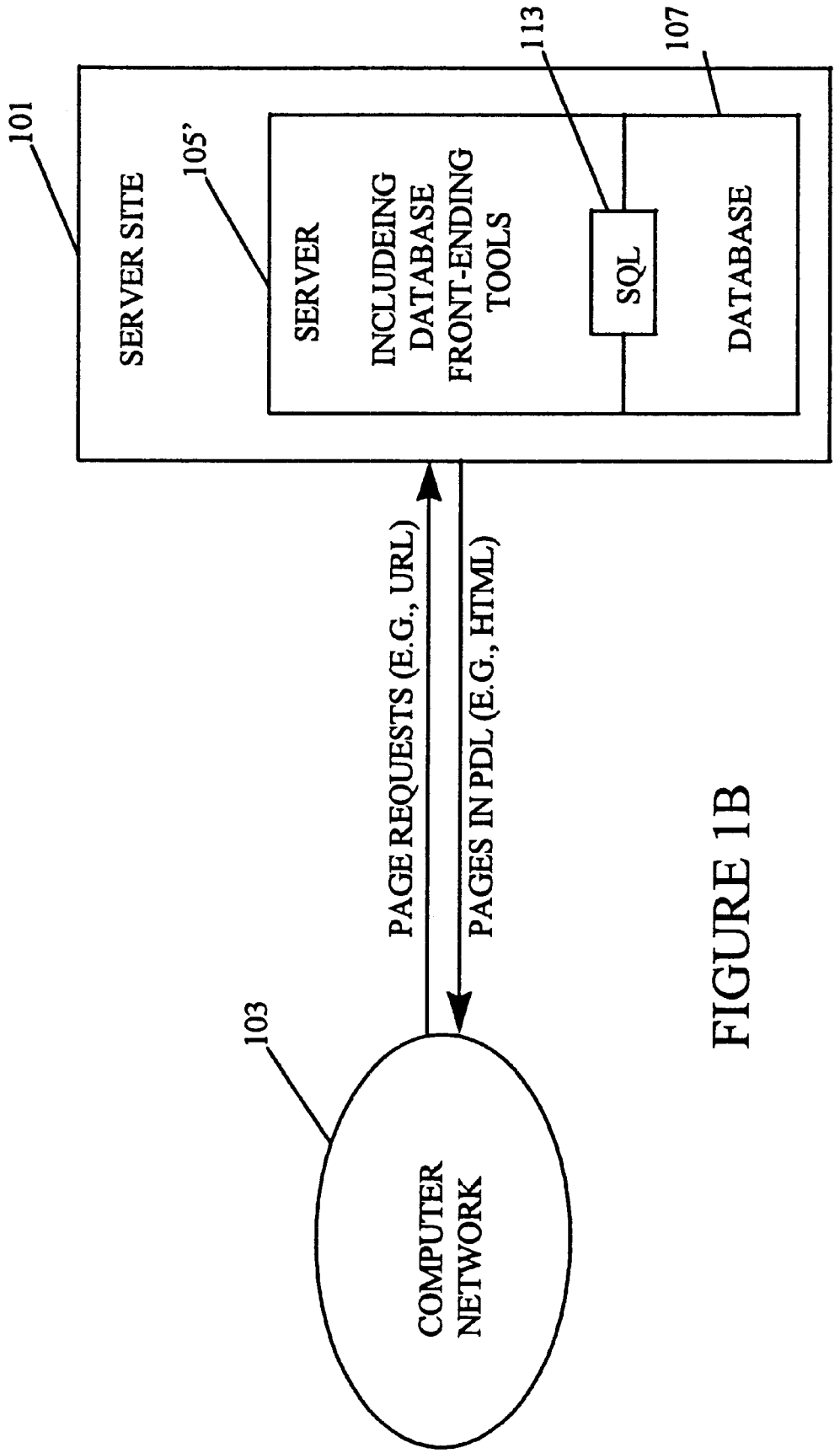

101
SERVER SITE
105'
SERVER
INCLUDEING DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1B

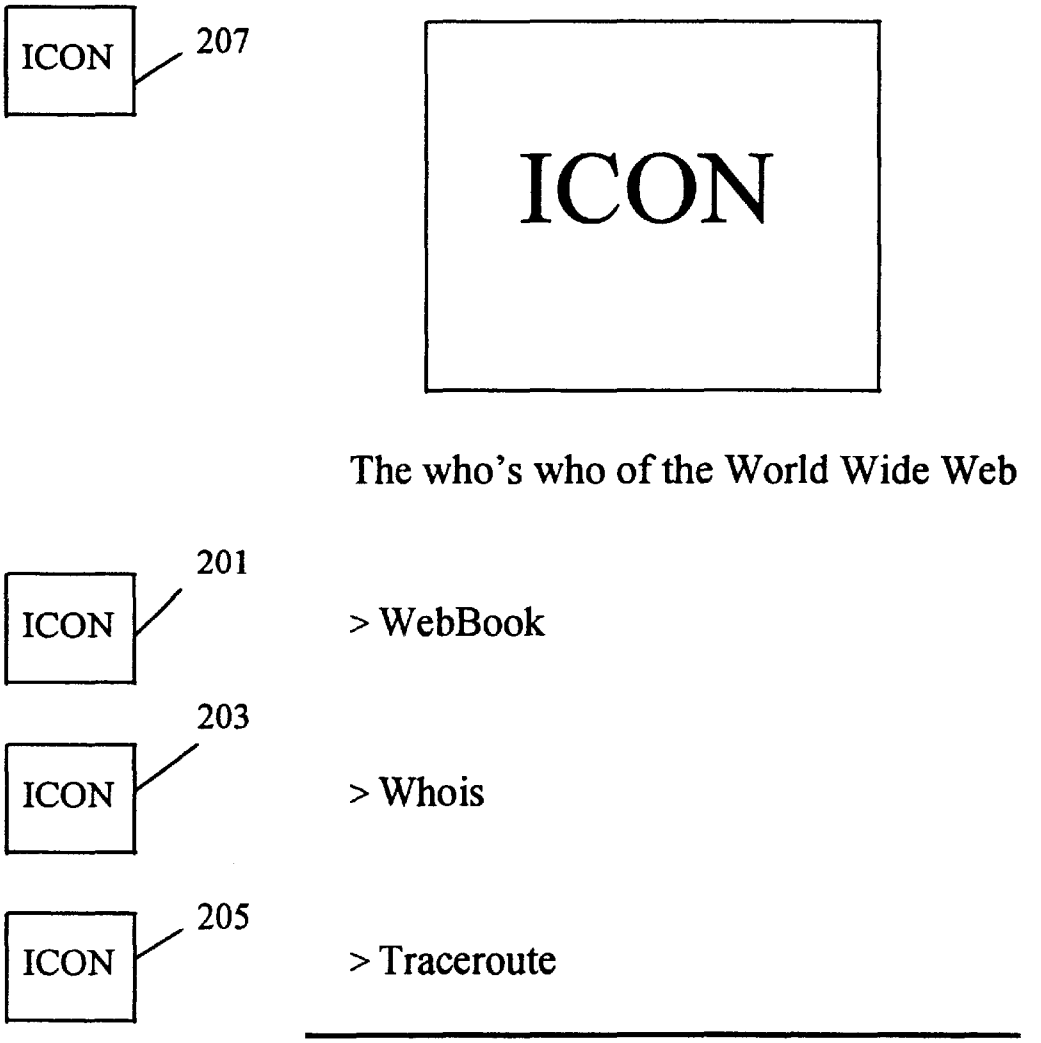

ICON
207
ICON
The who's who of the World Wide Web
201
ICON
> WebBook
203
ICON
> Whois
205
ICON
> Traceroute
This page is brought to you by the guys from _____. Intelligent Computing for the Internet from The Internet Solution Provider.
(C)1995 SRMC.

FIGURE 2A

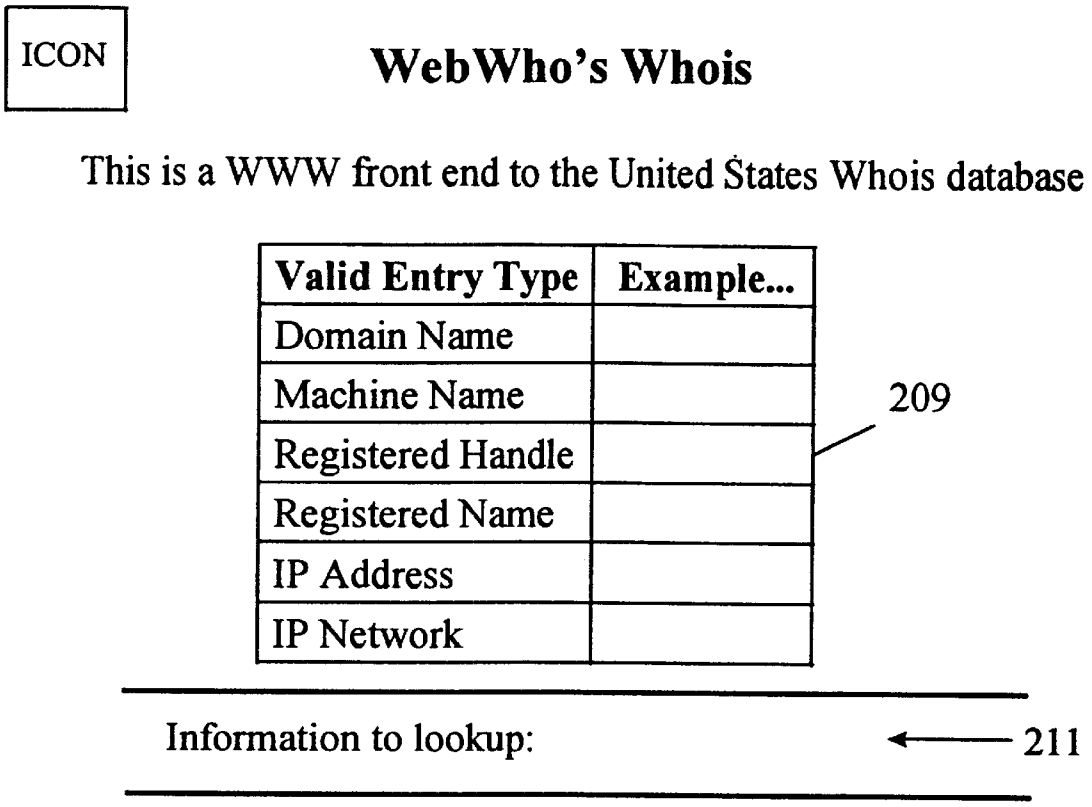

ICON
WebWho's Whois
This is a WWW front end to the United States Whois database
Valid Entry Type
Example...
Domain Name
Machine Name
Registered Handle
Registered Name
IP Address
IP Network
209
Information to lookup:
211

FIGURE 2B

Scientific Research Management Corp. (SRMC-DOM)
1714 Ringwood Avenue
San Jose, CA 95131

Domain Name: SRMC.COM

Administrative Contact:
Lyke, Howie (HL39) (No mailbox)
408 437-1800
Technical Contact, Zone contact:
Coley, Chris (CC339) ccoley@SRMC.COM
408 437-1800

215

213

Record last update on 04-Jun-95
Record created on 13-Dec-94

Domain servers in listed order:

NS.SRMC.COM	205.138.192.10
CASD.SRMC.COM	205.138.192.252
SWEB.SRMC.COM	205.138.192.253
SMAIL.SRMC.COM	205.138.192.254

The InterNIC Registration Services Host contains ONLY Internet information (Networks, ASN's, Domains, and POC's). Please use the whois server at nic.ddn.mil for MILNET Information.

FIGURE 2C

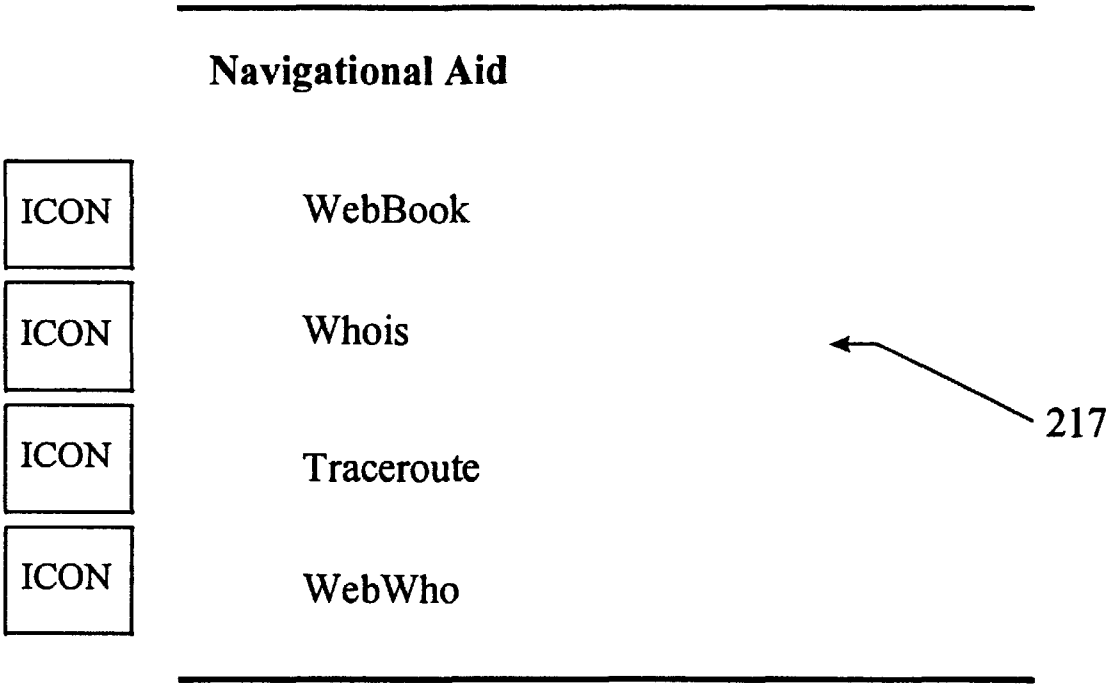

Navigational Aid
ICON
WebBook
ICON
Whois
ICON
Traceroute
ICON
WebWho
217
This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The
Internet Solution Provider.
(C) 1995 SRMC.

FIGURE 2D

WebWho's Traceroute

This is a WWW front end to the Traceroute utility

Enter the hostname or an address to trace a route to.

Host to traceroute to: 219

tracerpite to rs.internic.net (198.41.0.6), 30 hops max, 40 byte packets

1 r001-t3.srmc.com (205.138.192..1) 2ms 2ms 1ms
2 204.70.48.49 (204.70.48.49) 20ms 116ms 83 ms
3 core-fddi-0.Bloomington.mci.net (204.70.2.129) 186 ms 27 ms 268ms
4 core1-hssi-2.LosAngeles.mci.net (204.70.1.141) 19ms 26ms 19ms
5 core-hssi-3.Washington.mci.net (204.70.1.178) 335ms 245ms 348ms
6 border1-fddi-0.Washington.mci.net (204.70.2.2) 87ms 87ms 86ms
7 suranet-wtn-ds3.Washington.mci.net (204.70.56.6) 87ms 88ms 87ms
8 wtn9-wtn8-cf.sura.net (128.167.7.9) 88ms 87ms 88ms
9 netsol-wtn9-cl.sura.net (192.221.63.90) 92ms 93ms 90ms
10 rs1.internic.net (198.41.0.6) 90ms 90ms 94ms

FIGURE 2E

Navigational Aid

ICON	WebBook
ICON	Whois
ICON	Traceroute
ICON	WebWho

This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The Internet Solution Provider.

FIGURE 2F

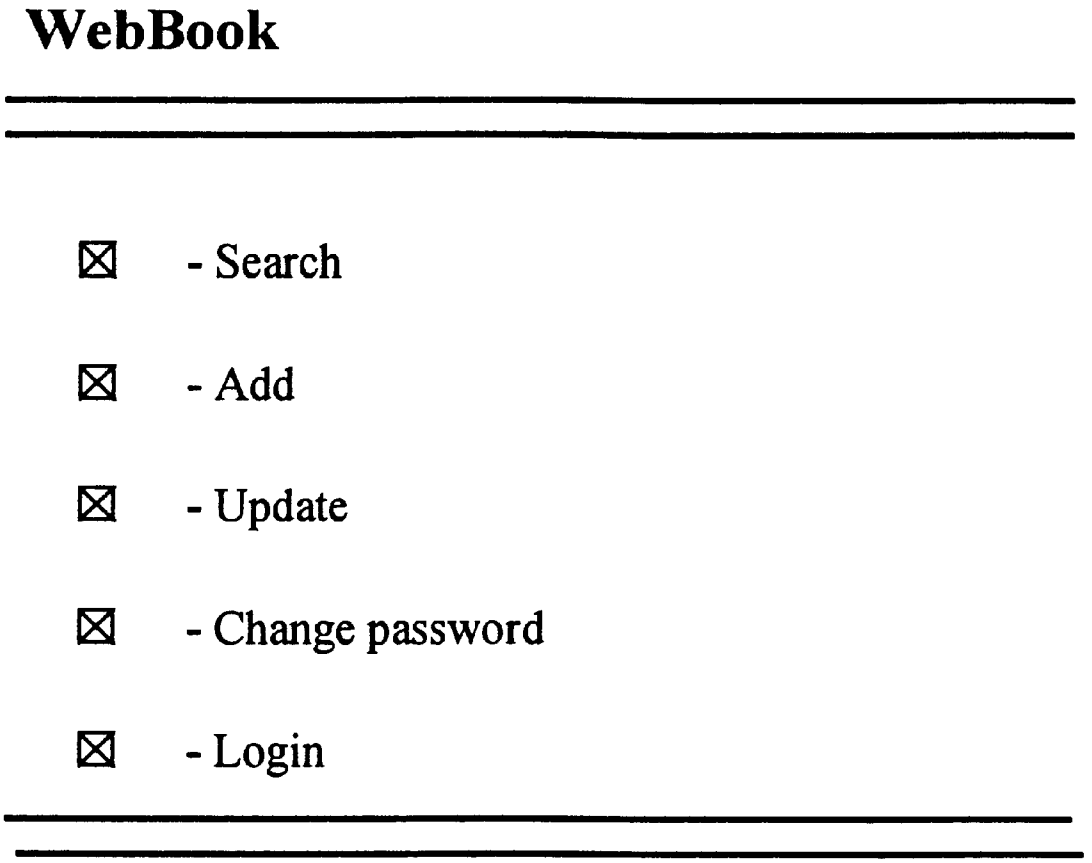


FIGURE 2G

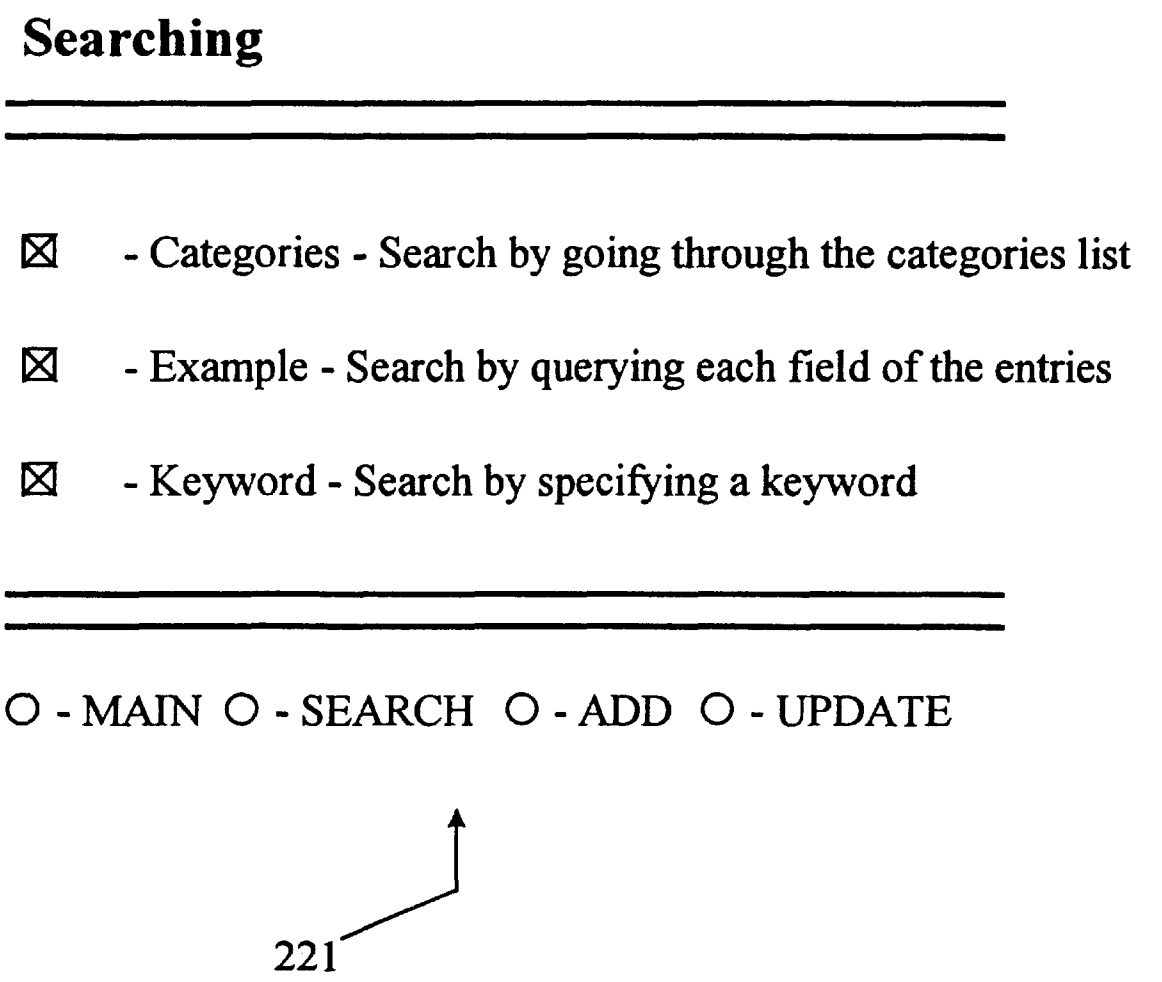

Searching
☒ - Categories - Search by going through the categories list
☒ - Example - Search by querying each field of the entries
☒ - Keyword - Search by specifying a keyword
○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE
221

FIGURE 2H

Choose a category

☒ BUSINESS - COMMERCIALS, FINANCE....

☒ RECREATION - recreation stuffs.

☒ WEBWHO95 - .

Display how many entries at a time?

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2I

Choose a category

WEBWHO95

Sub-categories:

☒ INDEX -

Display how many entries at a time?

9250 entries available!

9240 entries more

- ○ -Topographical Pictures
- ○ -Xtoys
- ○ -Index - The SoftSource Files
- ○ -Computer ESP
- ○ -Against Computer/Video Games
- ○ -Arrgh! The Entertainment Page
- ○ -CD-ROM Network
- ○ -Complete Gaming HeadQuarters
- ○ -Digital Nostalgia
- ○ -EINet's Gaming Resource

○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2J

Enter any field you want to search

Title:

First Name: Last Name:

Middle Name: (optional)

Phone#:

Address:

City: State:

Zipcode: Country:

Email:

URL:

Display how many entries at a time?

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2K

Submit a new entry to WebWho

Title: (The way you want your entry to appear in WebWho)

Name: (The way it appears on your credit card)

First Name: Last Name:

Middle Name:(optional)

Phone#1:

Phone#2(optional): Fax:(optional)

Address:

City: State:

Zipcode: Country:

Email:

URL#1:(optional)

URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2L

Choose a category

BUSINESS

☒ BOOKSTORE -STORE THAT SELLS BOOKS
☒ COMPUTER -COMPUTER COMPANIES.
☒ REAL ESTATE -BUYING AND SELLING PROPERTIES.
☒ WEDDING DESIGN -PLAN AND CORRDINATE WEDDINGS.

Or define your own

Category:

Description:

○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2M

ANNE HOGAN PERRY REALTOR

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

Name: Perry, Anne H

Phone#1: 8087352411

Phone#2:

Fax:

Address: 4211 WALALAE AVENUE SUITE 100

City: HONOLULU State: HI

Zipcode:96816 Country: USA

FIGURE 2N

Email: aperry@warrall.com

URL#1: http://www.worrall.com/estate/estate.shtml

URL#2: http://www.worrall.com/estate/estate.shtml

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2O

Edit your post, then press UPDATE

Title: (The way you want your entry to appear in WebWho)
Name: (The way it appears on your credit card)
First Name: Last Name:
Middle Name:(optional)
Phone#1:
Phone#2(optional): Fax:(optional)
Address:
City: State:
Zipcode: Country:
Email:
URL#1:(optional)
URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2P

Press BACK to edit the keywords and comments again. Otherwise, press the change button if you want to change category, or press the done button to update your entry.

The keywords you have entered are:

keyword1: HAWAII
keyword2: REALTOR
keyword3: HONOLULU
keyword4: REALESTATE
keyword5: OCEAN
keyword6: FRONT
keyword7: BROKER
keyword8: PROPERTIES
keyword9:
keyword10:
keyword11:
keyword12:
keyword13:
keyword14:
keyword15:
keyword16:
keyword17:
keyword18:
keyword19:
keyword20:

FIGURE 2Q

The following description will be displayed with your entry

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

O - Change categories O - Done update

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2R

Please enter the identification number of this post

identification number:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2S

Your post has been updated. Thank you!

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2T

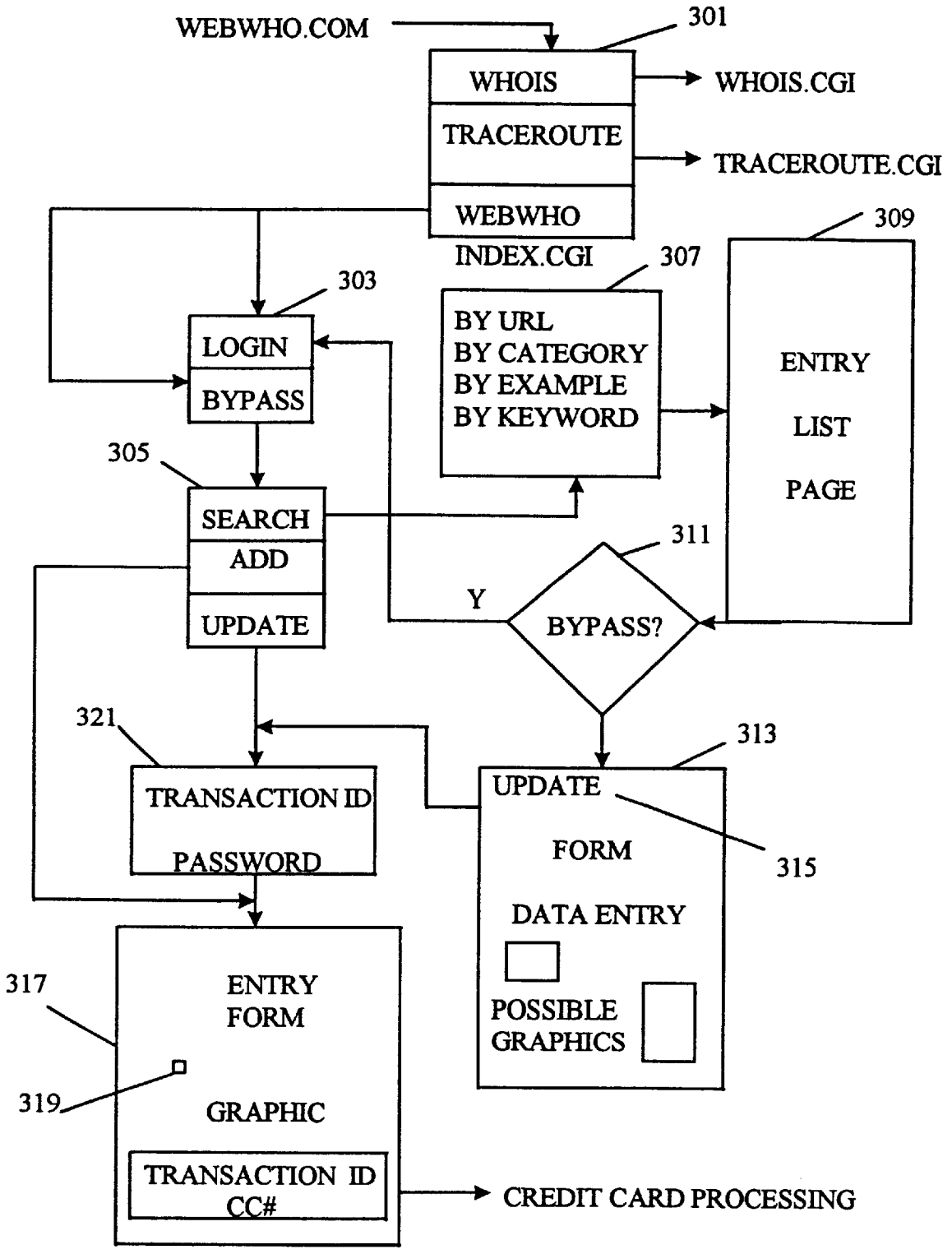

WEBWHO.COM
301
WHOIS
WHOIS.CGI
TRACEROUTE
TRACEROUTE.CGI
WEBWHO
INDEX.CGI
309
307
303
LOGIN
BYPASS
BY URL
BY CATEGORY
BY EXAMPLE
BY KEYWORD
ENTRY
LIST
PAGE
305
SEARCH
ADD
UPDATE
311
Y
BYPASS?
321
313
TRANSACTION ID
PASSWORD
UPDATE
FORM
DATA ENTRY
315
POSSIBLE
GRAPHICS
317
ENTRY
FORM
319
GRAPHIC
TRANSACTION ID
CC#
CREDIT CARD PROCESSING

FIGURE 3

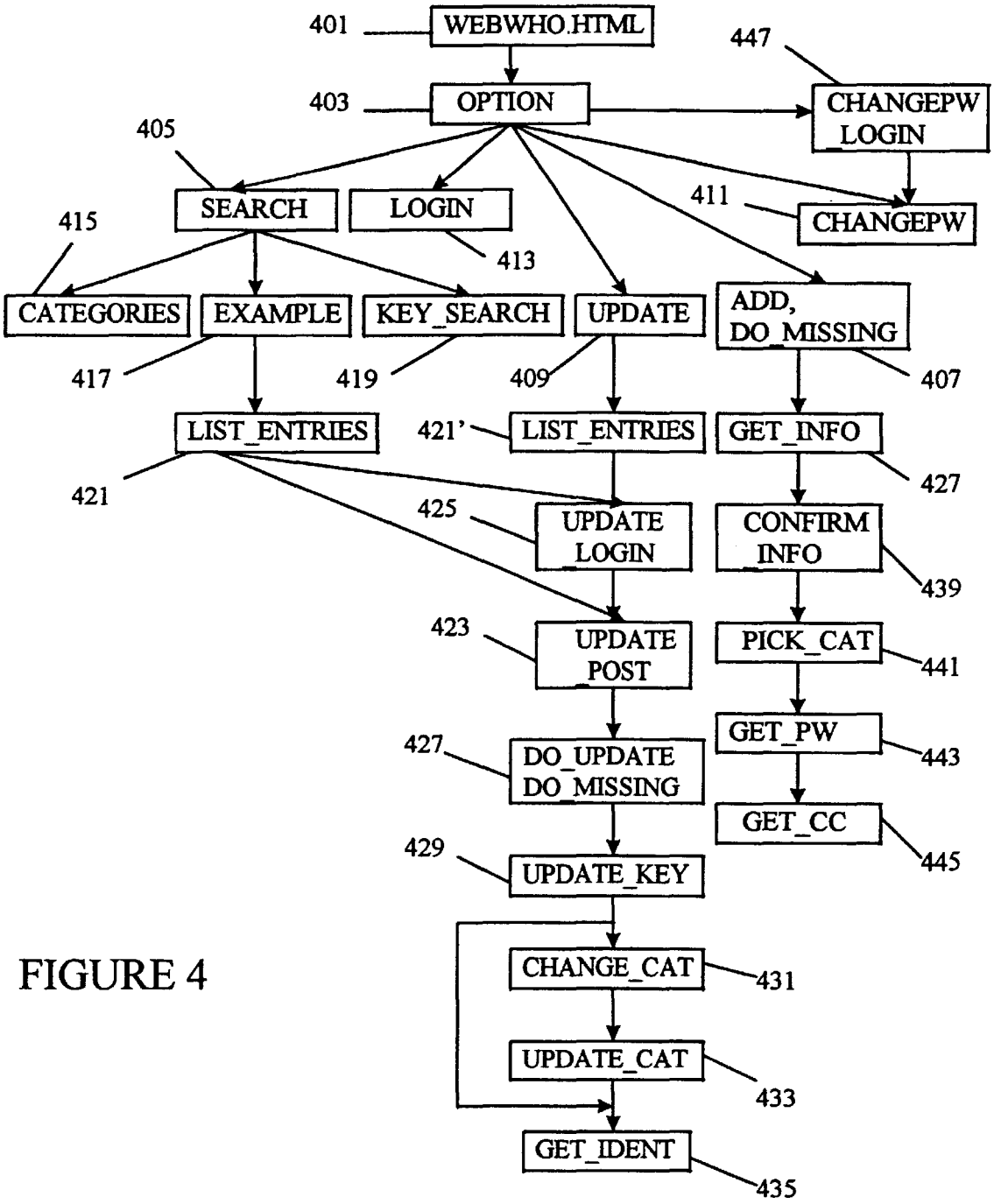

401
WEBWHO.HTML
447
403
OPTION
CHANGEPW_LOGIN
405
SEARCH
LOGIN
411
CHANGEPW
415
413
CATEGORIES
EXAMPLE
KEY_SEARCH
UPDATE
ADD, DO_MISSING
417
419
409
407
LIST_ENTRIES
421'
LIST_ENTRIES
GET_INFO
421
427
425
UPDATE_LOGIN
CONFIRM_INFO
439
423
UPDATE_POST
PICK_CAT
441
GET_PW
427
DO_UPDATE DO_MISSING
443
GET_CC
429
UPDATE_KEY
445
CHANGE_CAT
431
UPDATE_CAT
433
GET_IDENT
435

FIGURE 4

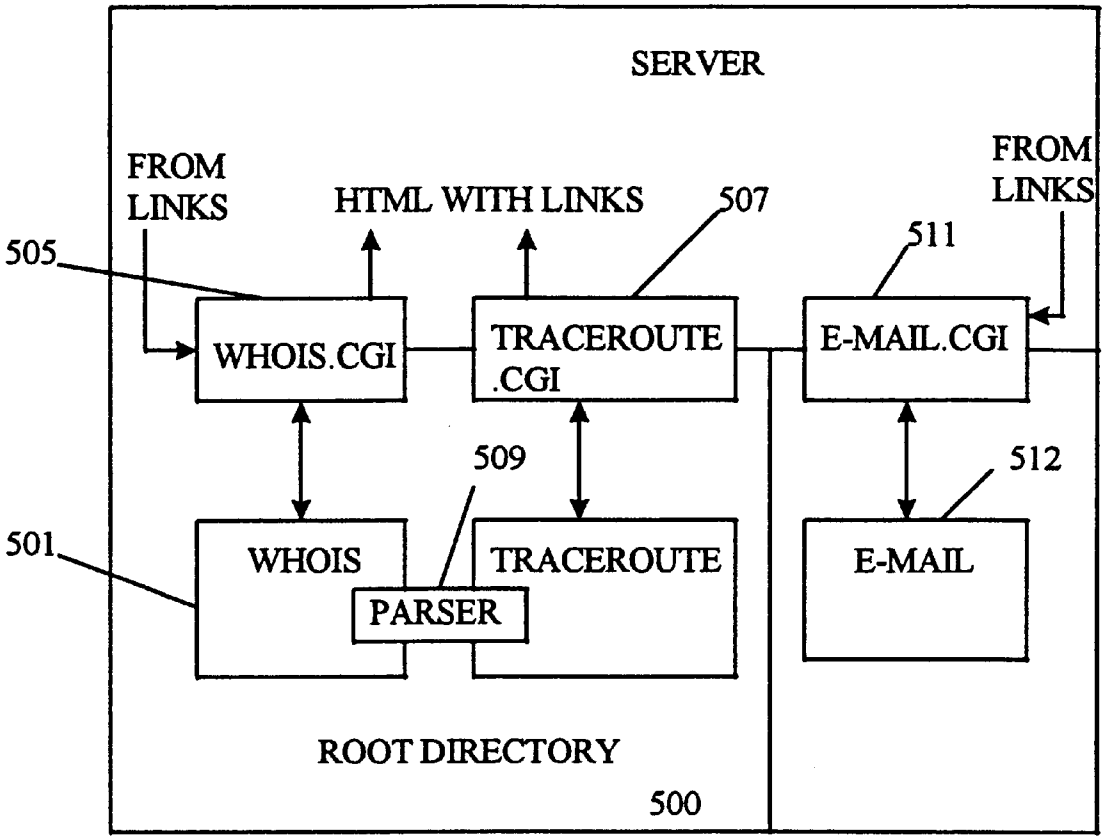

SERVER
FROM LINKS
HTML WITH LINKS
507
FROM LINKS
505
511
WHOIS.CGI
TRACEROUTE .CGI
E-MAIL.CGI
509
512
501
WHOIS
TRACEROUTE
PARSER
E-MAIL
ROOT DIRECTORY
500

FIGURE 5

AUTOMATED ON-LINE INFORMATION SERVICE AND DIRECTORY, PARTICULARLY FOR THE WORLD WIDE WEB

This is a Continuation application of prior application Ser. No. 09/110,708 filed on Jul. 7, 1998, which is a Continuation application of application Ser. No. 08/572,543 filed Dec. 14, 1995 which issued as U.S. Pat. No. 5,778,367 on Jul. 7, 1998, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to on-line services, particularly to services for the World Wide Web.

2. State of the Art

The Internet, and in particular the content-rich World Wide Web ("the Web"), have experienced and continue to experience explosive growth. The Web is an Internet service that organizes information using hypermedia. Each document can contain embedded reference to images, audio, or other documents. A user browses for information by following references. Web documents are specified in HyperText Markup Language (HTML), a computer language used to specify the contents and format of a hypermedia document (e.g., a homepage). HyperText Transfer Protocol (HTTP) is the protocol used to access a Web document.

Part of the beauty of the Web is that it allows for the definition of device-, system-, and application-independent electronic content. The details of how to display or play back that content on a particular machine within a particular software environment are left to individual web browsers. The content itself, however, need only be specified once. In some sense, then, the Web offers the ultimate in cross-platform capability.

Pre-existing collections of information, however, such as databases of various kinds, can rarely be placed directly on the Web. Rather, gateway programs are used to provide access to a wide variety of information and services that would otherwise be inaccessible to Web clients and servers. The Common Gateway Interface (CGI) specification has emerged as a standard way to extend the services and capabilities of a Web server having a defined core functionality. CGI "scripts" are used for this purpose. CGI provides an Application Program Interface, supported by CGI-capable Web servers, to which programmers can write to extend the functionality of the server. CGI scripts in large part produce from non-HTTP objects HTTP objects that a Web client can render, and also produce from HTTP objects non-HTTP input to be passed on to another program or a separate server, e.g., a conventional database server. More information concerning the CGI specification may be accessed using the following Universal Resource Locator (URL):http://hoohoo.ncsa.uiuc.edu/cgi/interfac.html

With the explosive growth of the Web, fueled in part by the extensibility provided by CGI scripts, the need for "finding aids" for the Web, i.e., tools to allow one to find information concerning a topic of interest, has grown acute.

Many hard-copy volumes are presently available that are represented to be "White Pages" or "Yellow Pages" for the Web. Of course, hard copy information becomes rapidly out of date, and in the case of the Web, is out of date before it is even printed (let alone distributed), in the sense of failing to list many interesting resources newly made available on the Web.

The only effective solution is to have such finding aids be on-line, available on the Web itself. One such finding aid is a class of software tools called search engines. Search engines rely on automated Web-traversing programs called robots or spiders that follow link after link around the Web, cataloging documents and storing the information for transmission to a parent database, where the information is sifted, categorized, and stored. When a search engine is run, the database compiled through the efforts of the robots and spiders is searched using a database management system. Using keywords or search terms provided by the user, the database locates matches and possibly near-mateches as well.

An example of one such search engine is known as Yahoo, offered by Yahoo! Corporation of Mountain View, Calif., and may be accessed at the URL http://www.yahoo.com. Persons having pages on the Web, rather than simply waiting to have their Web page be found by a robot or spider, can also have their Web page listed in the Yahoo database by providing information concerning the resource they wish to list and paying a fee. The result is an on-line-searchable directory of Web resources that is regularly updated.

While such services are indeed extremely useful, nevertheless, from the standpoint of a person wishing to publicize their Web site, they are typically attended by a number of drawbacks. In particular, the person wishing to publicize their Web site typically has very limited control of the content of the resulting listing. Submissions, including textual description and suggested categories, are often subjected to editorial control that may range from strict to arbitrary. As a result, a listing may be placed under an entirely different category from the category intended by the person making the submission. Furthermore, the textual description may be heavily edited (in some instances almost beyond recognition)—or even deleted—depending on the exaction of the editor. Because of this editorial process, posting of the listing is not immediate. Furthermore, once the listing has been posted to the database, if the person making the listing later wishes to change the listing in some respect, the change must again pass through the same laborious channel. Hence, the process of adding and updating listings is inconvenient and unsatisfactory.

Moreover, the nature of the listing is rather prosaic. The listing is in title/brief-description format and does not include graphical elements or otherwise appeal to the artistic sensibilities of the viewer. In this sense, the listing is comparable to the standard telephone book listing, which appears in plain text, nothing added, as compared, say, to a quarter-page advertisement with custom artwork and the like.

To use the foregoing service, one is required have a Web homepage. If a user has no Web presence but wishes to establish one, the foregoing service is entirely unavailable. The typical user must first establish a Web presence by paying a Web consultant to produce a homepage and then paying an Internet Service Provider to house that homepage on the Web. This undertaking can prove to be quite costly for an individual or a small business.

What is needed, then, is an information service that overcomes the foregoing disadvantages.

SUMMARY OF THE INVENTION

The present invention, generally speaking, uses a computer network and a database to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password.

Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made at any time thereafter. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

Because the user controls both the content of an entry and the manner in which it is classified, the database functions as a directory to allow the Web public to quickly and precisely find current and accurate data about the user, the user's products and services, etc., without requiring the user to have a conventional Web homepage. The user's mini homepage can be included in many different categories, with the user having the flexibility to change the categories or the descriptive content of the page at any time. Preferably, hyperlink services are also provided, by including within the page links to an E-mail address or to one or more other conventional homepages (or other mini homepages). The E-mail address may be a private E-mail address established on the host machine, avoiding the need to obtain a conventional E-mail address. An inexpensive way is therefore provided to set up a Web site with key information that might otherwise be very costly to widely distribute, and to achieve an Internet presence with a minimum of effort and expense.

BRIEF DESCRIPTION OF THE DRAWING

The present invention may be further understood from the following description in conjunction with the appended drawing. In the drawing:

FIGS. **1**A and **1**B are simplified block diagrams of alternative embodiments of the system of the present invention;

FIG. **2**A through FIG. **2**-O are screen shots showing use of the system and method of the present invention;

FIG. **3** is a flowchart of the operational steps involved in the present system and method;

FIG. **4** is a block diagram showing various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships; and

FIG. **5** is a simplified block diagram showing the manner in which whois and traceroute services are made readily available through HTML front-ending and augmented with hyperlink services.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. **1**A, there is shown a simplified block diagram of the system of the present invention. A server site **101** is connected to the a computer network **103** such as the Web or a Wide Area Network (WAN) other than the Web. At the server site, server software runs on a suitable server platform. In the case of the Web, for example, the server of FIG. **1**A might be a server available from the National Center for Supercomputing Applications (NCSA), or a secure server package of a known, commercially-available type, running on a super-minicomputer such as a SunServer machine available from Sun Microsystems of Menlo Park, Calif., or on any of a wide variety of suitable UNIX platforms. Also running, either on the same machine or a network-accessible machine, is a database management system **107**. Preferably, the database management system **107** supports Standard Query Language, or SQL. One suitable database management system is MiniSQL, which is also commercially available.

SQL databases, however, are not inherently "Web-friendly." Accordingly, a variety of HTML front-ending tools **109** are provided which run as extensions to the server software, allowing computer network users to each add entries to a database, search entries in the database, and update entries by that particular user, all using the Web (or a Web-like) graphical user interface. The server software and the HTML front-ending tools communicate through the Common Gateway Interface **111**. In accordance with another embodiment, shown in FIG. **1**B, the HTML front-ending tools may be fully integrated with the server software. The HTML front-ending tools and the database communicate through SQL (**113**).

When a network user visits the server site, the user is served a main page in a page description language such as HTML. The user interacts with the page, making selections or requests. These selections or requests, although they may not appears as such to the user, are in effect page requests, e.g., URLs that access a page directly or that call a CGI script to perform some sort of processing. The result of the selection or request may be a page eliciting a further selection or request, or may be contain the desired information itself.

In order to convey the manner in which the automated information service and directory is used, screen displays of the graphical user interface will now be described.

When a user first visits the site, he or she is presented with a main page as shown in FIG. **2**A. Along the side of the page are icons that may be clicked on to select different services. An icon **201** selects a "WebBook" service in which database entries may be searched, viewed and updated. An icon **203** selects a "WebWho Whois" service, providing a graphical front end to the United States Whois database, with additional hypertext link integration. An icon **205** selects the "WebWho Traceroute" service, providing a graphical front end to the Traceroute utility, again with additional hypertext link integration. An icon **207** in the top left shows the current page's icon and is not linked.

When the icon **201** is selected, the user is presented with a page like that shown in FIG. **2**B. At the top of the page appears a table **209** presenting examples of valid entry types for Whois, i.e., Domain Name, Machine Name, Registered Handle, Registered Name, IP Address and IP Network. Next appears a text input field **211** to receive the information to be looked up. Next appears an example of the results of a specific lookup. The user has input his or her request, and

results have been received back and displayed in a results area **213**. As described more fully below, links are embedded in the results such that, by clicking on an area **215** displaying ccoley@SRMC.COM, for example, an E-mail utility will be invoked showing a blank E-mail addressed to ccoley@SRMC.COM. Similarly, domain names, IP addresses, etc. may be clicked on, with the result that Whois is queried once again with respect to the selected information.

At the bottom of the page appears a Navigational Aid **217** used throughout the user interface where appropriate to allow the user to return directly to a particular entry point in the program flow without having to follow numerous links as is typical of the prior art.

When the icon **203** is selected, the user is presented with a page for the Traceroute utility like that shown in FIG. **2**C. The various features of the page will be evident from the preceding description. One feature, however, bears particular mention. That is, just as clicking a domain name or the like in Whois produces a further query, bringing up additional information, similarly, clicking on names or addresses in FIG. **2**C also produces a further query, not of Traceroute but of Whois. For example, if one wanted to find additional information about the machine on line number of 1 of FIG. **2**C, one could simply click on the IP address 205.138.192.1 displayed in the area **219**. This action would produce the same result as if the user had copied down the IP address, navigated to Whois and entered the IP address in the lookup field.

When the icon **205** is selected, the user is presented with a page like that shown in FIG. **2**D. The navigation aid previously described, although not shown in FIG. **2**D, may also be included if desired. The user is given the options of searching the database, adding a new entry, updating an existing entry, changing the user's password, or logging in. As described below, login is typically not required to view a listing of entries satisfying a particular search request, although login may be required to view an actual entry itself and is required to update an entry.

When the Search option is selected, the user is presented with a page like that shown in FIG. **2**E. Within WebBook, a different type of navigational aid **221** is included that allows the user to quickly move about within WebBook, between Search, Add and Update, or to go to the main page of FIG. **2**A. The screen of FIG. **2**E allows the user to select between different searching methods, including searching by Categories (going through a categories list), by Example (querying each field of the entries), and by Keyword (specifying a keyword).

When Categories is selected, the user is presented with a page like that shown in FIG. **2**F. In the example shown, three root-level categories are presented, BUSINESS, RECREATION, and WEBWHO**95**. The user selects one of these categories to show further subcategories, as seen in FIG. **2**G, which is displayed in response to the user selecting WEBWHO**95**. A single subcategory is shown—INDEX, having 9250 entries. The entries are listed by title within the lower part of the page. The user may select how many entries are to be displayed at a time in order to quicken response time. Also, presorts are used in order to quickly display the results of a category or keyword search.

When Example is selected, the user is presented with a page like that shown in FIG. **2**H. The user enters the information to be searched in any field or combination of fields to be searched.

To add a new entry to the database, the user is presented with a page like that shown in FIG. **21**. Each information item in the upper portion of the form is required, unless otherwise indicated. If a required item is not provided, the program will redisplay the form and request the user to complete all required items. Optional items include middle name, alternate phone number, fax number, URL#**1**, and URL#**2**.

The remainder of the form is used to enter up to twenty keywords and a description of the user's entry, to be displayed with the entry.

Following entry of keywords and a description of the entry, the user is requested to choose a category for the entry by presenting the user with a page like that shown in FIG. **2**J. The user can navigate the category tree until he or she has located the desired category and then select that category. If none of the categories is adequate, then the user may define his or her own category, by entering the name of the category and a short description of the category. The new category will then be added to the category tree.

A sample mini homepage is shown in FIG. **2**K. The mini homepage may be located by searching the database and then selecting the corresponding entry, or may be retrieved directly by URL. The URL of the mini homepage itself should not be confused with URL#**1** and URL#**2** listed on the mini homepage. The latter refer to independent resources. The URL of the mini homepage itself is, for example, based on a unique transaction ID assigned to each entry and may be entered into a browser program to view the mini homepage directly without searching.

When Update is selected (FIG. **2**D), the user, having entered the correct transaction ID and password, is presented with a page like that shown in FIG. **2**L. The corresponding mini homepage is displayed, and the user is requested to update the mini homepage (the "post"). When the user has edited the entry to his or her satisfaction, the user presses UPDATE. The user is then presented with a further page like that shown in FIG. **2**M, giving him or her the opportunity to review one final time the comments and keywords. To change the comments or keywords, the user presses BACK. The user can also change the category of the entry by pressing the Change category button. To accept and complete the update, the user presses a Done update button.

A page like that shown in FIG. **2**N is then presented. The user is required to enter the identification number of the post. If the identification number is entered correctly, the post is updated, and a page like that shown in FIG. **2**-O is presented to the user, confirming the update.

Referring now to FIG. **3**, the operational steps involved in the present system and method are represented. The system is accessed either directly by the user or by following a link to the server site, for example the URL WebWho.com. The name WebWho™ is a trademark of the present assignee.

The user is first presented with a page **301** (index.shtml) allowing the user to select from different services, including whois and traceroute. As described previously, whois is an Internet service that looks up information about a user in a database. Traceroute is a program that permits a user to find the path a packet will take as it crosses the Internet to a specific destination. Whois and traceroute are known services. Previously, however, use of these services has typically required "root-user access" on a UNIX host. In accordance with one aspect of the present invention, these services are HTML front-ended and made available to all users, together with further hyperlink services that greatly increase the utility of the underlying whois and traceroute services.

Referring to FIG. **5**, whois and traceroute are made readily available to all network users through HTML front-

ending using CGI scripts. The actual whois code **501** and traceroute code **503** remains within the root directory **500** on a UNIX host. Respective CGI scripts are provided, namely whois.cgi (**505**) and traceroute.cgi (**507**), that have root user privileges and that provide HTML front-ending between the user and their respective services. For example, when a user selects the WebWho Whois service from the main page of FIG. **2A**, the whois.cgi script **505** is invoked to pass the user input to the root directory whois service **501** and cause it to service the user's request. Output from the root directory whois service **501** is passed back from the whois.cgi script **505** in HTML format. The same description applies equally to the traceroute.cgi script and the root directory traceroute service.

To further augment the whois and traceroute services, hyperlink services are provided. The root directory whois and traceroute services are provided with a parsing routine **509** that parses the output of these services to identify E-mail addresses, domain names, IP names, etc.—character strings containing period separators and/or the character "@." The parser then passes back this information to the CGI scripts in the form of links, links to the whois.cgi script **505** in the case of names and links to an E-mail.cgi script **511** in the case of E-mail addresses. The E-mail.cgi script **511** controls an E-mail utility **513** that may be located in the root directory or in a different directory.

Whois and traceroute, as implemented as part of the present invention, provide powerful new tools for serious Internet tools. Using whois, the user may type in any address with a ".com", ".edu" or ".net" extension and find the physical address, phone number and the individual(s) that the address represents. This ability may be used as a powerful marketing tool to find a wealth of information about people on the Internet. Also, whois can be used to instantly check a domain name.

Traceroute may be used by System Administers to obtain information to make their jobs much easier. Previously, System Administrators have not been allowed to use traceroute on a PC running any operating system other than UNIX.

Whereas whois and traceroute are more technically oriented, "WebBook" allows non-technical users to take advantage of the capabilities of the Web with a minimum of effort. WebBook allows a user to have HTML-front-ended access to a database of mini homepages in order to search, add entries to, or update previous entries in the database.

Referring again to FIG. **3**, if WebBook is chosen, a login routine **303** may request the to enter identifying information of the type that would normally be found on a business card, for example. Presently, although Web sites are able to track the user's access point to the Web (for example, a particular slip connection through an Internet Service Provider), this information often gives no indication who the user really is. Such information is important in order to evaluate the extent to which a target audience is being reached.

The user may choose an options that allows the user to bypass the login request. The request for information as to the identity of the user therefore may or may not be complied with; moreover, the information provided may or may not be accurate. As an incentive to provide the requested information (and, it is hoped, the correct information), users providing the requested information may be given more complete access to the database than users who do not provide the requested information. Users providing the requested information are assigned a user ID to be used during subsequent accesses and are requested to choose a password. The password may be required to access some system services. To further encourage voluntary login, users that have complied with the login request and have been assigned a user ID may be afforded the ability to customize the user interface and maintain the resulting look and feel between uses. This customization is performed in a known manner by storing on the host a user preferences file and accessing the file to restore user preferences when a valid user ID is provided.

For a period during the initial stages of the service, while the database is still being built up, it may be desirable to allow all users complete access to the database regardless of whether or not they have identified themselves.

Following the login procedure, the user is provided with a page **305** presenting the different ways that the user may interact with the database. For example, a user may search the database, add a new entry to the database, or update a previous entry to the database by that user. Each of these options will be described in turn.

If the user chooses to search the database, the user is provided with a page **307** concerning different search options. A search may be performed on one or more of a number of different database fields, depending on the organization of the database entries. For example, in a preferred embodiment, the database entries include the following defined fields:

uid	country
fname	email
lname	url
mname	keywords
title	comment
ident	category
phone 1	active
phone 2	start_date
fax	expire_date
addr	info1 (Reserved)
city	info2 (Reserved)
state	info3 (Reserved)
zipcode	info4 (Reserved)

In one embodiment, searches may be performed by category, by keyword, by URL, or by example. To facilitate rapid retrieval of information, presorted listings may be stored for each category and keyword or for some number of the most common categories and keywords. To search by example, the user is provided with a form having the same organization as the database entries. The user fills in information in the fields of interest. The search then returns information concerning entries having matching information in those fields. Entries are displayed in list fashion by title on a page **309**.

The number of entries produced by a search may be very large. Therefore, instead of displaying a listing for all of the entries at once, the entries may be displayed ten at a time, for example. Alternatively, only the first 100 or 200 entries may be displayed.

While some sites may provide information and services free of charge, for example as a result of volunteerism or advertising subsidies, other sites may have a business model in which users are charged for information or services or both. For such a site, it becomes critical to protect the information stored in the database. Therefore, unlike some existing databases in which actual hypermedia links to Web homepages are stored in the listed items, in order to prevent effectual pirating of the database, links are embedded only in the full entry itself, not in the entry listings. Otherwise a

user could simply store a voluminous listing or various different listings, with their accompanying hypermedia links, and thereby capture in large part the entire benefit of the database. Instead, an item in a listing is intended only to give the user enough information to gauge the user's further interest in an item. If the user is interested in an item, the user may select that item, causing the full-page entry to be provided. The full page entry includes links to any E-mail address or URL that the owner of the entry may have provided, thereby providing a link to that person's or organization's homepage (or to some other homepage).

If the user bypassed login, as determined in step **311**, he or she will normally be returned to the login procedure when attempting to select an entry to view it in its entirety. If the user has logged in, then the user may select an entry and the corresponding full page **313** will be served to the user.

The full page entry **313** need not be limited to text alone but may be a complete hypermedia page, including possible graphics or other non-textual content In this manner, for person's or organizations not having any independent Web homepage, the entry can function as a "mini-homepage," i.e., a single page hypermedia document. Furthermore, the mini-homepage may have its own URL, allowing it to be accessed directly without performing a search of the database. For example, a URL for a mini homepage might be http://webwho.com/view?id=xxxx, where xxxx represents a transaction ID assigned to each entry in a manner described below.

A link **315** is embedded in the mini-homepage to allow for the page to be updated. Prior to describing the manner in which the mini-homepage is updated, however, the manner of adding a new entry to the database will first be described.

In order to add an entry to the database, a user must login, during which the user chooses a password, or must have logged in during a previous visit to the site. When the user chooses to add a new entry to the database, a unique transaction ID is created for that entry, to be used throughout the life of the entry. A unique transaction ID may be created in any of many different ways. For example, the transaction ID might be the date (e.g., 951215) and the entry number for that date (e.g., 00215). Alternatively, the transaction ID might be the time of day (e.g., HHMMSS) and the process ID of the host machine process that is servicing the user's request. In one embodiment, the transaction ID is a 14-digit hexadecimal number in which eight digits represent the number of seconds since an arbitrary date (e.g., Jan. 1, 1970), four digits represent the process ID running on the host machine, and two digits represent a portion of the machine IP address (to distinguish between different host machines).

Once a trasaction ID has been assigned, the user is then provided with an entry form **317** having fields corresponding to the various fields of a database entry as described previously. The user fills out the form and presses a screen button when the entry is complete. The form may have one or more checkboxes **319** to indicate the desire to include with the entry one or more non-textual elements, such as a graphic image, etc. Also, if desired, different templates may be provided governing the appearance of the finished page, with the user selecting a desired template.

Non-textual content may be obtained from the user in any of a number of different ways. For example, the user may transfer to the site a file containing the non-textual content using the File Transfer Protocol (FTP) with the same user ID and password as when the entry was added.

During the entry process, the user is prompted to enter keywords to facilitate later searching of the database and location of the entry. Furthermore, the HTML front-end tools may assist in developing keywords for the entry. A pre-search/sort tool, for example, might take the 2000 top keywords found in the database within the keyword field and do a total text search throughout the database for these keywords. If one or more of these keywords appears in the description ("comment" field) of an entry but not in the keyword list, these keywords are then added to a keyword extension field for up to some number of keywords, e.g. five.

If the server site is based on a pay-for-service model, the form will also call for the user to enter a credit card number as the last piece of information. Secure, on-line credit card processing will then be performed to bill the user, either on a one-time basis, on a periodic basis, or on an occasional basis as future services may require. Although various methods of processing credit card transaction on-line have been proposed, with various degrees of attendant security, such processing is preferably performed in accordance with a proprietary method developed by the assignee to provide the highest level of security possible.

After an entry has been made, it may be updated at any time by one able to provide the transaction ID assigned to the entry and the user password, i.e., by the user or one acting on behalf of the user. The update option may be entered directly, or the entry to be updated may first be viewed as the result of a search and the update screen button **315** then pressed. The user is then prompted to supply the correct transaction ID and password (page **321**), failing which the user will not be allowed to update the entry.

If the transaction ID and password are correctly supplied, then the equivalent of a new entry form will be provided to the user will the current information pertaining to the entry already filled in. The user may then modify the entry. If a charge is made for updating the entry, preferably the credit card information from the earlier creation of the entry will have been stored in a highly secure fashion, avoiding the need to reenter the information. Both security and convenience are thereby enhanced.

Nothing in the process of adding, searching and updating entries requires manual intervention. Rather, the entire process is automated and may be made available continuously, 24 hours a day, 365 days a year. Like a publicly-accessible bulletin board, the content that is posted on the database is entirely within the control of the user, both at the time the entry is posted and all times thereafter.

Referring now to FIG. **4**, various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships will now be described.

When a user visits the site and the WebWho option is selected, a page WebWho.html **(401)** is served to the user, offering the user various options, including, for example, options to search the database, add a new entry, update an existing entry, change the user's password, or to log in if the user has not previously done so. In an exemplary embodiment, the routines illustrated in FIG. **4** are standard C routines, called from a single CGI script In other embodiments, the routines may be called by separate scripts, and may be written other languages such as in a UNIX shell language, or in one of a number of emerging Internet computer languages such as Java.

The Options routine **403** reads in the user's choice and invokes one of the five following routines: Search **(405)**, Add **(407)**, Update **(409)**, Changepw **(411)**, and Login **(413)**. Each of these options will be described in turn.

If Search is chosen, the Search routine **405** initiates one of several possible search functions. In a preferred

embodiment, these functions include a categories search, an example search, and a keyword search. According to the search function chosen, the Search routine invokes one of the following routines: Categories (**415**), Example (**417**), and Key_Search (**419**).

Categories are represented in computer memory in the form of a tree structure. A categories search starts from the root level, with the Categories routine **415** displaying all the categories available at that level, and all the entries (or up to some number of entries) belonging to that level. The user can click on any category to go to the next level, and can click on any entry to bring up the mini page of the entry.

If Example is chosen, the Example routine **417** displays a form for the user to fill in any field he or she wants to search on. The Example routine **417** reads in the information and displays all the entries that match what has been specified.

If Keyword is chosen, the Key_search routine **419** displays text boxes to read in up to a specified number of keywords (e.g., four) to search on. The Key_search routine **419** displays all the entries that match the specified keywords.

When a user clicks on one of the entries returned by a search function, the mini page is displayed by a List_entries routine **421**. List_entries displays the mini page for a particular entry and also contains an update button for the user to update that particular entry.

When a user specifies that he or she wants to edit the entry currently being displayed, the Update routine **409** performs a check to see if that page belongs to the user currently logged in. If so, updating is initiated by invoking an Update_post routine **423**. Otherwise, an Update_login routine **425** is called to allow the user to perform the correct login sequence. The Update_login routine **425** reads in a user ID and password and matches them against the database to determine if the user is the owner of the mini page currently being displayed. Updating is not allowed until the correct user ID and password are entered.

The Update_post routine **423** displays an entry form with values filled in from the information stored in the database. It invokes a Do_update routine **427** to process the new values being entered. The Do_update routine reads in the new information, makes sure that all the required information is filled. If not, a routine Do_missing is invoked. When all of the required information has been supplied, a Update_key routine **429** reads in the keywords and comments from the database entry, displays them, and asks the user to confirm. The user can go ahead and update the database or can change the category the entry currently belongs to.

If the user chooses to change the category, a Change_cat routine **431** displays all the categories at the root level. The user can click on one of the categories to go to the next level or can specify a new category on the current level. If the user chooses to go ahead and update the database, another form is displayed to read in the identification number of the entry. A Get_ident routine **435** is then invoked. If the user chooses to change the category, an Update_cat routine **433** handles navigation through the categories tree. It will keep displaying the categories on the current level until the user has decided on a category or has specified a new category.

The routine Get_ident **435** reads in the identification number and matches it against the identification number stored in the database for the current entry. If they match, the database is updated; otherwise, the program declines the update.

Entries may also be updated directly without searching, using the Update routine **409**. If a user is currently logged in, the Update routine **409** displays all the entries belonging to that user. Otherwise, the Update_login routine **425** performs a login and displays all the entries belonging to the newly logged-in user. The remaining update routines have already been described as a continuation of the search options and will therefore not be further described.

When Add is selected, the Add routine **407** displays an empty form to allow the user to fill in all the information. The Add routine **407** processes the information that has been entered, using the Do_missing routine to make sure that all the required information is entered. The Do_missing routine displays the form again until all the required information is entered.

After all the required information has been entered, a Get_info routine **437** displays another form to read in the keywords and comments. A Confirm_info routine **439** processes the keywords and comment being entered and displays them again, asking the user to confirm. After the user confirms the keywords and comments, a Pick_cat routine **441** acquires the category using the same mechanism previously described in relation to Update_cat. If the user is not logged, in he or she is logged in, and a new user ID is determined. A form is then displayed to read in the user's password. A Get_pw routine **443** reads in the password and displays a form to read in credit card information. A Get_cc routine **445** verifies the credit card information. If the transaction is authorized, it adds the new entry into the database; otherwise, it rejects the entry.

The remaining routines are administrative in nature. The user may wish to change his or her password. If the user is not currently logged in, a login is performed by calling a Changepw_login routine **447**. Changepw_login reads in the user ID and password and matches them against the values in the database. A form is then displayed to read in the new password. The Changepw routine **411** actually updates the database with the new password.

The Login routine **413** reads in the user ID and password and checks them against the database. If the user ID and password are correct, operation begins at the main page with the user logged in as the new user.

It will be appreciated by those of ordinary skill in the art that the invention can be embodied in other specific forms without departing from the spirit or essential character thereof. The foregoing description is therefore considered in all respects to be illustrative and not restrictive. The scope of the invention is indicated by the appended claims, and all changes which come within the meaning and range of equivalents thereof are intended to be embraced therein.

What is claimed is:

1. A method for maintaining a network accessible database on a server processing system comprising:

receiving a request from a client processing system connected to said server processing system over a network for a user to add a record to said network accessible database;

receiving user authorization information from said client processing system;

determining whether a user is authorized to add said record from said user authorization information responsive to receiving said user authorization information;

receiving said information to be included in said record responsive to transmitting said request;

generating said record with said information;

storing said record in said network accessible database; and

storing an identification of said user indicating said user is authorized to modify said record in said network accessible database.

2. The method of claim **1** wherein said information includes non-textual content.

3. The method of claim **2** wherein said non-textual content includes an image.

4. The method of claim **2** wherein said non textual content is included in a file.

5. The method of claim **1** wherein said information includes a description of information provided by said user over said network.

6. The method of claim **1** wherein said step of generating said record includes:

generating a display of said information accessible over said network.

7. The method of claim **6** wherein said display is a web page.

8. A product for maintaining a network accessible database on a server processing system comprising:

instructions for directing a processing unit to:

receive a request from a client processing system connected to said server processing system over a network for a user to add a record to said network accessible database,

receive user authorization information from said client processing system,

determine whether a user is authorized to add said record from said user authorization information responsive to receiving said user authorization information,

receive said information to be included in said record responsive to transmitting said request,

generate said record with said information,

store said record in said network accessible database, and store an identification of said user indicating said user is authorized to modify said record in said network accessible database; and a media readable by said processing unit that stores said instructions.

9. The product of claim **8** wherein said information includes non-textual content.

10. The product of claim **9** wherein said non-textual content includes an image.

11. The product of claim **9** wherein said non-textual content is included in a file.

12. The product of claim **8** wherein said information includes a description of information provided by said user over said network.

13. The product of claim **8** wherein said instructions to generate said record includes:

Instructions for directing said processing unit to:

generate a display of said information accessible over said network.

14. The product of claim **13** wherein said display is a web page.

15. An apparatus for maintaining a network accessible database on a server processing system comprising:

means for receiving a request from a client processing system connected to said server processing system over a network for a user to add a record to said network accessible database;

means for receiving user authorization information from said client processing system;

means for determining whether a user is authorized to add said record from said user authorization information responsive to receiving said user authorization information;

means for receiving said information to be included in said record responsive to transmitting said request;

means for generating said record with said information;

means for storing said record in said network accessible database; and

means for storing an identification of said user indicating said user is authorized to modify said record in said network accessible database.

16. The apparatus of claim **15** wherein said information includes non-textual content.

17. The apparatus of claim **16** wherein said non-textual content includes an image.

18. The apparatus of claim **16** wherein said non textual content is included in a file.

19. The apparatus of claim **15** wherein said information includes a description of information provided by said user over said network.

20. The apparatus of claim **15** wherein said means for generating said record includes:

means for generating a display of said information accessible over said network.

21. The method of claim **20** wherein said display is a web page.

* * * * *

EXHIBIT C

US007028034B2

(12) **United States Patent**
Wesinger, Jr. et al.

(10) **Patent No.: US 7,028,034 B2**
(45) **Date of Patent: *Apr. 11, 2006**

(54) **METHOD AND APPARATUS FOR PROVIDING A DYNAMICALLY-UPDATING PAY-FOR-SERVICE WEB SITE**

(75) Inventors: **Ralph E. Wesinger, Jr.**, San Jose, CA (US); **Christopher D. Coley**, Morgan Hill, CA (US)

(73) Assignee: **GraphOn NES Sub, LLC**, Santa Cruz, CA (US)

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

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/844,599**

(22) Filed: **May 11, 2004**

(65) **Prior Publication Data**

US 2005/0125373 A1 Jun. 9, 2005

Related U.S. Application Data

(63) Continuation of application No. 10/703,823, filed on Nov. 7, 2003, which is a continuation of application No. 09/952,985, filed on Sep. 14, 2001, now Pat. No. 6,850,940, which is a continuation of application No. 09/110,708, filed on Jul. 7, 1998, now Pat. No. 6,324,538, which is a continuation of application No. 08/572,543, filed on Dec. 14, 1995, now Pat. No. 5,778,367.

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

(52) **U.S. Cl.** **707/10**; 707/100; 707/102; 705/1; 705/26

(58) **Field of Classification Search** 707/10, 707/100, 102; 705/1, 26; 709/215, 216, 709/217

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,581,072	A	5/1971	Nymeyer	235/152
3,956,615	A	5/1976	Anderson et al.	235/61.7
4,754,428	A	6/1988	Schultz et al.	364/900
4,799,156	A	1/1989	Shavit et al.	364/401
4,805,099	A	2/1989	Huber	364/300
4,805,134	A	2/1989	Calo et al.	364/900
4,962,475	A	10/1990	Hernandez et al.	364/900
4,989,141	A	1/1991	Lyons et al.	364/408
4,992,940	A	2/1991	Dworkin	364/401
5,063,507	A	11/1991	Lindsey et al.	364/408
5,107,443	A	4/1992	Smith et al.	395/158
5,136,501	A	8/1992	Silverman et al.	364/408
5,164,897	A	11/1992	Clark et al.	364/401
5,168,446	A	12/1992	Wiseman	364/408

(Continued)

OTHER PUBLICATIONS

Akkiraju, Praveen et al., White Paper, Enabling Enterprise Multihoming with Cisco IOS Network Address Translation (NAT), 25 pages, 1997 (no month).

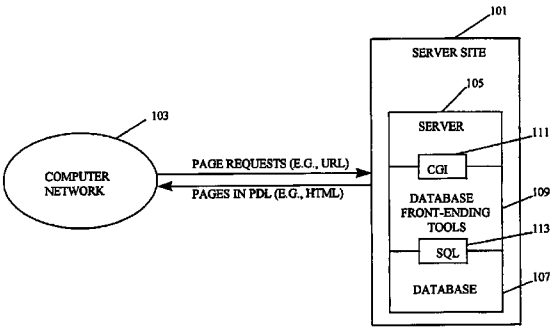
(Continued)

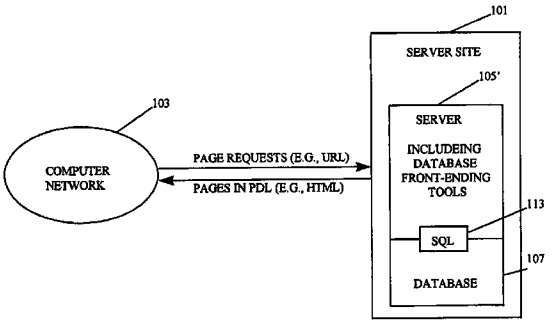
Primary Examiner—Frantz Coby
(74) *Attorney, Agent, or Firm*—Sierra Patent Group, Ltd.

(57) **ABSTRACT**

A web server for providing a dynamically-updating pay-for-service web site is disclosed. The web server includes an HTML front-end entry process configured to create and store personal homepage content in a database for a owner, receive a fee for making the personal homepage accessible on a network. The HTML front-end update process is also configured to allow the owner to update their personal homepage over a network.

22 Claims, 25 Drawing Sheets





U.S. PATENT DOCUMENTS

5,189,608	A	2/1993	Lyons et al.	364/408
5,197,004	A	3/1993	Sobotka et al.	364/419
5,197,005	A	3/1993	Schwartz et al.	364/419
5,204,947	A	4/1993	Bernstein et al.	395/157
5,235,680	A	8/1993	Bijnagte	395/161
5,243,515	A	9/1993	Lee	364/401
5,257,366	A	10/1993	Adair et al.	395/600
5,261,102	A	11/1993	Hoffman	395/700
5,262,943	A	11/1993	Thibado et al.	364/413.01
5,263,157	A	11/1993	Janis	395/600
5,263,158	A	11/1993	Janis	395/600
5,283,731	A	2/1994	Lalonde et al.	364/401
5,297,249	A	3/1994	Bernstein et al.	395/156
5,299,123	A	3/1994	Wang et al.	364/419
5,301,105	A	4/1994	Cummings, Jr.	364/401
5,309,437	A	5/1994	Perlman et al.	370/85.13
5,319,542	A	6/1994	King, Jr. et al.	364/401
5,325,297	A	6/1994	Bird et al.	364/419.07
5,335,346	A	8/1994	Fabbio	395/600
5,347,632	A	9/1994	Filepp et al.	395/200
5,355,474	A	10/1994	Thuraisngham et al.	395/600
5,367,619	A	11/1994	Dipaolo et al.	395/149
5,367,621	A	11/1994	Cohen et al.	395/154
5,386,525	A	1/1995	Noack	395/400
5,394,471	A	2/1995	Ganesan et al.	380/23
5,408,655	A	4/1995	Oren et al.	395/600
5,410,693	A	4/1995	Yu et al.	395/600
5,412,774	A	5/1995	Agrawal et al.	395/157
5,416,694	A	5/1995	Parrish et al.	364/401
5,418,942	A	5/1995	Krawchuk et al.	395/600
5,426,780	A	6/1995	Gerull et al.	395/600
5,448,724	A	9/1995	Hayashi	395/182.02
5,455,945	A	10/1995	VanderDrift	395/600
5,459,863	A	10/1995	Taylor	395/600
5,471,617	A	11/1995	Farrand et al.	395/700
5,483,586	A	1/1996	Sussman	379/201
5,495,412	A	2/1996	Thiessen	364/401
5,502,637	A	3/1996	Beaulieu et al.	364/408
5,506,984	A	4/1996	Miller	395/600
5,513,126	A	4/1996	Harkins et al.	364/514 A
5,530,852	A	6/1996	Meske, Jr. et al.	395/600
5,537,546	A	7/1996	Sauter	395/200.01
5,537,590	A	7/1996	Amado	395/600
5,542,024	A	7/1996	Balint et al.	395/161
5,544,255	A	8/1996	Smithies et al.	382/119
5,544,360	A	8/1996	Lewak et al.	395/600
5,553,239	A	9/1996	Heath et al.	395/187.01
5,557,518	A	9/1996	Rosen	364/408
5,559,958	A	9/1996	Farrand et al.	395/183.03
5,564,119	A	10/1996	Krawchuk et al.	395/600
5,572,643	A	11/1996	Judson	395/793
5,592,375	A	1/1997	Salmon et al.	395/207
5,608,903	A	3/1997	Prasad et al.	395/610
5,623,601	A	4/1997	Vu	395/187.01
5,623,652	A	4/1997	Vora et al.	395/610
5,625,781	A	4/1997	Cline et al.	395/335
5,630,125	A	5/1997	Zellweger	395/614
5,633,910	A	5/1997	Cohen	379/38
5,638,457	A	6/1997	Deaton et al.	382/100
5,649,192	A	7/1997	Stucky	395/614
5,655,077	A	8/1997	Jones et al.	395/187.01
5,659,741	A	8/1997	Eberhardt	395/615
5,659,742	A	8/1997	Beattie et al.	395/615
5,664,115	A	9/1997	Fraser	705/37
5,664,207	A	9/1997	Crumpler et al.	395/766
5,675,507	A	10/1997	Bobo, II	364/514 R
5,677,953	A	10/1997	Dolphin	380/4
5,678,041	A	10/1997	Baker et al.	395/609
5,682,525	A	10/1997	Bouve et al.	395/615
5,684,951	A	11/1997	Goldman et al.	395/188.01
5,694,546	A	12/1997	Reisman	395/200.9
5,699,526	A	12/1997	Siefert	395/227
5,706,507	A	1/1998	Schloss	395/615
5,708,780	A	1/1998	Levergood et al.	395/200.12
5,710,887	A	1/1998	Chelliah et al.	395/226
5,710,918	A	1/1998	Lagarde et al.	395/610
5,715,314	A	2/1998	Payne et al.	380/24
5,715,402	A	2/1998	Popolo	395/237
5,717,923	A	2/1998	Dedrick	395/613
5,721,827	A	2/1998	Logan et al.	395/200.47
5,721,906	A	2/1998	Siefert	395/609
5,721,908	A	2/1998	Lagarde et al.	395/610
5,724,424	A	3/1998	Gifford	380/24
5,727,156	A	3/1998	Herr-Hoyman et al.	395/200.49
5,729,682	A	3/1998	Marquis et al.	395/200.12
5,732,219	A	3/1998	Blumer et al.	395/200.57
5,734,718	A	3/1998	Prafullchandra	380/4
5,734,823	A	3/1998	Saigh et al.	395/200.06
5,737,395	A	4/1998	Irribarren	379/88
5,737,592	A	4/1998	Nguyen et al.	395/604
5,742,769	A	4/1998	Lee et al.	395/200.36
5,742,845	A	4/1998	Wagner	395/831
5,745,556	A	4/1998	Ronen	379/127
5,748,188	A	5/1998	Hu et al.	345/326
5,748,740	A	5/1998	Curry et al.	380/25
5,748,783	A	5/1998	Rhoads	382/232
5,754,939	A	5/1998	Herz et al.	455/4.2
5,754,981	A	5/1998	Veeneman et al.	705/26
5,757,917	A	5/1998	Rose et al.	380/25
5,758,324	A	5/1998	Hartman et al.	705/1
5,761,649	A	6/1998	Hill	705/27
5,761,656	A	6/1998	Ben Shachar	707/4
5,761,661	A	6/1998	Coussens et al.	707/9
5,761,662	A	6/1998	Dasan	707/10
5,761,673	A	6/1998	Bookman et al.	707/104
5,778,367	A *	7/1998	Wesinger et al.	707/10
5,784,608	A	7/1998	Meske, Jr. et al.	395/602
5,790,793	A	8/1998	Higley	395/200.48
5,802,299	A	9/1998	Logan et al.	395/200.48
5,802,497	A	9/1998	Manasse	705/27
5,812,776	A	9/1998	Gifford	395/200.47
5,813,006	A	9/1998	Polnerow et al.	707/10
5,819,285	A	10/1998	Damico et al.	707/104
5,822,745	A	10/1998	Hekmatpour	706/59
5,826,241	A	10/1998	Stein et al.	705/26
5,832,497	A	11/1998	Taylor	707/104
5,835,712	A	11/1998	DuFresne	395/200.33
5,835,896	A	11/1998	Fisher et al.	705/37
5,842,173	A	11/1998	Strum et al.	705/1
5,850,446	A	12/1998	Berger et al.	380/24
5,870,552	A	2/1999	Dozier et al.	395/200.49
5,878,141	A	3/1999	Daly et al.	380/25
5,884,309	A	3/1999	Vanechanos, Jr.	707/10
5,890,170	A	3/1999	Sidana	707/501
6,026,433	A	2/2000	D Arlach et al.	709/217
6,085,219	A	7/2000	Moriya	709/200
6,161,124	A	12/2000	Takagawa et al.	709/203
6,317,757	B1	11/2001	Sakamaki	707/502
6,324,538	B1 *	11/2001	Wesinger et al.	707/10
6,486,895	B1	11/2002	Robertson et al.	345/776
6,850,940	B1 *	2/2005	Wesinger et al.	707/10

OTHER PUBLICATIONS

Andrews, Keith et al., "Serving Information to the Web with Hyper-G", The Third International World-Wide Web Conference, (www'95), Darmstatdt, Germany, 6 pages, Apr. 12, 1995.

Anick, Peter G. et al, "A Direct Manipulation Interface for Boolean Information Retrieval via Natural Language Query", *Proceedings of the 13th International Conference*

On Research and Development in Information Retrieval, Brussels, Belgium, pp. 135-151, Sep. 5-7, 1990.
Anonymous, "Amaya New Features History," W3C Amaya, [Internet] http://www.w3.org,Amaya_New_User.html 10 pages, printed Jul. 14, 1998.
Anonymous, "Amaya—W3C's Browser/Editor" from Amaya Overview, W3C User Interface Domain, [Internet]. w3.org, 4 pages, printed Jul. 14, 1998.
Anonymous, "Application Development with Database Repositories", [Internet] wji.com/wji/b3468.html, 10 pages, printed Jul. 22, 1999.
Anonymous, *Developing Applications with OpenDiS Access Service*, Metaphor Data Interpretation System publication Version 2.0, First Edition, pp. Table of Contents—Index (IX04), Sep. 1994.
Anonymous, "The Fruitful, Tangled Trees of Knowledge", *The Economist*, Science and Technology Section, pp. 85-88, Jun. 20th -26 th , 1992.
Anonymous, "MORE Technology Transfer", [Internet]rbse.jsc.nasa.gov/eichmann/MORE_sites.html, 7 pages, Jan. 9, 1996.
Anonymous, "The Oracle World Wide Web Interface Kit", www.inf.ufrgs.br/tools/oraweb etc., 51 pages, no date, printed Jul. 14, 1999.
Anonymous, "Sybase SQL Server 1: Performance Optimized for Real-World Results", Sybase,® Inc., 10 pages, 1995 (no month).
Anonymous, (Online Directory and Windows NT Based *Web Development Services*), World Yellow Pages Network (wyp.net) Yellow White Pages, [Internet], wyp.net, 7 pages, 1995 (no month), printed Jul. 9, 1996.
Anonymous, "CGI: Common Gateway Interface", W3C®, [Internet].w3.org/CGI, 2 pages, Oct. 13, 1999.
Anonymous, "CGI: The Common Gateway Interface", [Internet]o.ncsa.uiuc.edu/cgi/overivew.html, 1 page, no date, printed Feb. 21, 2005.
Arai, Toshifumi et al., Retrieving Electronic Documents with Real-World Objects on InteractiveDESK, *ACM*, pp. 37-38, Nov. 14-17, 1995.
Armbrüster, Heinrich et al., "Broadband Multimedia Applications Using ATM Networks: High-Performance Computing, High-Capacity Storage, and High-Speed Communication", *IEEE Journal On Selected Areas In Communications*, Institute of Electronics and Electrical Engineers, vol. 10, No. 9, pp. 1382-1396, Dec. 1992.
Ayre, Rick et al., "The Web Untangled", *PC Magazine*, Cover Story: Web Browsers, pp. 173-196, Feb. 7, 1995.
Baker, Steven, "Hypertext Browsing On The Internet", *Unix Review*, Net Worth section, pp. 21-27, Sep. 1994.
Balasubramanian, V., "State of the art review on hypermedia issues and applications", Graduate School of Management, Rutgers University, Newark, New Jersey, [Internet] csi.uottawa.ca/~dduchier/misc/hypertext, and isg.sfu.ca/~duchier.misc.hypertext_review.index.html, 40 pages, 1994.
Bank, David, "The Road Ahead", Information Highway 101, Part one of three parts, *San Jose Mercury News*, Business Monday Section, pp. 1D, 4D-5D, Dec. 5, 1994.
Bank, David, "Foundation for an Information Age" Information Highway 101, Part two of three parts, *San Jose Mercury News*, pp. 1A, 26A, 27A, Need Date, 1994.
Bank, David, "Info Travelers Will Determine Highway's Look", Part one of three parts, *San Jose Mercury News*, pp. 1A, 13A, Need Date, 1994.
Barclay Rebecca O., Virtual Blood, Real Sweat, No Tears: Lesson Learned from Making a Publication about electronic Publications', 1995 IEEE International Professional Communication Conference. IPCC 95 Proceedings, entitled Smooth Sailing to the Future, Savanna GA, USA, pp. 106-109, Sep. 27-29, 1995.
Baser, K. et al., "On-Line Indexing Experiment at Chemical Abstract Service: Algorithmic Generation of Articulated Index Entries from Natural language Phrases", *J. Chem. Inf. Computer Science*, vol. 18, No. 1, pp. 18-25, 1978.
"BBN could bulk up its Internet muscle", *Electronic Engineering Times*, pp. 89-90, Dec. 19, 1994.
Beck, Bradley C., "An Interactive Forum for Convection-Diffusion Problems", The Second International Conference (94: Mosaic and the Web, Chicago, Ill, USA, 4 pages, Oct. 17-19, 1994.
Berners-Lee, Tim, "Electronic publishing and visions of hypertext", *Physics World*, pp. 14-16, Jun. 1992.
Berners-Lee, Tim et al., Hypertext Transfer Protocol—HTTP/1.0, Internet Draft, pp. 2-43, Dec. 19, 1994.
Berners-Lee, Tim et al., "The World-Wide Web", *Communications Of The ACM*, vol. 37, No. 8, pp. 76-82, Aug. 1994.
Berners-Lee, Tim et al., "World-Wide Web: The Information Universe", *Electronic Networking*, vol. 2, No. 1, pp. 52-58, Spring 1992.
Bina, Eric et al., "Secure Access to Data Over the Internet", *Proceedings of the Third International Conference on Parallel and Distributed Information Systems*, Austin, Tx. USA, pp. 99-102, 1994.
Björn, Michael, "An Interactive Relational Database Gateway with Load Balancing", *Proceedings '95 AUUG95 and APWWW95 Conference & Exhibition*, [Internet] .csu.edu.au/special/conference/apwww95/papers95/mbjorn/mbjorn.html, 10 pages, updated Jul. 2, 1997.
Born, Gary, "a Knowledge Based Hypertext System for Document Generation and Checking", *IEE Colloquim on "Hypertext", Digest No. 142*, Conference London, UK, 2/1-2/4, Nov. 2, 1990.
Boutell, Thomas, "Techniques for Server-Side Dynamic Document Generation", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, 5 pages, Oct. 17-19, 1994.
Boutell, Thomas (Maintainer of web site), "World Wide Web FAQ", [Internet] sunrise.unc.edu/boutell/faq/www_faq.html, 39 pages, Updated Jan. 23, 1995.
Bowman, C. Mic et al., "Harvest: A Scalable, customizable Discovery and Access System", *Technical Report CU-CS-732-94*, Dept. Computer Science, University of Colorado, pp. 1-27, Aug. 26, 1994.
Brown, Marc H., "Browsing the Web with a Mail/News Reader", *ACM*, pp. 197-198, Nov. 14-17, 1995.
Calliau, Robert, "A Little History of the World Wide Web", W3C® [Internet] 3.org/History.html, 6 pages, crated circa 1995.
Chabrow, Eric R., "Online Employment", *Information Week*, pp. 38 etc. (3 pages Dialog printout), Jan. 23, 1995.
Cinkosky, M. J. et al., "A New Design for the Genome Sequence Data Base", *IEEE Engineering in Medicine and Biology Magazine*, vol. 14, Issue 6, pp. 725-729, Nov.-Dec. 1995.
Clark, Michele, "Net Force Gets Tough on Security", *Electronic Engineering Times*, pp. 96 & 98, Dec. 19, 1994.

Clyde, Stephen et al., "An Object-oriented Implementation of an Adaptive Classification of Job Openings", *Proceedings of the 11th Conference on Artificial Intelligence for Applications*, Los Angeles, CA, USA, pp. 9-16, Feb. 20-23, 1995.
Cohen, Ellis, S., "Review-Based Information Services: Lessons Learned from The Boston Restaurant List", The Second International WWW Conference (WWW'94: Mosaic and Web), Chicago, Ill, USA, 12 pages, Oct. 17-19, 1994.
Cortese, Amy et al., "Cyberspace—The Software That Will Take You There", a Special Report in *Businees Week*, pp. 78-89, Feb. 27, 1995.
Crane, Michael L. et al., Marine Data Entry, *IEEE Proceedings OCEANS '83, vol. 1, Technical Papers*, San Francisco, CA, pp. 124-128, Aug. 29-Sep. 1, 1983.
Davis Jim et al., "'Drop-in'publishing with the World Wide Web", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, 9 pages, Oct. 17-19, 1994.
Davison, Andrew, "Coding with HTML Forms", *Dr. Dobbs Journal*, pp. 71-75, Jun. 1995.
Day John D. et al., "The OSI Reference Model", *Proceedings Of The IEEE*, vol. 71, No. 12, p. 1334-1340, Dec. 1983.
Daynès, Laurent et al., "Locking in OODBMS Client Supporting Nested Transactions", *ICDE*, a publication of IEEE, pp. 316-323, 1995 (no month).
Derfler, Frank J., Jr., "Betting on the Dream", *PC Magazine*, pp. 267-288, Oct. 25, 1994.
Dolan, Donna R. et al., "Top U.S. Sources For An Online Job Search", *Database*, pp. 35-43, Oct./Nov. 1994.
Dougherty, Elizabeth, Networks—Router Roundup and SNMP Catches On, *MacWorld*, p. 158, Dec. 1994.
Dozier, Linda T., NaviPress and NaviServer: A Client-Server Publishing System for the World-Wide Web II, NaviSoft, an America Online Company, pp. 1-Index p. IV, Mar. 1995.
Duncan, Ray, "Publishing Databases on the World Wide Web", *PC Magazine*, PC TECH/Power Programming, vol. 14. No. 21, pp. 403-412, Aug. 1995.
Duncan, Ray, "Publishing HTML Forms on the Web", *PC Magazine*, PC TECH/Power Programming, vol. 14. No. 21, pp. 391-403, Dec. 5 1995.
Duncan, Ray, "Setting Up a Web Server", *PC Magazine*, PC TECH/Power Programming, vol. 14, No. 9, pp. 273-280, May 16, 1995.
Earthlink Launches Single-Solution Premium Web Site Package; [Internet] .earthlink.net/about/press/pr_pwebsite/, Mar. 12, 1997.
Earthlink Launches the World's First Virtual "Theme" Room with Dilbert, Peanuts, and More; [Internet] .earthlink.net/aboutpress/pr_elnroom/, Mar. 9, 1998.
Earthlink Network's New Personal Start Page Actually Takes You Where You Want to Go, [Internet] earthlink.net/about/press/pr_psp/, Oct. 6, 1997.
Eichmann, David et al., "Integrating Structured Databases Into the Web: The MORE System", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994 also published in *Computer Netowrks and ISDN Systems*, vol. 27, No. 2, pp. 281-288, Nov. 1994.
Fernandez, Eduardo B. et al., *Datbase Security and Integrity*, Addison-Wesley Publishing Company, 1981.
Flynn, Laurie, "The Executive Computer: Browsers Make Navigating The World Wide Web a Snap", *New York Times*, Sunday, Late Edition—Final, Section 3, p. 6, col. 1, Business/Financial Desk, Jan. 29, 1995.
Frank, Maurice, "Database and the Internet", *DBMS Online* [Internet] dbmsmag.com/f19512.html, 15 pages, Dec. 1995.
Freeman-Benson, Bjorn N., "Using the Web to Provide Private Information-or-A Short Paper About Password Protection Without Client Modifications", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994.
Frentzen, Jeff, "Low-cost Windows tools fill in Internet gaps", *PC Week*, p. 19, Dec. 12, 1994.
Frentzen, Jeff et al., "Setting Up Shop on the Internet", *Windows Sources*, pp. 64-143, Feb. 1995.
Frentzen, Jeff, "SQL databases, Web servers make connection", *PC Week*, vol. 12, No. 9, Mar. 6, 1995.
Frentzen, Jeff, "The mystery of Common Gateway Interface", *PC Week*, vol. 12, No. 20, p. 13, May 22, 1995.
Frivold, Thane J. et al., "Extending WWW for Synchronous Collaboration", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW, 5 pages, Oct. 17-19, 1994.
Gee, David A. et al., "MosaicForms Database Access?: A Palaeobotanic case study", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] .ncsa.uiuc.edu/SDG/IT94/Proceedings/GenSci/gee/pfrwww.html, 8 pages, Oct. 17-19, 1994.
Gilster, Paul, *The Internet Navigator*, John Wiley & Sons, Inc., Cover Page—p. 470, 1993.
Google Groups Search results for "common gateway interface", Google, Inc., 20 pages, originally executed 2002, reexecuted Feb. 21, 2005.
Google Groups Search results for author:usx@spud.hyperion.com, for email thread to Announce: The Used Software Exchange Google. Inc., 4 pages, Oct. 1994.
Greenfield, David, "Radware Linkproof", *Network Magazine*, [Internet] //newworkmagazine.com/shared/article/showArticle.jhtml?articled=8702642, 2 pages, Dec. 1, 1999.
Grunin, Lori, "Publish Without Paper", *PC Magazine*, Cover Story, pp. 110-171, Feb. 7, 1995.
Gunn, Angela, "Power in pictures: a Web-page primer: easier than it looks; World-Wide Web; includes related article on how to read Uniform Resource Locators", *Computer Shopper*, vol. 14, No. 11, p. 598 etc. (6 pages total), Nov. 1994.
Gutierrez, Dan D., "Link the Web with Your Relational Databases", *Data Based Advisor*, Section-The Internet, WebDBC, 2 pages, Aug. 1995.
Halama, James R. et al, "An Interactive Electronic Bulletin Board Implementation For Mosaic and HTTP Server", The Second International WWW Conference (WWW'94: Mosaic and Web), Chicago, Ill, USA, [Internet] .ncsa.uiuc, edu/SDG/IT94/Proceedings/CSCW/halam/halama.html, 4 pages, Oct. 17-19, 1994.
Halasz, Frank et al., "The Dexter Hypertext Reference", *Communications of the ACM*, vol. 37, No. 2, pp. 30-39, Feb. 1994.
Harrington, Michael, "Mosaic: Door to the On-Line World", *Uniform Monthly*, pp. 20-26, Oct. 1994.
Hastings, Edwin E. et al., "Providing Customers Information Using the WEB and CORBA", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/DDay/hastings/hastings.html, 10 pages, Oct. 17-19, 1994.

Haycox, Jamie, "Standard Generalized Markup Language (SGML) as a basis for an intelligent Data Management System", *Aerospace and Electronics Conference. NAECON*, Dayton, Ohio, also published in *Proceedings of the IEEE*, vol. 2, pp. 1017-1020, May 24-28, 1993.

Heffron, Gordon, "Teleconferencing comes of age", *IEEE Spectrum*, pp. 61-66, Oct. 1984.

Hughes, David, *Mini SOL—A Lightweight Database Engine*, Bond University, Australia, Version 1.0, Dec. 1994, Patch level: Patch 1, Jan. 1995, 21 pages.

Hughes, Kevin, "Entering the World—Wide Web: A Guide to Cyberspace", Version 6.1, 29 pages, May 1994.

Jacobsen, Lynn et al., "Providing Access to a Data Library: SQL and Full-Text IR Methods of Automatically Generating Web Structure", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] .ncsa.uiuc.edu/SDG/IT94/Proceedings/SocialSci/jacobsen/jacobsen.html, 4 pages, Oct. 17-19, 1994.

James, Edward, "Media and Hypermedia", *IEE Colloquium on 'Large Database in Press and Publishing: the Present and the Future'*, London, UK, pp. 6/1-6/2, Jun. 12, 1990.

Jennings, Donald, et al., "How to Present Lots of Volatile Information on the World Wide Web", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/Astronomy/jennings/.html, 7 pages, Oct. 17-19, 1994.

Johnson, Tony, "Spinning the World Wide Web", *Beam Line*, pp. 2-9, Fall 1994.

Jones, Kennie H., "TOPS On-Line—Automating the Construction and Maintenance of HTML Pages", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] .ncsa.uiuc.edu/SDG/IT94/Proceedings/Autools/jones/kjoness/paper.html 7 pages, Oct. 17-19, 1994.

Jones, Russ, "Digital's World-Wide Web Server: A Case Study", First International Conference on the World-Wide Web, Cern, Geneva, Switzerland, 10 pages, May 1994.

Keizer, Gregg, "Accessing the Internet", *Computer Shopper*, pp. 533-545, Jan. 1995.

Kelly, C. W., "An Enhanced Presence Video Conferencing System", *Proceedings Computer Networks* (COMPCON Fall '82), IEEE Computer Society, pp. 545-551, Sep. 20-23, 1982.

Knowles, Anne, "Information Highway—ATM carriers outpace demand for fast data links", *PC Week* vol. 12, No. 5, front page and p. 125, Feb. 6, 1995.

LaLiberte, Daniel et al., "A Protocol for Scalable Group and Public Annotations", [Internet] hypernews.org/~liberte/www/scalable-annotations.html, 9 pages, The Third International World-Wide Web Conference, (www'95), Darmstatdt, Germany, 9 pages, Apr. 12, 1995.

Lawton, Stephen, "Internet reveals its commercial potential", *digital news & review*, pp. 36-37, Sep. 12, 1994.

Lemay, Laura, *Teach Yourself Web Publishing with HTML in a Week*, Sams Publishing, First Ed., pp. i-403, 1995.

Lemay, Laura, *Teach Yourself More Web Publishing with HTML in a Week*, Sams.net, First Ed., pp. 1-449, 1995.

Lewis, Peter H., "Prodigy Leads Its Peers Onto the World Wide Web", *The New York Times*, Section D, p. 7, Col. 1, Business/Financial Desk, Jan. 18, 1995.

Linde, Peter L, HTML and MOSAIC: A taste for more *INET94 Proceedings*, Prague, Czech Republic, 8 pages, Jun. 13-17, 1994.

Liu, Jinhui et al., Description and Recognition of Form and Automated Form Data Entry, vol. 2, pp. 579-582, Aug. 14-16, 1995.

Lynch, Russ, "Outrigger on-line with travel info", *Starr-Bulletin*, 1 page, circa Nov. 1994.

Mamrak, Sandra A. et al., "Benefits of Automating Data Translation", *IEEE Software*, vol. 10, Issue 4, pp. 82-88, Jul. 1993.

Marcus, Aaron et al., "User-Interface Developments for the Nineties", *IEEE Computer*, pp. 49-57, Sep. 1991.

Mariott, Michael et al., Super Cyber Surfers—The Web: How to get around the most fun place on the Internet', *Newsweek*, pp. 43-44, Mar. 20, 1995.

McArthur, Douglas C., "World Wide Web & HTML", *Dr. Dobb's Journal*, vol. 19, No. 15, pp. 18-23, Dec. 1994.

McGee, Marianne Kolbasuk, "Help Wanted? Find it online; JobTrak is just one new service making both job hunting and recruitment easier", *Information Week*, 1995, No. 531, p. 84(1), Jun. 12, 1995.

MCI Employment Advertisement using Resume Builder, [Internet] mci.com.cgi-bin-display-cg . . . data/main.jobs.previews.add-85699005.job, 32 pages, no date, printed Apr. 29, 1997.

McKee, Douglas, "Towards Better Integration of Dynamic Search Technology and the World-Wide Web", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, 7 pages, May 25-27, 1994.

Morton, Sanford, "A Tour of HTML Forms and CGI Scripts", CGI Resources, [Internet] jalix.org/ressources/internet/cgi/~perl-cgi/form&cgi-tour.html, 11 pages, Last modified Aug. 16, 1998, printed Feb. 21, 2005.

Mueller, B, "Implementation of the Information System", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] //archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Educ/mueller/Implementation.html, 3 pages.

Müller, Bernd, "Using World Wide Web as an information system to reduce the average period of study by better information providing and to relieve administration", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94.Proceedings/Educ/mueller/Paper.html, 10 pages, Oct. 17-19, 1994.

Nesbitt, Kenn, "Data Entry on the World Wide Web: Part 2", *Data Base Advisor*, pp. 84-86, 90-93, Aug. 1995.

Ng, Jason, "GSQL—a Mosaic—SQL gateway", [Internet] nscsa.uiuc.edu/SDG/People/jason/pub/gsql/starthere.htm, University of Ill., 2 pages, 1994.

Ng, Jason, GSQL in detail, [Internet] nscsa.uiuc.edu/SDG/People/jason/pub/gsql/howto.html, University of Ill., 3 pages, 1994.

Ng, Jason, "GSQL PROC file commands" [Internet] nscsa.uiuc.edu/SDG/People/jason/pub/gsql/proc-tmt.html, University of Ill., 7 pages, 1994.

Ng, Jason, "New Mosaic-SQL interface" [Internet] nscsa.uiuc.edu/SDG/People/jason/pub/gsql/sampleform.html,, University of Ill., 2 pages, 1994.

Ogle, David M. et al., "Dynamically Selecting Protocols for Socket Applications", *IEEE Network* pp. 48-57, May 1993.

Paoli, Jean, "Cooperative Work On the Network: Edit the WWW!", Proceedings of the Third International World Wide Web Conference, [Internet] .igd.fhg.de/www/www95/proceedings/papers/76/paper.html, also published by Computer Networks and ISDN systems, pp. 841-847, Apr. 1995.

Patton, Phil, "Life On The Net", *Esquire*, pp. 131-138, Dec. 1994.
Peters, Ralph et al., "CrystalWeb-A distributed authoring environment for the World-Wide Web", Proceedings of the Third International World-Wide Web Conference, Apr. 10-14, 1995, Darmstadt, Germany also published in *Computer Networks and ISDN Systems*, vol. 27, pp. 861-870, 1995.
Pferd, William et al., "Special Feature: Interactive Graphics Teleconferencing", *IEEE Computer*, pp. 62-72, Nov. 1979.
Pierog, Karen, "Ohio—Greater Columbus Freenet", publication unknown, 1 page, circa Feb. 22, 1995.
Postel, J, et al., "White Pages Meeting Report", Network Working Group, Request for Comments: 1588, [Internet] pmg.lcs.mit.edu/cgi-bin/rfc/view-plain?number=1588, 29 pages, Feb. 1994.
Powell, James, "Adventures With The World Wide Web-Creating A Hypertext Library Information System", *Database*, pp. 59-66, Feb. 1994.
Prah, Chris et al., "Mosaic as Corporate Data Collector and Dispenser", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/CorInfSys/prah/phah.html 4 pages, Oct. 17-19, 1994.
Preece J., "Survival of the Fittest: The Evolution of Multimedia User Interface", *ACM Computing Surveys*, vol. 27, No. 4, pp. 57-559, Dec. 1995.
Press L., "The Internet and the Travel Industry", *Proceedings of ENTER '95*, [Internet] /som.csudh.edu/cis/lpress/travel.htm., Innsbruck, Austria, 11 pages, Jan. 18-20, 1995.
Putz, Steve, "Interactive Information Services Using World-Wide Web Hypertext", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, Switzerland, May 25-27, 1994.
Raeder, Aggi, "Internet World '95 in San Jose", *Searcher: The Magazine for Database Professionals*, p. 10, 12, 14, 16,-18, May 1995.
Ramsay, Martin L., "The USA at Your Fingertips", *Computer Graphics World*, vol. 16, No. 6, p. 81(1), Jun. 1993.
Randall, L. Scott, "The Shared Graphic Workspace: Interactive Data Sharing In A Teleconference Environment", *Proceedings Computer Networks* (COMPCON Fall '82), IEEE Computer Society, pp. 535-542, Sep. 20-23, 1982.
Rasmussen, B. F., "WDB-A Web Interface to Sybase", *Astronomical Data Analysis Software And Systems IV*, ASP Conference Series, vol. 77, pp. 72-75, 1995.
Resumix Product Announcement: Resume: Resumix announces Internet service for building effective scannable resumes on-line (Resume Builder), *Edge: Work-Group Computing Report*, vol. 6, No. 264, 3 pages, Jun. 12, 1995.
Riley, Margaret F., "Resume Databases on the Internet", *The Riley Guide*, 5 pages, Jan. 20, 1997.
Rodgers, R. P. Channing et al., "On-Line Images from the History of Medicine (OLI): Creating a Large Searchable Image Database for Distribution via World-Wide Web", *Proceedings of the First International World-Wide Web Conference*. Geneva, May 25-27, 1994: 423-431 (paper available at: nlm.nih.gov/hmd.dir/oli.dir/paper/paper.html: system available at: nlm.nih.gov/hmd.dir/oli.dir/).
Rosenking, Jeffrey P. et al., "A Generic system for Directory Pagination", *Proceedings of thr IEEE/ACM International Conference on Developing and Managing Expert System Programs*, pp. 166-169, Sep. 20-Oct. 2, 1991.
Rosenthal, Steve, "Mega Channels", pp. 36-46, Sep. 1993. (pp. 36 & 37 missing from copy).
Rousseau, B., "Publishing on the Web", Presented at the CERN School of Computing, Aries, France, pp. 279-293, Aug. 20-Sep. 2, 1995.
"Royalty Demands Anger Firms", *San Jose Mercury News*, 1 page, unknown date.
Saal, Harry J., "Think the info higway is great? Baby, you ain't seen nothing yet", *San Jose Mercury News*, Business Monday, p. 4D, unknown date.
Scharf, Ronald et al., "Using Mosaic for Remote Test System Control Supports Distributed Engineering", The Second International WWW Conference WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW/scharf/scharf.html, 8 pages, Oct. 17-19, 1994.
Schroeder, Michael D., "A State-of-the-Art Distributed System: Computing with BOB", appears in Chapter 1, *Distributed Systems*, Addison-Wesley/ACM Press, 1993 (no month).
Stefanac, Suzanne, Surfing the TeleNet in 2008, *NewMedia*, pp. 40-41, Sep. 1993.
Story, Guy A. et al., "The RightPages Image-Based Electronic Library for Alerting and Browsing", *COMPUTER*, vol. 25, No. 9, pp. 17-26, Sep. 1992.
Sullivan, Kristina B, "Vendors to push multimedia wares at CD ROM show" at CD-ROM Expo in Washington D.C., *PC Week*, vol. 8, N40, p. 28, Oct. 7, 1991.
"Sun joins $1 billion alliance", *San Jose Mercury News*, 1 page, unknown date.
Suryaraman, Maya, "Internet access for schools is nearer", *San Jose Mercury News*, pp. 1A and Back Page, date unknown.
Tanaka, Jennifer et al, "A (Free and) Easy Guide to the Web", *Newsweek*, p. 44, Mar. 20, 1995.
Thomas, Christoph G., "BASAR: A framework for integrating agents in the World Wide Web" *IEEE Computer*, pp. 84-86, May 1995.
Towsend, Carl et al., *Microsoft Office/Access*, QUE Computer Publishing, pp. 615-618, 646-658. 670-679, 1994 (no month).
Varela, Carlos A. et al., "Providing Data on the Web: From Examples to Programs", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/SDG/IT94/Dday/varela/paper.html, 10 pages, Oct. 17-19, 1994.
Varela, Carlos A. et al., "Zelig: Schema—Based Generation of Soft WWW Database Applications", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994.
Veljkov, Mark et al., *Pocket Guides To The Internet: vol. 2: Transferring files With File Transfer Protocol*, Mecklermedia, pp. 11-17, 1994.
Verity, John W. et al., "How the INTERNET will change the way you do business", *Business Week*, Cover Story, pp. 80-88, Nov. 14, 1994.
Volpentestra, A, "A Multimedia Bulletin Board in WWW environment", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW/volpentesta/giuda.html, 4 pages, Oct. 17-19, 1994.
Wagner, Mitch, "Law Firm's Verdict On Internet Is Unanimous", *Open Systems Today*, pp. 84-85, Nov. 28, 1994.
Weibel, Stuart et al, "An Architecture for Scholarly Publishing on the World Wide Web", The Second International

WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Pub/weibel/weibel_www_paper.html, 7 pages, Oct. 17-19, 1994.

Welch, Peter D. et al., The Internet's World Wide Web and the Simulation Community A Surfing Lesson for Beginners, *ACM*, pp. 1329-1332, Winter 1995.

Whitehead, Steven D., "Auto-FAQ: an experiment in cyberspace leveraging", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Agents/whitehead/whitehead.html, 5 pages, Oct. 17-19, 1994.

Willard, K. E. et al., "W3 Based Medical Information Systems vs Custom Client Server Applications", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/UMHC_www/UMHC_paper.html, 10 pages, Oct. 17-19, 1994.

Yamamoto, Kazu, "(Ipng 7052) new multi-home technologies", [Internet] cs-ipy6.lancs.ac.uk/ipv6/mail-archive/1Png/1999-02/0045.html, 7 pages, Jan. 13, 1999, printed Feb. 16, 2005.

Young, Degi et al., "A Graphical Filter/Flow Representation of Boolean Queries: A Prototype Implementation and Evaluation", *Journal of the American Society for Information Science* (*JASIS*), vol. 44, No. 6, 327-339, Jul. 1993.

Young, Stephen et al., *Claris MacProject® II*, pp. 1-137, unknown date.

* cited by examiner

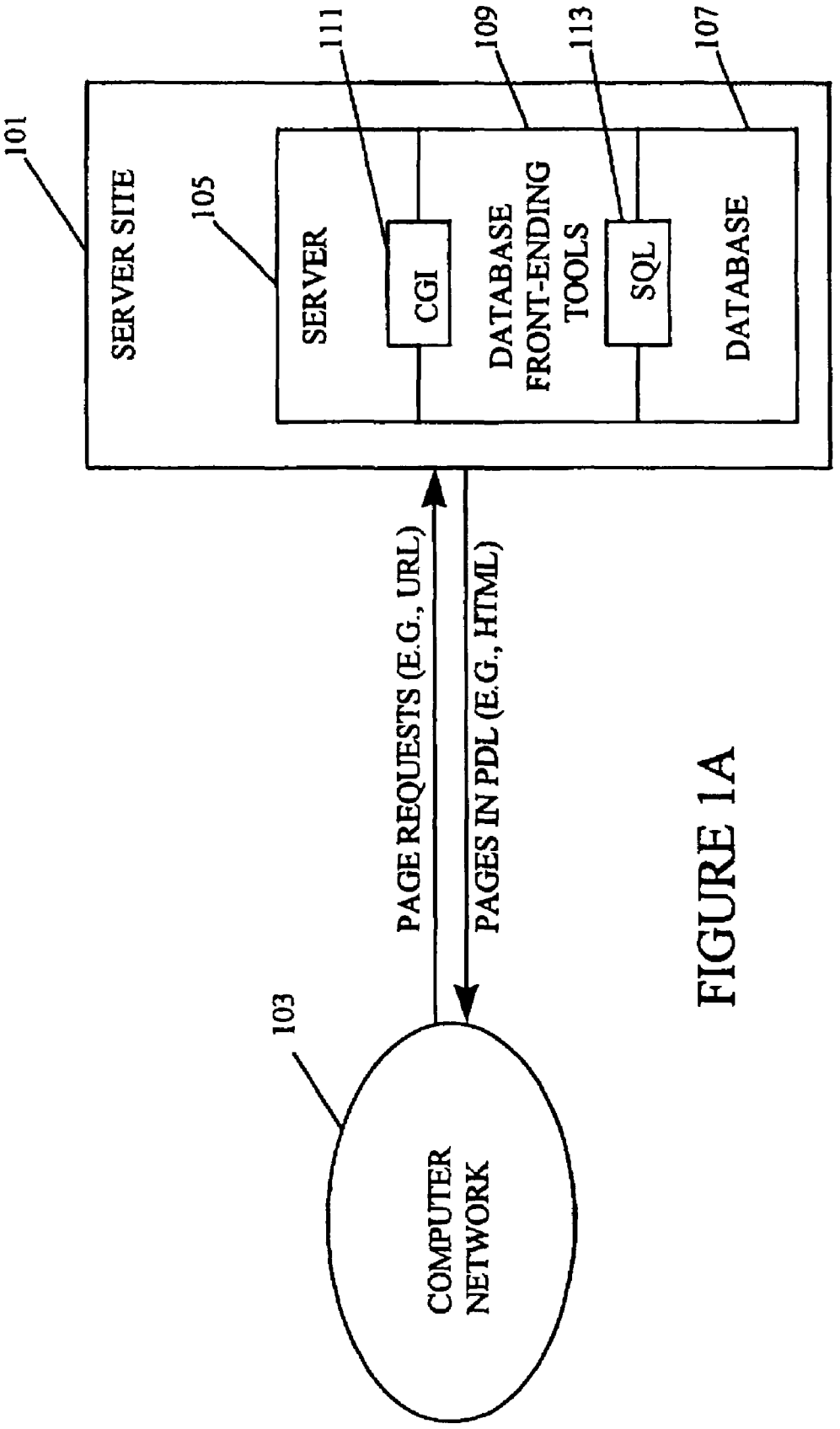

101
SERVER SITE
105
SERVER
111
CGI
109
DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1A

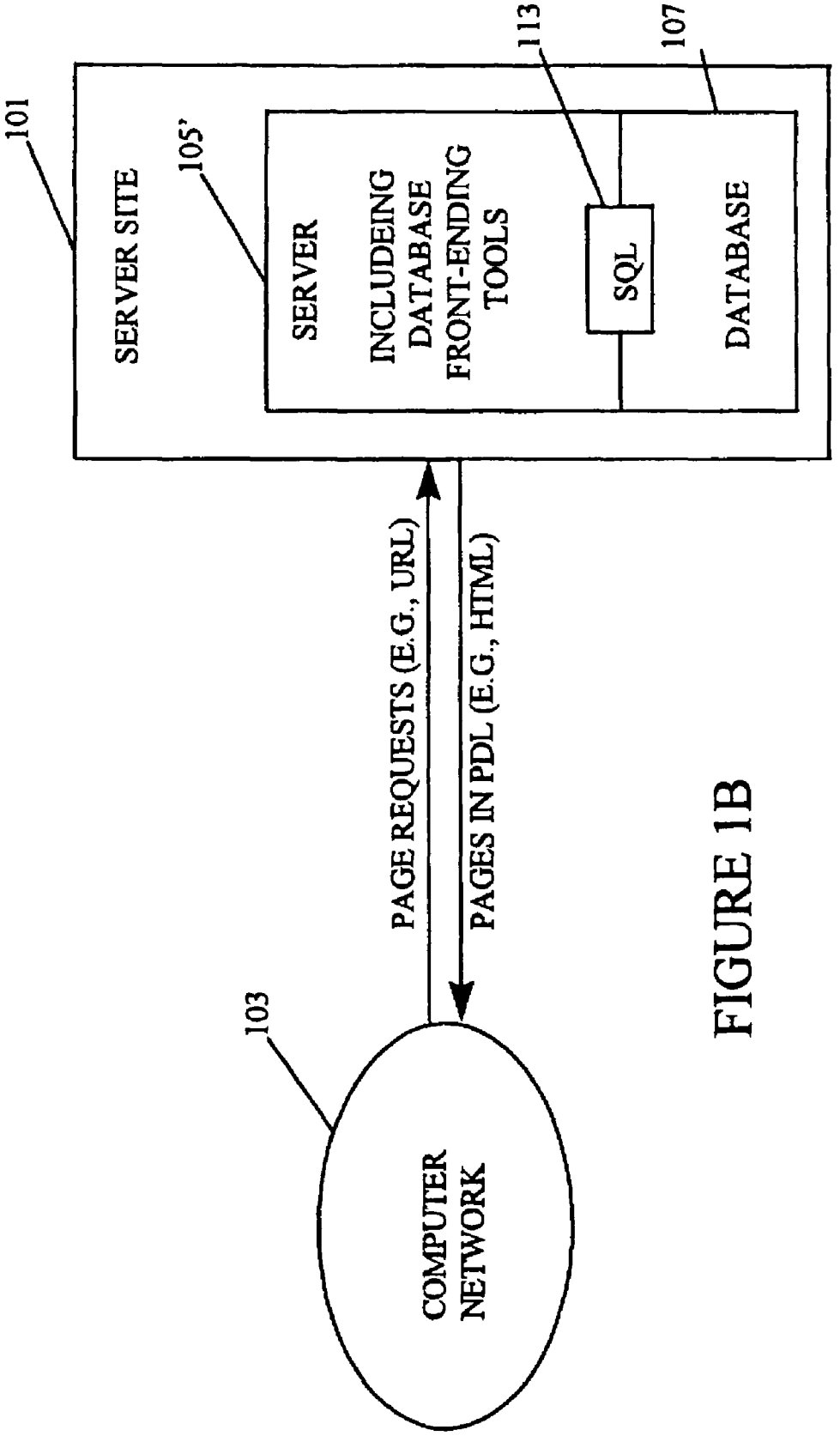

101
SERVER SITE
105'
SERVER
INCLUDEING DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1B

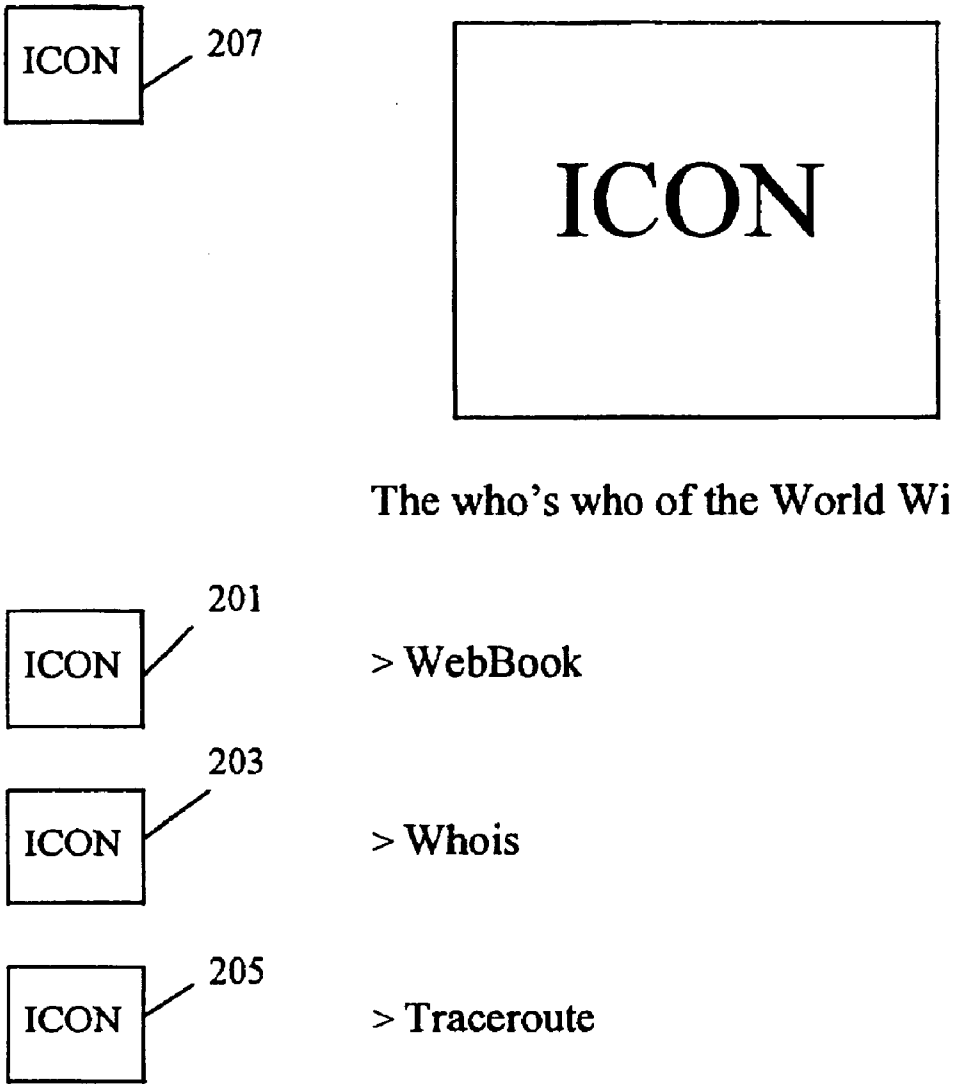

ICON
207
ICON
The who's who of the World Wide Web
201
ICON
> WebBook
203
ICON
> Whois
205
ICON
> Traceroute
This page is brought to you by the guys from _____. Intelligent Computing for the Internet from The Internet Solution Provider.
(C)1995 SRMC.

FIGURE 2A

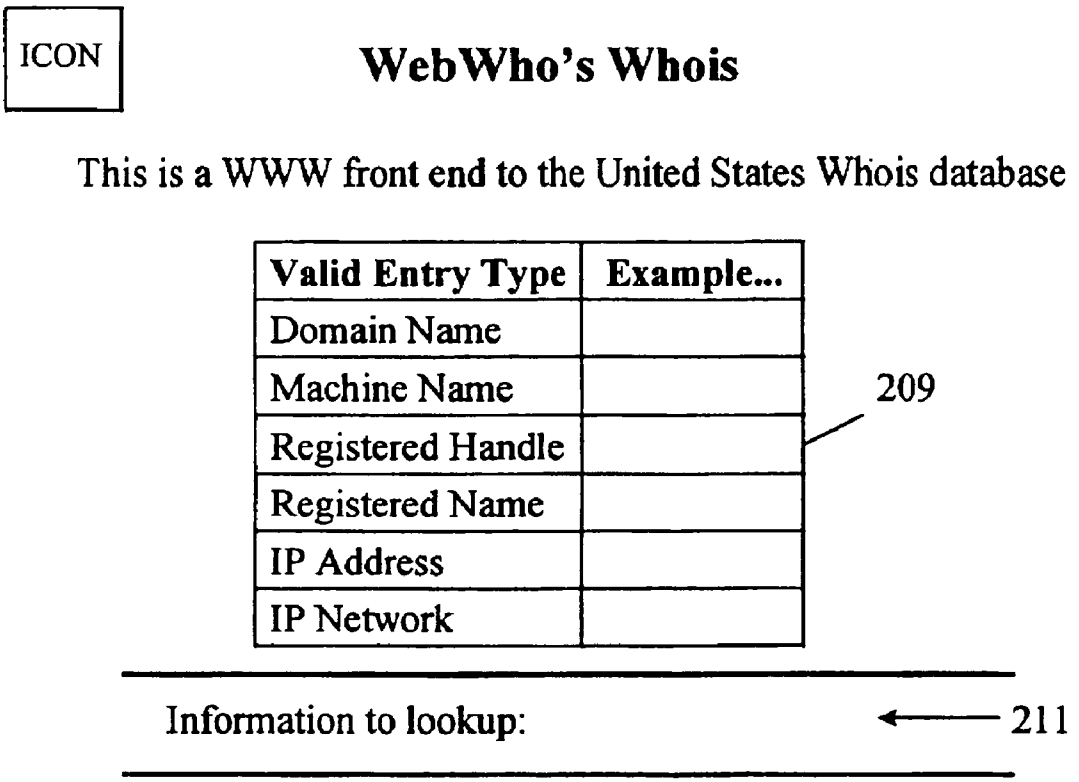

ICON
WebWho's Whois
This is a WWW front end to the United States Whois database
Valid Entry Type
Example...
Domain Name
Machine Name
Registered Handle
Registered Name
IP Address
IP Network
209
Information to lookup:
211

FIGURE 2B

Scientific Research Management Corp. (SRMC-DOM)
1714 Ringwood Avenue
San Jose, CA 95131

Domain Name: SRMC.COM

Administrative Contact:
Lyke, Howie (HL39) (No mailbox)
408 437-1800
Technical Contact, Zone contact:
Coley, Chris (CC339) ccoley@SRMC.COM
408 437-1800

215

213

Record last update on 04-Jun-95
Record created on 13-Dec-94

Domain servers in listed order:

NS.SRMC.COM	205.138.192.10
CASD.SRMC.COM	205.138.192.252
SWEB.SRMC.COM	205.138.192.253
SMAIL.SRMC.COM	205.138.192.254

The InterNIC Registration Services Host contains ONLY Internet information (Networks, ASN's, Domains, and POC's). Please use the whois server at nic.ddn.mil for MILNET Information.

FIGURE 2C

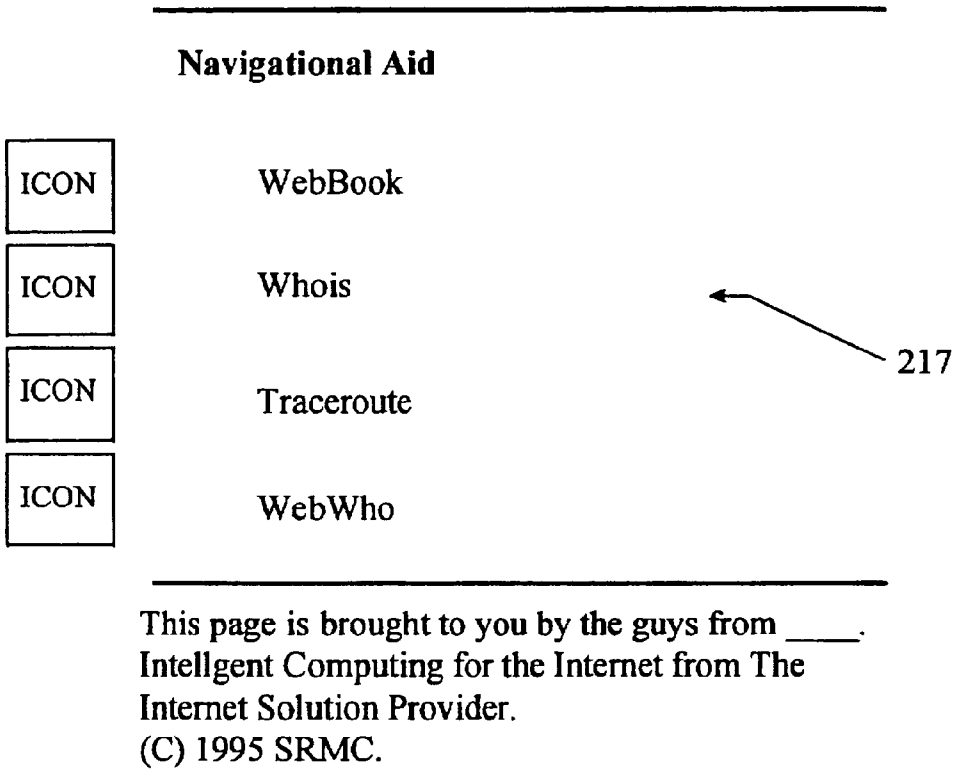

Navigational Aid
ICON
WebBook
ICON
Whois
ICON
Traceroute
ICON
WebWho
217
This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The Internet Solution Provider.
(C) 1995 SRMC.

FIGURE 2D

WebWho's Traceroute

This is a WWW front end to the Traceroute utility
Enter the hostname or an address to trace a route to.

Host to traceroute to: 219

tracerpite to rs.internic.net (198.41.0.6), 30 hops max, 40 byte packets
1 r001-t3.srmc.com (205.138.192..1) 2ms 2ms 1ms
2 204.70.48.49 (204.70.48.49) 20ms 116ms 83 ms
3 core-fddi-0.Bloomington.mci.net (204.70.2.129) 186 ms 27 ms 268ms
4 core1-hssi-2.LosAngeles.mci.net (204.70.1.141) 19ms 26ms 19ms
5 core-hssi-3.Washington.mci.net (204.70.1.178) 335ms 245ms 348ms
6 border1-fddi-0.Washington.mci.net (204.70.2.2) 87ms 87ms 86ms
7 suranet-wtn-ds3.Washington.mci.net (204.70.56.6) 87ms 88ms 87ms
8 wtn9-wtn8-cf.sura.net (128.167.7.9) 88ms 87ms 88ms
9 netsol-wtn9-cl.sura.net (192.221.63.90) 92ms 93ms 90ms
10 rs1.internic.net (198.41.0.6) 90ms 90ms 94ms

FIGURE 2E

Navigational Aid

ICON	WebBook
ICON	Whois
ICON	Traceroute
ICON	WebWho

This page is brought to you by the guys from _____.
Intellgent Computing for the Internet from The Internet Solution Provider.

FIGURE 2F

WebBook

☒ - Search

☒ - Add

☒ - Update

☒ - Change password

☒ - Login

FIGURE 2G

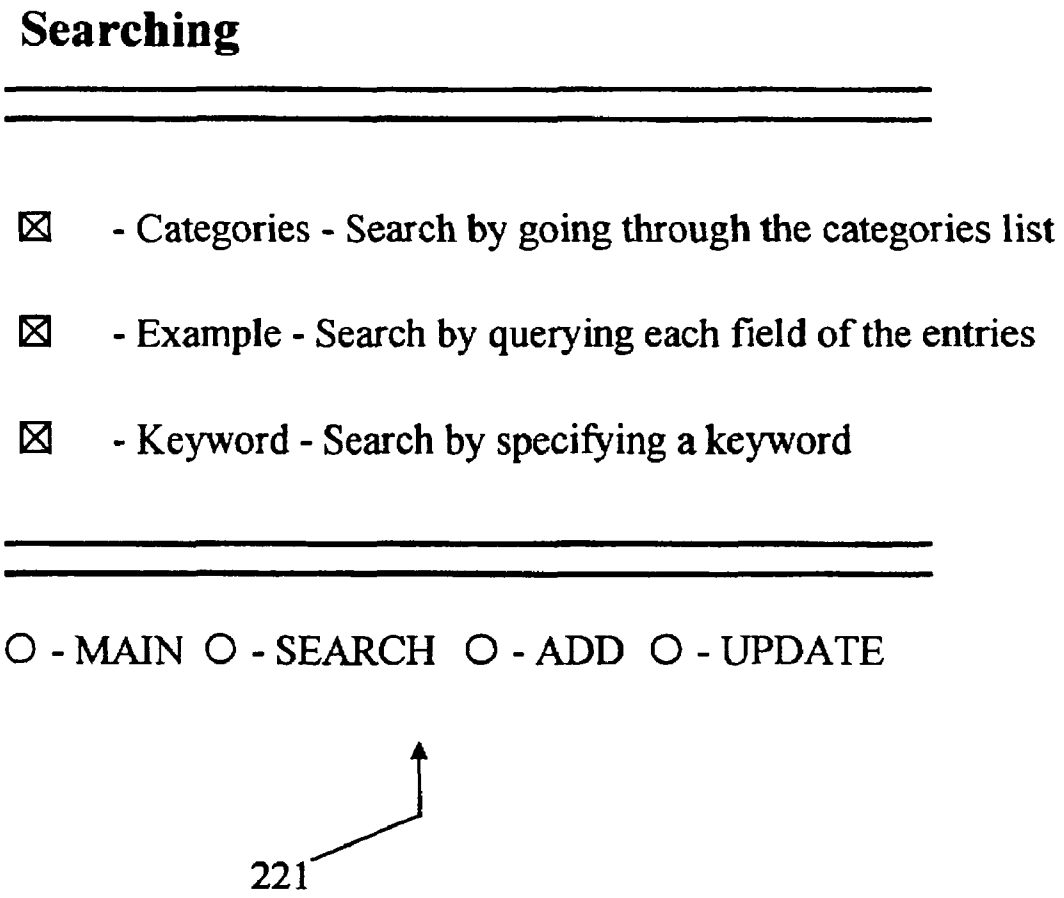

Searching
☒ - Categories - Search by going through the categories list
☒ - Example - Search by querying each field of the entries
☒ - Keyword - Search by specifying a keyword
O - MAIN O - SEARCH O - ADD O - UPDATE
221

FIGURE 2H

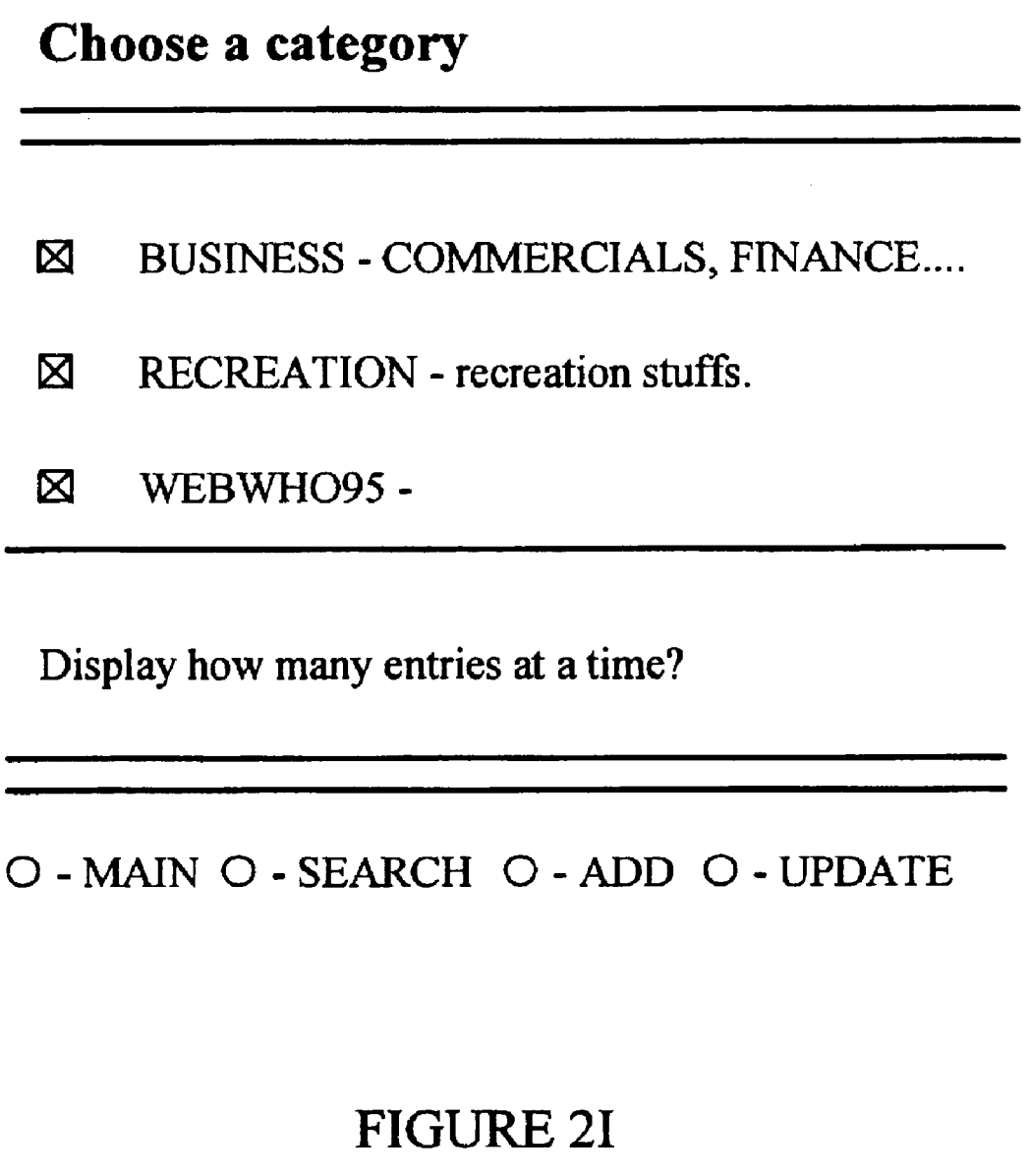

Choose a category
☒ BUSINESS - COMMERCIALS, FINANCE....
☒ RECREATION - recreation stuffs.
☒ WEBWHO95 -
Display how many entries at a time?
O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2I

Choose a category

WEBWHO95

Sub-categories:

☒ INDEX -

Display how many entries at a time?

9250 entries available!

9240 entries more

- O -Topographical Pictures
- O -Xtoys
- O -Index - The SoftSource Files
- O -Computer ESP
- O -Against Computer/Video Games
- O -Arrgh! The Entertainment Page
- O -CD-ROM Network
- O -Complete Gaming HeadQuarters
- O -Digital Nostalgia
- O -EINet's Gaming Resource

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2J

Enter any field you want to search

Title:

First Name: Last Name:

Middle Name: (optional)

Phone#:

Address:

City: State:

Zipcode: Country:

Email:

URL:

Display how many entries at a time?

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2K

Submit a new entry to WebWho

Title: (The way you want your entry to appear in WebWho)

Name: (The way it appears on your credit card)

First Name: Last Name:

Middle Name:(optional)

Phone#1:

Phone#2(optional): Fax:(optional)

Address:

City: State:

Zipcode: Country:

Email:

URL#1:(optional)

URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2L

Choose a category

BUSINESS

☒ BOOKSTORE -STORE THAT SELLS BOOKS
☒ COMPUTER -COMPUTER COMPANIES.
☒ REAL ESTATE -BUYING AND SELLING PROPERTIES.
☒ WEDDING DESIGN -PLAN AND CORRDINATE WEDDINGS.

Or define your own

Category:

Description:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2M

ANNE HOGAN PERRY REALTOR

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

Name: Perry, Anne H
Phone#1: 8087352411
Phone#2:
Fax:
Address: 4211 WALALAE AVENUE SUITE 100
City: HONOLULU State: HI
Zipcode:96816 Country: USA

FIGURE 2N

Email: aperry@warrall.com

URL#1: http://www.worrall.com/estate/estate.shtml

URL#2: http://www.worrall.com/estate/estate.shtml

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 20

Edit your post, then press UPDATE

Title: (The way you want your entry to appear in WebWho)

Name: (The way it appears on your credit card)

First Name: Last Name:

Middle Name:(optional)

Phone#1:

Phone#2(optional): Fax:(optional)

Address:

City: State:

Zipcode: Country:

Email:

URL#1:(optional)

URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2P

Press BACK to edit the keywords and comments again. Otherwise, press the change button if you want to change category, or press the done button to update your entry.

The keywords you have entered are:

keyword1: HAWAII
keyword2: REALTOR
keyword3: HONOLULU
keyword4: REALESTATE
keyword5: OCEAN
keyword6: FRONT
keyword7: BROKER
keyword8: PROPERTIES
keyword9:
keyword10:
keyword11:
keyword12:
keyword13:
keyword14:
keyword15:
keyword16:
keyword17:
keyword18:
keyword19:
keyword20:

FIGURE 2Q

The following description will be displayed with your entry

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

O - Change categories O - Done update

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2R

Please enter the identification number of this post

identification number:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2S

Your post has been updated. Thank you!

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2T

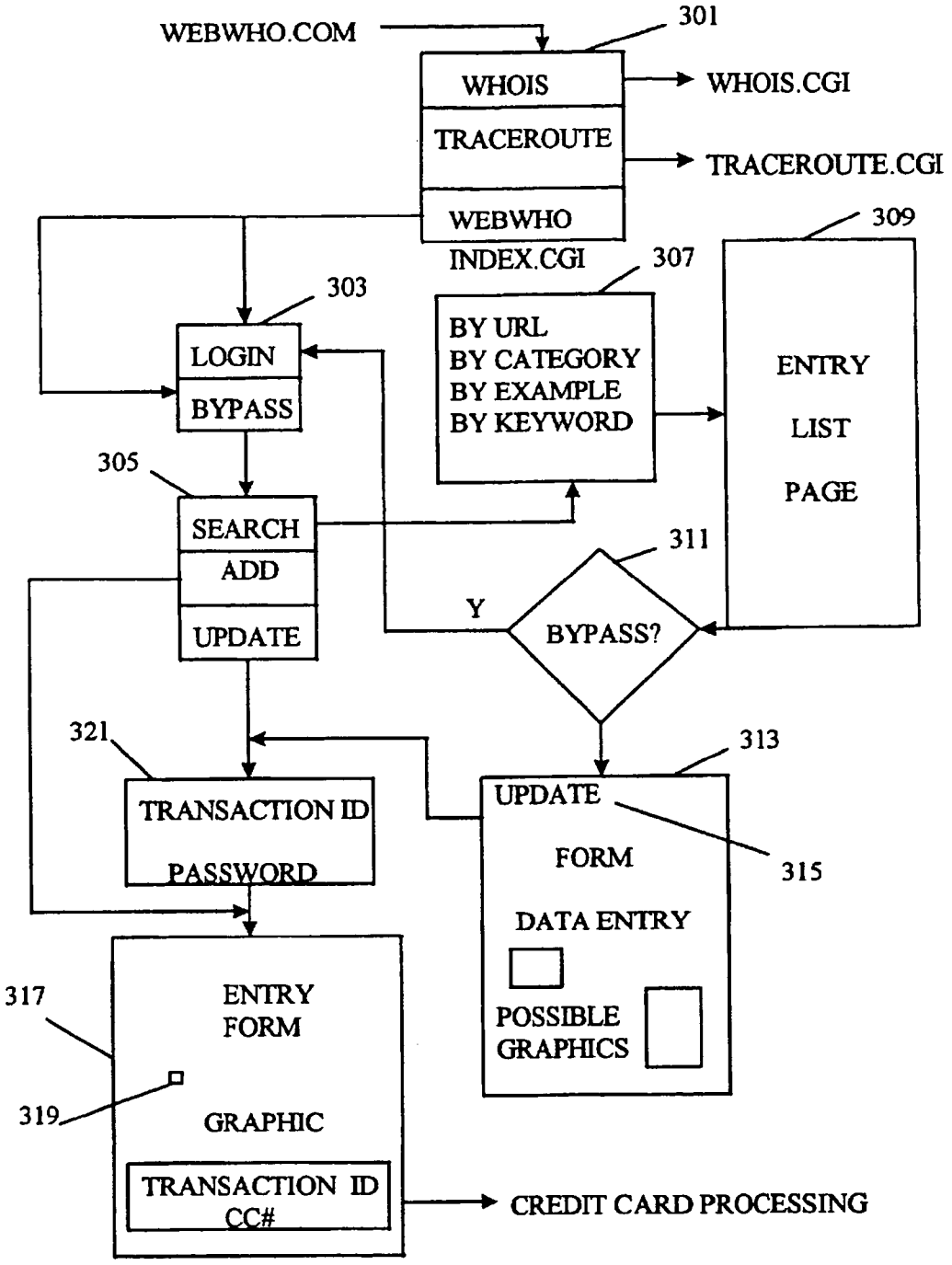

WEBWHO.COM
301
WHOIS
WHOIS.CGI
TRACEROUTE
TRACEROUTE.CGI
WEBWHO
INDEX.CGI
309
307
303
LOGIN
BYPASS
BY URL
BY CATEGORY
BY EXAMPLE
BY KEYWORD
ENTRY
LIST
PAGE
305
SEARCH
ADD
UPDATE
311
Y
BYPASS?
321
313
TRANSACTION ID
PASSWORD
UPDATE
FORM
DATA ENTRY
315
POSSIBLE
GRAPHICS
317
ENTRY
FORM
319
GRAPHIC
TRANSACTION ID
CC#
CREDIT CARD PROCESSING

FIGURE 3

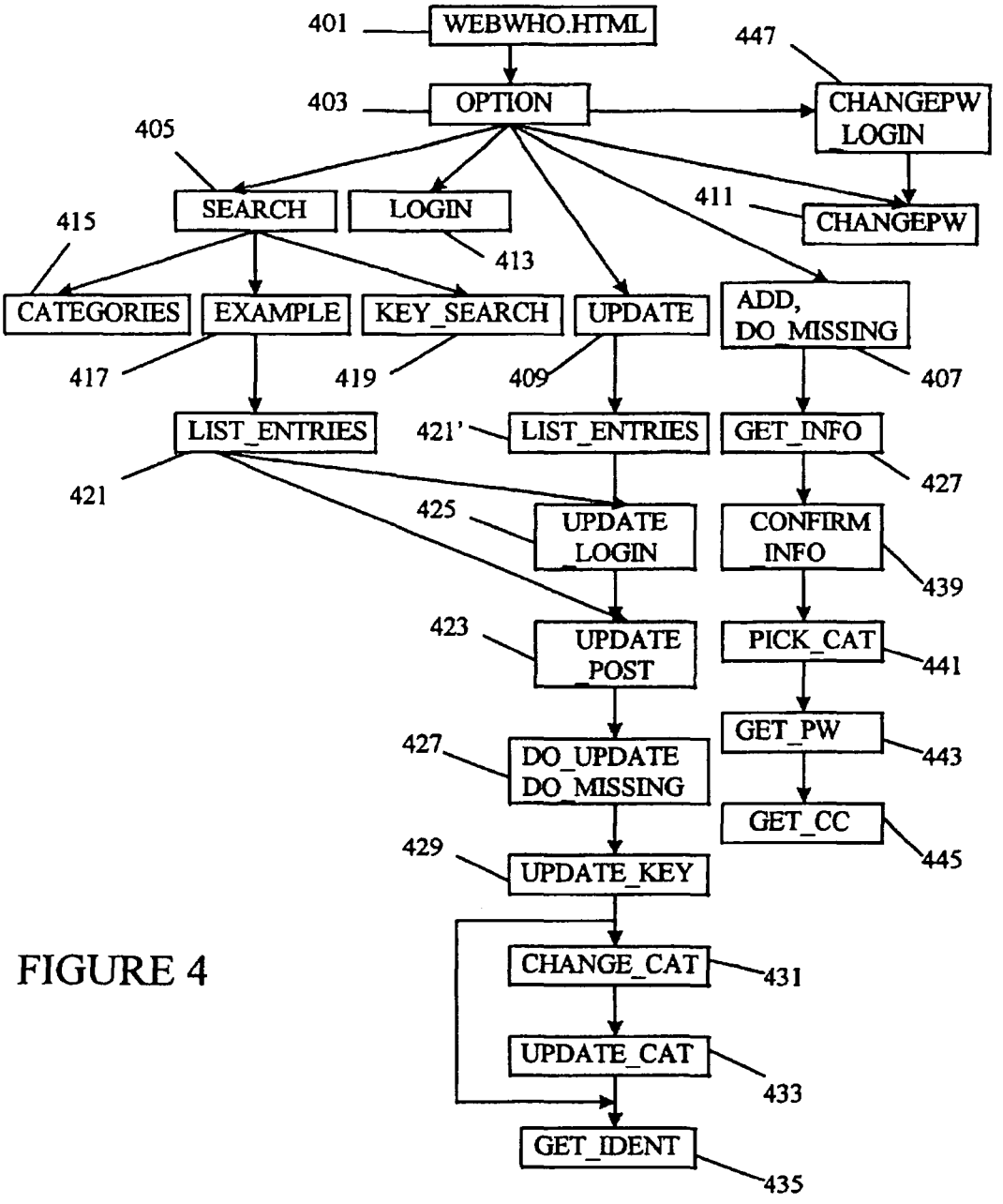

401
WEBWHO.HTML
447
403
OPTION
CHANGEPW_LOGIN
405
SEARCH
LOGIN
411
CHANGEPW
415
413
CATEGORIES
EXAMPLE
KEY_SEARCH
UPDATE
ADD, DO_MISSING
417
419
409
407
LIST_ENTRIES
421'
LIST_ENTRIES
GET_INFO
427
421
425
UPDATE_LOGIN
CONFIRM_INFO
439
423
UPDATE_POST
PICK_CAT
441
GET_PW
427
DO_UPDATE DO_MISSING
443
GET_CC
429
UPDATE_KEY
445
CHANGE_CAT
431
UPDATE_CAT
433
GET_IDENT
435

FIGURE 4

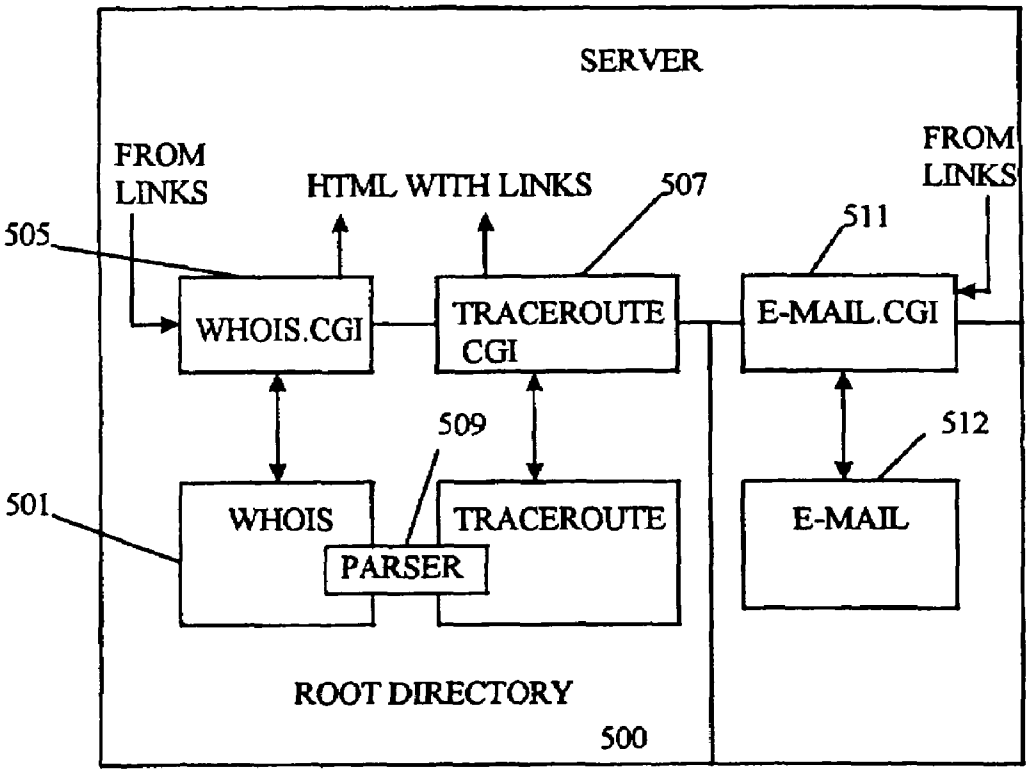

SERVER
FROM LINKS
HTML WITH LINKS
507
FROM LINKS
505
511
WHOIS.CGI
TRACEROUTE CGI
E-MAIL.CGI
509
512
501
WHOIS
TRACEROUTE
PARSER
E-MAIL
ROOT DIRECTORY
500

FIGURE 5

METHOD AND APPARATUS FOR PROVIDING A DYNAMICALLY-UPDATING PAY-FOR-SERVICE WEB SITE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 10/703,823, filed Nov. 7, 2003, which is a continuation of U.S. patent application Ser. No. 09/952,985, filed Sep. 14, 2001 now U.S. Pat. No. 6,850,940, which is a continuation of U.S. patent application Ser. No. 09/110,708, filed Jul. 7, 1998, now issued as U.S. Pat. No. 6,324,538, which is a continuation of U.S. patent application Ser. No. 08/572,543, filed Dec. 14, 1995, now issued as U.S. Pat. No. 5,778,367.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to on-line services, particularly to services for the World Wide Web.

2. State of the Art

The Internet, and in particular the content-rich World Wide Web ("the Web"), have experienced and continue to experience explosive growth. The Web is an Internet service that organizes information using hypermedia. Each document can contain embedded reference to images, audio, or other documents. A user browses for information by following references. Web documents are specified in HyperText Markup Language (HTML), a computer language used to specify the contents and format of a hypermedia document (e.g., a homepage). HyperText Transfer Protocol (HTTP) is the protocol used to access a Web document.

Part of the beauty of the Web is that it allows for the definition of device-, system-, and application-independent electronic content. The details of how to display or play back that content on a particular machine within a particular software environment are left to individual web browsers. The content itself, however, need only be specified once. In some sense, then, the Web offers the ultimate in cross-platform capability.

Pre-existing collections of information, however, such as databases of various kinds, can rarely be placed directly on the Web. Rather, gateway programs are used to provide access to a wide variety of information and services that would otherwise be inaccessible to Web clients and servers. The Common Gateway Interface (CGI) specification has emerged as a standard way to extend the services and capabilities of a Web server having a defined core functionality. CGI "scripts" are used for this purpose. CGI provides an Application Program Interface, supported by CGI-capable Web servers, to which programmers can write to extend the functionality of the server. CGI scripts in large part produce from non-HTTP objects HTTP objects that a Web client can render, and also produce from HTTP objects non-HTTP input to be passed on to another program or a separate server, e.g., a conventional database server. More information concerning the CGI specification may be accessed using the following Universal Resource Locator (URL): http://hoohoo.ncsa.uiuc.edu/cgi/interfac.html

With the explosive growth of the Web, fueled in part by the extensibility provided by CGI scripts, the need for "finding aids" for the Web, i.e., tools to allow one to find information concerning a topic of interest, has grown acute. Many hardcopy volumes are presently available that are represented to be "White Pages" or "Yellow Pages" for the Web. Of course, hard copy information becomes rapidly out of date, and in the case of the Web, is out of date before it is even printed (let alone distributed), in the sense of failing to list many interesting resources newly made available on the Web.

The only effective solution is to have such finding aids be on-line, available on the Web itself. One such finding aid is a class of software tools called search engines. Search engines rely on automated Web-traversing programs called robots or spiders that follow link after link around the Web, cataloging documents and storing the information for transmission to a parent database, where the information is sifted, categorized, and stored. When a search engine is run, the database compiled through the efforts of the robots and spiders is searched using a database management system. Using keywords or search terms provided by the user, the database locates matches and possibly near-matches as well.

An example of one such search engine is known as Yahoo, offered by Yahoo! Corporation of Mountain View, Calif., and may be accessed at the URL http://www.yahoo.com. Persons having pages on the Web, rather than simply waiting to have their Web page be found by a robot or spider, can also have their Web page listed in the Yahoo database by providing information concerning the resource they wish to list and paying a fee. The result is an on-line-searchable directory of Web resources that is regularly updated.

While such services are indeed extremely useful, nevertheless, from the standpoint of a person wishing to publicize their Web site, they are typically attended by a number of drawbacks. In particular, the person wishing to publicize their Web site typically has very limited control of the content of the resulting listing. Submissions, including textual description and suggested categories, are often subjected to editorial control that may range from strict to arbitrary. As a result, a listing may be placed under an entirely different category from the category intended by the person making the submission. Furthermore, the textual description may be heavily edited (in some instances almost beyond recognition)—or even deleted—depending on the exaction of the editor. Because of this editorial process, posting of the listing is not immediate. Furthermore, once the listing has been posted to the database, if the person making the listing later wishes to change the listing in some respect, the change must again pass through the same laborious channel. Hence, the process of adding and updating listings is inconvenient and unsatisfactory.

Moreover, the nature of the listing is rather prosaic. The listing is in title/brief-description format and does not include graphical elements or otherwise appeal to the artistic sensibilities of the viewer. In this sense, the listing is comparable to the standard telephone book listing, which appears in plain text, nothing added, as compared, say, to a quarter-page advertisement with custom artwork and the like.

To use the foregoing service, one is required have a Web homepage. If a user has no Web presence but wishes to establish one, the foregoing service is entirely unavailable. The typical user must first establish a Web presence by paying a Web consultant to produce a homepage and then paying an Internet Service Provider to house that homepage on the Web. This undertaking can prove to be quite costly for an individual or a small business.

What is needed, then, is an information service that overcomes the foregoing disadvantages.

SUMMARY OF THE INVENTION

The present invention, generally speaking, uses a computer network and a database to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password.

Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made at any time thereafter. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

Because the user controls both the content of an entry and the manner in which it is classified, the database functions as a directory to allow the Web public to quickly and precisely find current and accurate data about the user, the user's products and services, etc., without requiring the user to have a conventional Web homepage. The user's mini homepage can be included in many different categories, with the user having the flexibility to change the categories or the descriptive content of the page at any time. Preferably, hyperlink services are also provided, by including within the page links to an E-mail address or to one or more other conventional homepages (or other mini homepages). The E-mail address may be a private E-mail address established on the host machine, avoiding the need to obtain a conventional E-mail address. An inexpensive way is therefore provided to set up a Web site with key information that might otherwise be very costly to widely distribute, and to achieve an Internet presence with a minimum of effort and expense.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be further understood from the following description in conjunction with the appended drawing. In the drawing:

FIGS. **1**A and **1**B are simplified block diagrams of alternative embodiments of the system of the present invention;

FIG. **2**A through FIG. **2**T are screen shots showing use of the system and method of the present invention;

FIG. **3** is a flowchart of the operational steps involved in the present system and method;

FIG. **4** is a block diagram showing various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships; and

FIG. **5** is a simplified block diagram showing the manner in which whois and traceroute services are made readily available through HTML front-ending and augmented with hyperlink services.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. **1**A, there is shown a simplified block diagram of the system of the present invention. A server site **101** is connected to the computer network **103** such as the Web or a Wide Area Network (WAN) other than the Web. At the server site, server software runs on a suitable server platform. In the case of the Web, for example, the server of FIG. **1**A might be a server available from the National Center for Supercomputing Applications (NCSA), or a secure server package of a known, commercially-available type, running on a super-minicomputer such as a SunServer machine available from Sun Microsystems of Menlo Park, Calif., or on any of a wide variety of suitable UNIX platforms. Also running, either on the same machine or a network-accessible machine, is a database management system **107**. Preferably, the database management system **107** supports Standard Query Language, or SQL. One suitable database management system is MiniSQL, which is also commercially available.

SQL databases, however, are not inherently "Web-friendly." Accordingly, a variety of HTML front-ending tools **109** are provided which run as extensions to the server software, allowing computer network users to each add entries to a database, search entries in the database, and update entries by that particular user, all using the Web (or a Web-like) graphical user interface. The server software and the HTML front-ending tools communicate through the Common Gateway Interface **111**. In accordance with another embodiment, shown in FIG. **1**B, the HTML front-ending tools may be fully integrated with the server software. The HTML front-ending tools and the database communicate through SQL (**113**).

When a network user visits the server site, the user is served a main page in a page description language such as HTML. The user interacts with the page, making selections or requests. These selections or requests, although they may not appears as such to the user, are in effect page requests, e.g., URLs that access a page directly or that call a CGI script to perform some sort of processing. The result of the selection or request may be a page eliciting a further selection or request, or may be contain the desired information itself.

In order to convey the manner in which the automated information service and directory is used, screen displays of the graphical user interface will now be described.

When a user first visits the site, he or she is presented with a main page as shown in FIG. **2**A. Along the side of the page are icons that may be clicked on to select different services. An icon **201** selects a "WebBook" service in which database entries may be searched, viewed and updated. An icon **203** selects a "WebWho Whois" service, providing a graphical front end to the United States Whois database, with additional hypertext link integration. An icon **205** selects the "WebWho Traceroute" service, providing a graphical front end to the Traceroute utility, again with additional hypertext link integration. An icon **207** in the top left shows the current page's icon and is not linked.

When the icon **201** is selected, the user is presented with a page like that shown in FIGS. **2**B, **2**C, and **2**D. At the top of the page appears a table **209** presenting examples of valid

entry types for Whois, i.e., Domain Name, Machine Name, Registered Handle, Registered Name, IP Address and IP Network. Next appears a text input field **211** to receive the information to be looked up. Next appears an example of the results of a specific lookup. The user has input his or her request, and results have been received back and displayed in a results area **213**. As described more fully below, links are embedded in the results such that, by clicking on an area **215** displaying ccoley@SRMC.COM, for example, an E-mail utility will be invoked showing a blank E-mail addressed to ccoley@SRMC.COM. Similarly, domain names, IP addresses, etc. may be clicked on, with the result that Whois is queried once again with respect to the selected information.

At the bottom of the page appears a Navigational Aid **217** used throughout the user interface where appropriate to allow the user to return directly to a particular entry point in the program flow without having to follow numerous links as is typical of the prior art.

When the icon **203** is selected, the user is presented with a page for the Traceroute utility like that shown in FIGS. **2**E and **2**F. The various features of the page will be evident from the preceding description. One feature, however, bears particular mention. That is, just as clicking a domain name or the like in Whois produces a further query, bringing up additional information, similarly, clicking on names or addresses in FIG. **2**C also produces a further query, not of Traceroute but of Whois. For example, if one wanted to find additional information about the machine on line number of 1 of FIG. **2**C, one could simply click on the IP address 205.138.192.1 displayed in the area **219**. This action would produce the same result as if the user had copied down the IP address, navigated to Whois and entered the IP address in the lookup field.

When the icon **205** is selected, the user is presented with a page like that shown in FIG. **2**G. The navigation aid previously described, although not shown in FIG. **2**G, may also be included if desired. The user is given the options of searching the database, adding a new entry, updating an existing entry, changing the user's password, or logging in. As described below, login is typically not required to view a listing of entries satisfying a particular search request, although login may be required to view an actual entry itself and is required to update an entry.

When the Search option is selected, the user is presented with a page like that shown in FIG. **2**H. Within WebBook, a different type of navigational aid **221** is included that allows the user to quickly move about within WebBook, between Search, Add and Update, or to go to the main page of FIG. **2**A. The screen of FIG. **2**H allows the user to select between different searching methods, including searching by Categories (going through a categories list), by Example (querying each field of the entries), and by Keyword (specifying a keyword).

When Categories is selected, the user is presented with a page like that shown in FIG. **2**I. In the example shown, three root-level categories are presented, BUSINESS, RECREATION, and WEBWHO95. The user selects one of these categories to show further subcategories, as seen in FIG. **23**, which is displayed in response to the user selecting WEBWHO95. A single subcategory is shown—INDEX, having 9250 entries. The entries are listed by title within the lower part of the page. The user may select how many entries are to be displayed at a time in order to quicken response time. Also, presorts are used in order to quickly display the results of a category or keyword search.

When Example is selected, the user is presented with a page like that shown in FIG. **2**K. The user enters the information to be searched in any field or combination of fields to be searched.

To add a new entry to the database, the user is presented with a page like that shown in FIG. **2**L. Each information item in the upper portion of the form is required, unless otherwise indicated. If a required item is not provided, the program will redisplay the form and request the user to complete all required items. Optional items include middle name, alternate phone number, fax number, URL#**1**, and URL#**2**.

The remainder of the form is used to enter up to twenty keywords and a description of the user's entry, to be displayed with the entry.

Following entry of keywords and a description of the entry, the user is requested to choose a category for the entry by presenting the user with a page like that shown in FIG. **2**M. The user can navigate the category tree until he or she has located the desired category and then select that category. If none of the categories is adequate, then the user may define his or her own category, by entering the name of the category and a short description of the category. The new category will then be added to the category tree.

A sample mini homepage is shown in FIG. **2**N and **2**O. The mini homepage may be located by searching the database and then selecting the corresponding entry, or may be retrieved directly by URL. The URL of the mini homepage itself should not be confused with URL#**1** and URL#**2** listed on the mini homepage. The latter refer to independent resources. The URL of the mini homepage itself is, for example, based on a unique transaction ID assigned to each entry and may be entered into a browser program to view the mini homepage directly without searching.

When Update is selected (FIG. **2**G), the user, having entered the correct transaction ID and password, is presented with a page like that shown in FIG. **2**P. The corresponding mini homepage is displayed, and the user is requested to update the mini homepage (the "post"). When the user has edited the entry to his or her satisfaction, the user presses UPDATE. The user is then presented with a further page like that shown in FIGS. **2**Q and **2**R, giving him or her the opportunity to review one final time the comments and keywords. To change the comments or keywords, the user presses BACK. The user can also change the category of the entry by pressing the Change category button. To accept and complete the update, the user presses a Done update button.

A page like that shown in FIG. **2**S is then presented. The user is required to enter the identification number of the post. If the identification number is entered correctly, the post is updated, and a page like that shown in FIG. **2**T is presented to the user, confirming the update.

Referring now to FIG. **3**, the operational steps involved in the present system and method are represented. The system is accessed either directly by the user or by following a link to the server site, for example the URL WebWho.com. The name WebWho.™ is a trademark of the present assignee.

The user is first presented with a page **301** (index.shtml) allowing the user to select from different services, including whois and traceroute. As described previously, whois is an Internet service that looks up information about a user in a database. Traceroute is a program that permits a user to find the path a packet will take as it crosses the Internet to a specific destination. Whois and traceroute are known services. Previously, however, use of these services has typically required "root-user access" on a UNIX host. In accordance with one aspect of the present invention, these

services are HTML front-ended and made available to all users, together with further hyperlink services that greatly increase the utility of the underlying whois and traceroute services.

Referring to FIG. **5**, whois and traceroute are made readily available to all network users through HTML front-ending using CGI scripts. The actual whois code **501** and traceroute code **503** remains within the root directory **500** on a UNIX host. Respective CGI scripts are provided, namely whois.cgi (**505**) and traceroute.cgi (**507**), that have root user privileges and that provide HTML front-ending between the user and their respective services. For example, when a user selects the WebWho Whois service from the main page of FIG. **2**A, the whois.cgi script **505** is invoked to pass the user input to the root directory whois service **501** and cause it to service the user's request. Output from the root directory whois service **501** is passed back from the whois.cgi script **505** in HTML format. The same description applies equally to the traceroute.cgi script and the root directory traceroute service.

To further augment the whois and traceroute services, hyperlink services are provided. The root directory whois and traceroute services are provided with a parsing routine **509** that parses the output of these services to identify E-mail addresses, domain names, IP names, etc.—character strings containing period separators and/or the character "@." The parser then passes back this information to the CGI scripts in the form of links, links to the whois.cgi script **505** in the case of names and links to an E-mail.cgi script **511** in the case of E-mail addresses. The E-mail.cgi script **511** controls an E-mail utility **513** that may be located in the root directory or in a different directory.

Whois and traceroute, as implemented as part of the present invention, provide powerful new tools for serious Internet tools. Using whois, the user may type in any address with a ".com", ".edu" or ".net" extension and find the physical address, phone number and the individual(s) that the address represents. This ability may be used as a powerful marketing tool to find a wealth of information about people on the Internet. Also, whois can be used to instantly check a domain name.

Traceroute may be used by System Administers to obtain information to make their jobs much easier. Previously, System Administrators have not been allowed to use traceroute on a PC running any operating system other than UNIX.

Whereas whois and traceroute are more technically oriented, "WebBook" allows non-technical users to take advantage of the capabilities of the Web with a minimum of effort. WebBook allows a user to have HTML-front-ended access to a database of mini homepages in order to search, add entries to, or update previous entries in the database.

Referring again to FIG. **3**, if WebBook is chosen, a login routine **303** may request the to enter identifying information of the type that would normally be found on a business card, for example. Presently, although Web sites are able to track the user's access point to the Web (for example, a particular slip connection through an Internet Service Provider), this information often gives no indication who the user really is. Such information is important in order to evaluate the extent to which a target audience is being reached.

The user may choose an option that allows the user to bypass the login request. The request for information as to the identity of the user therefore may or may not be complied with; moreover, the information provided may or may not be accurate. As an incentive to provide the requested information (and, it is hoped, the correct information), users providing the requested information may be given more complete access to the database than users who do not provide the requested information. Users providing the requested information are assigned a user ID to be used during subsequent accesses and are requested to choose a password. The password may be required to access some system services. To further encourage voluntary login, users that have complied with the login request and have been assigned a user ID may be afforded the ability to customize the user interface and maintain the resulting look and feel between uses. This customization is performed in a known manner by storing on the host a user preferences file and accessing the file to restore user preferences when a valid user ID is provided.

For a period during the initial stages of the service, while the database is still being built up, it may be desirable to allow all users complete access to the database regardless of whether or not they have identified themselves.

Following the login procedure, the user is provided with a page **305** presenting the different ways that the user may interact with the database. For example, a user may search the database, add a new entry to the database, or update a previous entry to the database by that user. Each of these options will be described in turn.

If the user chooses to search the database, the user is provided with a page **307** concerning different search options. A search may be performed on one or more of a number of different database fields, depending on the organization of the database entries. For example, in a preferred embodiment, the database entries include the following defined fields:

uid	country
fname	email
lname	url
mname	keywords
title	comment
ident	category
phone 1	active
phone 2	start.sub.--date
fax	expire.sub.--date
addr	info1 (Reserved)
city	info2 (Reserved)
state	info3 (Reserved)
zipcode	info4 (Reserved)

In one embodiment, searches may be performed by category, by keyword, by URL, or by example. To facilitate rapid retrieval of information, presorted listings may be stored for each category and keyword or for some number of the most common categories and keywords. To search by example, the user is provided with a form having the same organization as the database entries. The user fills in information in the fields of interest. The search then returns information concerning entries having matching information in those fields. Entries are displayed in list fashion by title on a page **309**.

The number of entries produced by a search may be very large. Therefore, instead of displaying a listing for all of the entries at once, the entries may be displayed ten at a time, for example. Alternatively, only the first 100 or 200 entries may be displayed.

While some sites may provide information and services free of charge, for example as a result of volunteerism or advertising subsidies, other sites may have a business model in which users are charged for information or services or both. For such a site, it becomes critical to protect the

information stored in the database. Therefore, unlike some existing databases in which actual hypermedia links to Web homepages are stored in the listed items, in order to prevent effectual pirating of the database, links are embedded only in the full entry itself, not in the entry listings. Otherwise a user could simply store a voluminous listing or various different listings, with their accompanying hypermedia links, and thereby capture in large part the entire benefit of the database. Instead, an item in a listing is intended only to give the user enough information to gauge the user's further interest in an item. If the user is interested in an item, the user may select that item, causing the full-page entry to be provided. The full page entry includes links to any E-mail address or URL that the owner of the entry may have provided, thereby providing a link to that person's or organization's homepage (or to some other homepage).

If the user bypassed login, as determined in step **311**, he or she will normally be returned to the login procedure when attempting to select an entry to view it in its entirety. If the user has logged in, then the user may select an entry and the corresponding full page **313** will be served to the user.

The full page entry **313** need not be limited to text alone but may be a complete hypermedia page, including possible graphics or other non-textual content. In this manner, for person's or organizations not having any independent Web homepage, the entry can function as a "mini-homepage," i.e., a single page hypermedia document. Furthermore, the mini-homepage may have its own URL, allowing it to be accessed directly without performing a search of the database. For example, a URL for a mini homepage might be http://webwho.com/view?id=xxxx, where xxxx represents a transaction ID assigned to each entry in a manner described below.

A link **315** is embedded in the mini-homepage to allow for the page to be updated. Prior to describing the manner in which the mini-homepage is updated, however, the manner of adding a new entry to the database will first be described.

In order to add an entry to the database, a user must login, during which the user chooses a password, or must have logged in during a previous visit to the site. When the user chooses to add a new entry to the database, a unique transaction ID is created for that entry, to be used throughout the life of the entry. A unique transaction ID may be created in any of many different ways. For example, the transaction ID might be the date (e.g., 951215) and the entry number for that date (e.g., 00215). Alternatively, the transaction ID might be the time of day (e.g., HHMMSS) and the process ID of the host machine process that is servicing the user's request. In one embodiment, the transaction ID is a 14-digit hexadecimal number in which eight digits represent the number of seconds since an arbitrary date (e.g., Jan. 1, 1970), four digits represent the process ID running on the host machine, and two digits represent a portion of the machine IP address (to distinguish between different host machines).

Once a transaction ID has been assigned, the user is then provided with an entry form **317** having fields corresponding to the various fields of a database entry as described previously. The user fills out the form and presses a screen button when the entry is complete. The form may have one or more checkboxes **319** to indicate the desire to include with the entry one or more non-textual elements, such as a graphic image, etc. Also, if desired, different templates may be provided governing the appearance of the finished page, with the user selecting a desired template.

Non-textual content may be obtained from the user in any of a number of different ways. For example, the user may transfer to the site a file containing the non-textual content using the File Transfer Protocol (FIP) with the same user ID and password as when the entry was added.

During the entry process, the user is prompted to enter keywords to facilitate later searching of the database and location of the entry. Furthermore, the HTML front-end tools may assist in developing keywords for the entry. A pre-searchtsort tool, for example, might take the 2000 top keywords found in the database within the keyword field and do a total text search throughout the database for these keywords. If one or more of these keywords appears in the description ("comment" field) of an entry but not in the keyword list, these keywords are then added to a keyword extension field for up to some number of keywords, e.g. five.

If the server site is based on a pay-for-service model, the form will also call for the user to enter a credit card number as the last piece of information. Secure, on-line credit card processing will then be performed to bill the user, either on a onetime basis, on a periodic basis, or on an occasional basis as future services may require. Although various methods of processing credit card transaction on-line have been proposed, with various degrees of attendant security, such processing is preferably performed in accordance with a proprietary method developed by the assignee to provide the highest level of security possible.

After an entry has been made, it may be updated at any time by one able to provide the transaction ID assigned to the entry and the user password, i.e., by the user or one acting on behalf of the user. The update option may be entered directly, or the entry to be updated may first be viewed as the result of a search and the update screen button **315** then pressed. The user is then prompted to supply the correct transaction ID and password (page **321**), failing which the user will not be allowed to update the entry.

If the transaction ID and password are correctly supplied, then the equivalent of a new entry form will be provided to the user will the current information pertaining to the entry already filled in. The user may then modify the entry. If a charge is made for updating the entry, preferably the credit card information from the earlier creation of the entry will have been stored in a highly secure fashion, avoiding the need to reenter the information. Both security and convenience are thereby enhanced.

Nothing in the process of adding, searching and updating entries requires manual intervention. Rather, the entire process is automated and may be made available continuously, 24 hours a day, 365 days a year. Like a publicly-accessible bulletin board, the content that is posted on the database is entirely within the control of the user, both at the time the entry is posted and all times thereafter.

Referring now to FIG. **4**, various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships will now be described.

When a user visits the site and the WebWho option is selected, a page WebWho.html (**401**) is served to the user, offering the user various options, including, for example, options to search the database, add a new entry, update an existing entry, change the user's password, or to log in if the user has not previously done so. In an exemplary embodiment, the routines illustrated in FIG. **4** are standard C routines, called from a single CGI script. In other embodiments, the routines may be called by separate scripts, and may be written other languages such as in a UNIX shell language, or in one of a number of emerging Internet computer languages such as Java.

The Options routine **403** reads in the user's choice and invokes one of the five following routines: Search (**405**),

Add (**407**), Update (**409**), Changepw (**411**), and Login (**413**). Each of these options will be described in turn.

If Search is chosen, the Search routine **405** initiates one of several possible search functions. In a preferred embodiment, these functions include a categories search, an example search, and a keyword search. According to the search function chosen, the Search routine invokes one of the following routines: Categories (**415**), Example (**417**), and Key.sub.—Search (**419**).

Categories are represented in computer memory in the form of a tree structure. A categories search starts from the root level, with the Categories routine **415** displaying all the categories available at that level, and all the entries (or up to some number of entries) belonging to that level. The user can click on any category to go to the next level, and can click on any entry to bring up the mini page of the entry.

If Example is chosen, the Example routine **417** displays a form for the user to fill in any field he or she wants to search on. The Example routine **417** reads in the information and displays all the entries that match what has been specified.

If Keyword is chosen, the Key.sub.—ysearch routine **419** displays text boxes to read in up to a specified number of keywords (e.g., four) to search on. The Key.sub.—search routine **419** displays all the entries that match the specified keywords.

When a user clicks on one of the entries returned by a search function, the mini page is displayed by a List.sub.—entries routine **421**. List.sub.—entries displays the mini page for a particular entry and also contains an update button for the user to update that particular entry.

When a user specifies that he or she wants to edit the entry currently being displayed, the Update routine **409** performs a check to see if that page belongs to the user currently logged in. If so, updating is initiated by invoking an Update post routine **423**. Otherwise, an Update.sub.—login routine **425** is called to allow the user to perform the correct login sequence. The Update.sub.—login routine **425** reads in a user ID and password and matches them against the database to determine if the user is the owner of the mini page currently being displayed. Updating is not allowed until the correct user ID and password are entered.

The Update-post routine **423** displays an entry form with values filled in from the information stored in the database. It invokes a Do.sub.—update routine **427** to process the new values being entered. The Do.sub.—update routine reads in the new information, makes sure that all the required information is filled. If not, a routine Do.sub.—missing is invoked. When all of the required information has been supplied, a Update.sub.—key routine **429** reads in the keywords and comments from the database entry, displays them, and asks the user to confirm. The user can go ahead and update the database or can change the category the entry currently belongs to.

If the user chooses to change the category, a Change-.sub.—cat routine **431** displays all the categories at the root level. The user can click on one of the categories to go to the next level or can specify a new category on the current level. If the user chooses to go ahead and update the database, another form is displayed to read in the identification number of the entry. A Get.sub.—ident routine **435** is then invoked. If the user chooses to change the category, an Update.sub.—cat routine **433** handles navigation through the categories tree. It will keep displaying the categories on the current level until the user has decided on a category or has specified a new category.

The routine Get.sub.—ident **435** reads in the identification number and matches it against the identification number stored in the database for the current entry. If they match, the database is updated; otherwise, the program declines the update.

Entries may also be updated directly without searching, using the Update routine **409**. If a user is currently logged in, the Update routine **409** displays all the entries belonging to that user. Otherwise, the Update.sub.—login routine **425** performs a login and displays all the entries belonging to the newly logged-in user. The remaining update routines have already been described as a continuation of the search options and will therefore not be further described.

When Add is selected, the Add routine **407** displays an empty form to allow the user to fill in all the information. The Add routine **407** processes the information that has been entered, using the Do.sub.—missing routine to make sure that all the required information is entered. The Do.sub.—missing routine displays the form again until all the required information is entered.

After all the required information has been entered, a Get.sub.—info routine **437** displays another form to read in the keywords and comments. A Confirm.sub.—info routine **439** processes the keywords and comment being entered and displays them again, asking the user to confirm. After the user confirms the keywords and comments, a Pick.sub.—cat routine **441** acquires the category using the same mechanism previously described in relation to Update.sub.—cat. If the user is not logged, in he or she is logged in, and a new user ID is determined. A form is then displayed to read in the user's password. A Get.sub.—pw routine **443** reads in the password and displays a form to read in credit card information. A Get.sub.—cc routine **445** verifies the credit card information. If the transaction is authorized, it adds the new entry into the database; otherwise, it rejects the entry.

The remaining routines are administrative in nature. The user may wish to change his or her password. If the user is not currently logged in, a login is performed by calling a Changepw.sub.—login routine **447**. Changepw.sub.—login reads in the user ID and password and matches them against the values in the database. A form is then displayed to read in the new password. The Changepw routine **411** actually updates the database with the new password.

The Login routine **413** reads in the user ID and password and checks them against the database. If the user ID and password are correct, operation begins at the main page with the user logged in as the new user.

It will be appreciated by those of ordinary skill in the art that the invention can be embodied in other specific forms without departing from the spirit or essential character thereof. The foregoing description is therefore considered in all respects to be illustrative and not restrictive. The scope of the invention is indicated by the appended claims, and all changes which come within the meaning and range of equivalents thereof are intended to be embraced therein.

The invention claimed is:

1. A web server for providing a dynamically-updating pay-for-service web site comprising:

a web server coupled to a computer network having a database operatively disposed within and accessible on said network, said server comprising:

an HTML front-end entry process configured to:

create and store personal homepage content in a database for a owner;

receive a fee from said owner for making said personal homepage accessible on said network; and

an HTML front-end update process configured to allow said owner to update said personal homepage over said network.

2. The apparatus of claim **1**, wherein said content includes categories of information.

3. The apparatus of claim **2**, further including non-textual information associated with said categories.

4. The apparatus of claim **3**, wherein said non-textual information includes graphics.

5. The apparatus of claim **1**, wherein said content includes keywords.

6. The apparatus of claim **5**, wherein said content includes categories associated to said keywords.

7. The apparatus of claim **6**, wherein said content includes categories associated to said second set of keywords.

8. The apparatus of claim **7**, wherein said content categories associated to said keywords and further associated to an additional set of categories.

9. The apparatus of claim **1**, wherein said account further includes personalized information.

10. The apparatus of claim **9**, wherein said personalized information includes a URL to the user's homepage.

11. The apparatus of claim **10**, further including the act of password-protecting said account.

12. A method for providing a dynamically-updating pay-for-service web site comprising:

providing a web server coupled to a computer network having a database operatively disposed within and accessible on said network;

using an HTML front-end entry process;

creating and storing personal homepage content in a database for a owner;

receiving a fee from said owner for making said personal homepage accessible on said network; and

allowing said owner to update said personal homepage over said network.

13. The method of claim **12**, wherein said content includes categories of information.

14. The method of claim **13**, further including non-textual information associated with said categories.

15. The method of claim **14**, wherein said non-textual information includes graphics.

16. The method of claim **12**, wherein said content includes keywords.

17. The method of claim **15**, wherein said content includes categories associated to said keywords.

18. The method of claim **16**, wherein said content includes categories associated to said second set of keywords.

19. The method of claim **18**, wherein said content categories associated to said keywords and further associated to an additional set of categories.

20. The method of claim **12**, wherein said account further includes personalized information.

21. The method of claim **20**, where said personalized information includes a URL to the user's homepage.

22. The method of claim **12**, further including the act of password-protecting said account.

* * * * *

EXHIBIT D

US007269591B2

(12) **United States Patent**
Wesinger, Jr. et al.

(10) **Patent No.: US 7,269,591 B2**
(45) **Date of Patent: Sep. 11, 2007**

(54) **METHOD AND APPARATUS FOR PROVIDING A PAY-FOR-SERVICE WEB SITE**

(75) Inventors: **Ralph E. Wesinger, Jr.**, San Jose, CA (US); **Christopher D. Coley**, Morgan Hill, CA (US)

(73) Assignee: **GraphOn NES Sub, LLC.**, Santa Cruz, CA (US)

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

(21) Appl. No.: **10/844,260**

(22) Filed: **May 11, 2004**

(65) **Prior Publication Data**

US 2005/0144085 A1 Jun. 30, 2005

Related U.S. Application Data

(63) Continuation of application No. 10/703,823, filed on Nov. 7, 2003, which is a continuation of application No. 09/952,985, filed on Sep. 14, 2001, now Pat. No. 6,850,940, which is a continuation of application No. 09/110,708, filed on Jul. 7, 1998, now Pat. No. 6,324,538, which is a continuation of application No. 08/572,543, filed on Dec. 14, 1995, now Pat. No. 5,778,367.

(51) **Int. Cl.**
G06F 7/00 (2006.01)

(52) **U.S. Cl.** **707/10**; 705/26; 709/229

(58) **Field of Classification Search** 707/10; 705/26; 709/229
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,581,072	A	5/1971	Nymeyer	235/152
3,956,615	A	5/1976	Anderson et al.	235/61.7
4,754,428	A	6/1988	Schultz et al.	364/900
4,799,156	A	1/1989	Shavit et al.	364/401
4,805,099	A	2/1989	Huber	364/300
4,805,134	A	2/1989	Calo et al.	364/900
4,962,475	A	10/1990	Hernandez et al.	364/900
4,989,141	A	1/1991	Lyons et al.	364/408
4,992,940	A	2/1991	Dworkin	364/401
5,032,989	A	7/1991	Tornetta	364/401
5,063,507	A	11/1991	Lindsey et al.	364/408
5,107,443	A	4/1992	Smith et al.	395/158
5,136,501	A	8/1992	Silverman et al.	364/408
5,164,897	A	11/1992	Clark et al.	364/401
5,168,446	A	12/1992	Wiseman	364/408
5,189,608	A	2/1993	Lyons et al.	364/408
5,197,004	A	3/1993	Sobotka et al.	364/419
5,197,005	A	3/1993	Schwartz et al.	364/419
5,204,947	A	4/1993	Bernstein et al.	395/157

(Continued)

OTHER PUBLICATIONS

Earthlink Launches the World's First Virtual "Theme" Room with Dilbert, Peanuts, and More; Mar. 9, 1998; http://www.earthlink.net/about/press/pr_elnroom/.*

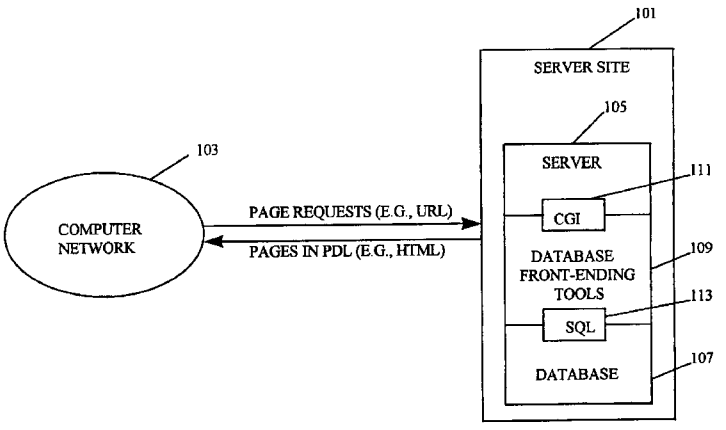
(Continued)

Primary Examiner—Andrew Joseph Rudy
(74) *Attorney, Agent, or Firm*—Sierra Patent Group, Ltd.

(57) **ABSTRACT**

A web server for providing a pay-for-service web site is disclosed configured to execute an HTML front-end entry process configured for creating and storing a personal homepage for a owner. The web server is also configured to receive a fee for making the personal homepage accessible on a network.

22 Claims, 25 Drawing Sheets



U.S. PATENT DOCUMENTS

5,235,680	A	8/1993	Bijnagte	395/161
5,243,515	A	9/1993	Lee	364/401
5,251,294	A	10/1993	Abelow	395/155
5,257,366	A	10/1993	Adair et al.	395/600
5,261,102	A	11/1993	Hoffman	395/700
5,262,943	A	11/1993	Thibado et al.	364/413.01
5,263,157	A	11/1993	Janis	395/600
5,263,158	A	11/1993	Janis	395/600
5,283,731	A	2/1994	Lalonde et al.	364/401
5,297,249	A	3/1994	Bernstein et al.	395/156
5,299,123	A	3/1994	Wang et al.	364/419
5,301,105	A	4/1994	Cummings, Jr.	364/401
5,309,437	A	5/1994	Perlman et al.	370/85.13
5,319,542	A	6/1994	King, Jr. et al.	364/401
5,325,297	A	6/1994	Bird et al.	364/419.07
5,335,346	A	8/1994	Fabbio	395/600
5,339,361	A	8/1994	Schwalm et al.	380/23
5,339,392	A	8/1994	Risberg et al.	395/161
5,347,632	A	9/1994	Filepp et al.	395/200
5,355,474	A	10/1994	Thuraisngham et al.	395/600
5,367,619	A	11/1994	Dipaolo et al.	395/149
5,367,621	A	11/1994	Cohen et al.	395/154
5,386,525	A	1/1995	Noack	395/400
5,394,471	A	2/1995	Ganesan et al.	380/23
5,406,475	A	4/1995	Kouchi et al.	364/401
5,408,655	A	4/1995	Oren et al.	395/600
5,410,693	A	4/1995	Yu et al.	395/600
5,412,774	A	5/1995	Agrawal et al.	395/157
5,414,809	A	5/1995	Hogan et al.	395/155
5,416,694	A	5/1995	Parrish et al.	364/401
5,418,942	A	5/1995	Krawchuk et al.	395/600
5,426,780	A	6/1995	Gerull et al.	395/600
5,428,606	A	6/1995	Moskowitz	370/60
5,428,778	A	6/1995	Brookes	395/600
5,448,724	A	9/1995	Hayashi	395/182.02
5,455,945	A	10/1995	VanderDrift	395/600
5,459,863	A	10/1995	Taylor	395/600
5,471,617	A	11/1995	Farrand et al.	395/700
5,483,586	A	1/1996	Sussman	379/201
5,495,412	A	2/1996	Thiessen	364/401
5,502,637	A	3/1996	Beaulieu et al.	364/408
5,506,984	A	4/1996	Miller	395/600
5,513,126	A	4/1996	Harkins et al.	364/514 A
5,530,852	A	6/1996	Meske, Jr. et al.	395/600
5,537,546	A	7/1996	Sauter	395/200.01
5,537,590	A	7/1996	Amado	395/600
5,542,024	A	7/1996	Balint et al.	395/161
5,544,255	A	8/1996	Smithies et al.	382/119
5,544,360	A	8/1996	Lewak et al.	395/600
5,553,239	A	9/1996	Heath et al.	395/187.01
5,557,518	A	9/1996	Rosen	364/408
5,559,958	A	9/1996	Farrand et al.	395/183.03
5,564,119	A	10/1996	Krawchuk et al.	395/600
5,572,643	A	11/1996	Judson	395/793
5,592,375	A	1/1997	Salmon et al.	395/207
5,608,903	A	3/1997	Prasad et al.	395/610
5,623,601	A	4/1997	Vu	395/187.01
5,623,652	A	4/1997	Vora et al.	395/610
5,625,781	A	4/1997	Cline et al.	395/335
5,630,125	A	5/1997	Zellweger	395/614
5,633,910	A	5/1997	Cohen	379/38
5,638,457	A	6/1997	Deaton et al.	382/100
5,649,192	A	7/1997	Stucky	395/614
5,655,077	A	8/1997	Jones et al.	395/187.01
5,659,741	A	8/1997	Eberhardt	395/615
5,659,742	A	8/1997	Beattie et al.	395/615
5,664,115	A	9/1997	Fraser	705/37
5,664,207	A	9/1997	Crumpler et al.	395/766
5,675,507	A	10/1997	Bobo, II	364/514 R
5,677,953	A	10/1997	Dolphin	380/4
5,678,041	A	10/1997	Baker et al.	395/609
5,682,525	A	10/1997	Bouve et al.	395/615
5,684,951	A	11/1997	Goldman et al.	395/188.01
5,694,546	A	12/1997	Reisman	395/200.9
5,699,526	A	12/1997	Siefert	395/227
5,706,507	A	1/1998	Schloss	395/615
5,708,780	A	1/1998	Levergood et al.	395/200.12
5,710,887	A	1/1998	Chelliah et al.	395/226
5,710,918	A	1/1998	Lagarde et al.	395/610
5,715,314	A	2/1998	Payne et al.	380/24
5,715,402	A	2/1998	Popolo	395/237
5,717,923	A	2/1998	Dedrick	395/613
5,721,827	A	2/1998	Logan et al.	395/200.47
5,721,906	A	2/1998	Siefert	395/609
5,721,908	A	2/1998	Lagarde et al.	395/610
5,724,424	A	3/1998	Gifford	380/24
5,727,156	A	3/1998	Herr-Hoyman et al.	395/200.49
5,729,682	A	3/1998	Marquis et al.	395/200.12
5,732,219	A	3/1998	Blumer et al.	395/200.57
5,734,718	A	3/1998	Prafullchandra	380/4
5,734,823	A	3/1998	Saigh et al.	395/200.06
5,737,395	A	4/1998	Irribarren	379/88
5,737,592	A	4/1998	Nguyen et al.	395/604
5,742,769	A	4/1998	Lee et al.	395/200.36
5,742,845	A	4/1998	Wagner	395/831
5,745,556	A	4/1998	Ronen	379/127
5,748,188	A	5/1998	Hu et al.	345/326
5,748,740	A	5/1998	Curry et al.	380/25
5,748,783	A	5/1998	Rhoads	382/232
5,754,939	A	5/1998	Herz et al.	455/4.2
5,754,981	A	5/1998	Veeneman et al.	705/26
5,757,917	A	5/1998	Rose et al.	380/25
5,758,324	A	5/1998	Hartman et al.	705/1
5,761,649	A	6/1998	Hill	705/27
5,761,656	A	6/1998	Ben-Shachar	707/4
5,761,661	A	6/1998	Coussens et al.	707/9
5,761,662	A	6/1998	Dasan	707/10
5,761,673	A	6/1998	Bookman et al.	707/104
5,778,367	A	7/1998	Wesinger, Jr. et al.	707/10
5,784,608	A *	7/1998	Meske et al.	707/2
5,790,793	A	8/1998	Higley	395/200.48
5,802,299	A	9/1998	Logan et al.	395/200.48
5,802,497	A	9/1998	Manasse	705/27
5,812,776	A	9/1998	Gifford	395/200.47
5,813,006	A	9/1998	Polnerow et al.	707/10
5,819,285	A	10/1998	Damico et al.	707/104
5,822,745	A	10/1998	Hekmatpour	706/59
5,826,241	A	10/1998	Stein et al.	705/26
5,832,497	A	11/1998	Taylor	707/104
5,835,712	A	11/1998	DuFresne	395/200.33
5,835,896	A	11/1998	Fisher et al.	705/37
5,842,173	A	11/1998	Strum et al.	705/1
5,850,446	A	12/1998	Berger et al.	380/24
5,870,552	A	2/1999	Dozier et al.	395/200.49
5,878,141	A	3/1999	Daly et al.	380/25
5,884,309	A	3/1999	Vanechanos, Jr.	707/10
5,890,170	A *	3/1999	Sidana	715/501.1
6,026,433	A *	2/2000	D'Arlach et al.	709/217
6,085,219	A *	7/2000	Moriya	709/200
6,161,124	A *	12/2000	Takagawa et al.	709/203
6,317,757	B1 *	11/2001	Sakamaki	715/502
6,486,895	B1 *	11/2002	Robertson et al.	715/776

OTHER PUBLICATIONS

Earthlink Network's New Personal Start Page Actually Takes You Where You Want to Go; Oct. 6, 1997; http://www.earthlink.net/about/press/pr_psp/.*

Earthlink Launches Single-Solution Premium Web Site Package; Mar. 12, 1997; http://www.earchlink.net/about/press/pr_pwebsite/.*

BHI Offers Free Host Web Sites (Beverly Hills Internet is offering free host home pages at its World Wide Web site as a way to build GeoCities modeled after real-world addresses), Interactive Age, v. 2, n. 19, Jul. 17, 1995.*
Web Tools Flourish, Computer Retail Week, v. 5, n. 118, Nov. 6, 1995.*
Compuserve's Web Kit For Kids, Spryte Plans, Newbytes News Network, Nov. 6, 1995.*
Spin Your Own Web Page, Windows Magazine, v. 6, n. 11, Oct. 1995.*
GeoCities Reach 20 Million Hits Monthly Oct. 26, 1995, Newbytes News Network, Oct. 26, 1995.*
Miller, Leslie, On-line Services Offer the Tools to Create a Place Of Your Own, USA Today, Nov. 7, 1995.*
Compuserve Lets Users Buiold Own Web Pages, Newbytes New Network, Sep. 11, 1995.*
Silverman, Robert, Compuserve Unveils Web Home Pages From the Home Office, Communications Week, n. 576, Sep. 26, 1995.*
Akkiraju, Praveen et al., White Paper, Enabling Enterprise Multihorning with Cisco IOS Network Address Translation (NAT), 25 pages, 1997, no month.
Andrews, Keith et al., "Serving Information to the Web with Hyper-G", The Third International World-Wide Web Conference, (www'95), Darmstatdt, Germany, 6 pages, Apr. 12, 1995.
Anick, Peter G. et al, "A Direct Manipulation Interface for Boolean Information Retrieval via Natural Language Query", *Proceedings of the 13th International Conference On Research and Development in Information Retrieval*, Brussels, Belgium, pp. 135-151, Sep. 5-7, 1990.
Anonymous, "Amaya New Features History," W3C Amaya, [Internet] http://www.w3.org,Amaya_New_User.html 10 pages, printed Jul. 14, 1998.
Anonymous, "Amaya—W3C's Browser-Editor", from Amaya Overview, W3C User Interface Domain, [Internet] http://www.w3.org, 4 pages, printed Jul. 14, 1998.
Anonymous, "Application Development with Database Repositories", [Internet] http://www.wji.com/wji/b3468.html, 10 pages, printed Jul. 22, 1999.
Anonymous, *Developing Applications with OpenDiS Access Service*, Metaphor Data Interpretation System publication Version 2.0, First Edition, pp. Table of Contents—Index (IX04), Sep. 1994.
Anonymous, "The Fruitful, Tangled Trees of Knowledge", *The Economist*, Science and Technology Section, pp. 85-88, Jun. 20-26, 1992.
Anonymous, "MORE Technology Transfer", [Internet] http://rbse.jsc.nasa.gov/eichmann/MORE_sites.html, 7 pages, Jan. 9, 1996.
Anonymous, "The Oracle World Wide Web Interface Kit", www.inf.ufrgs.br/tools/oraweb etc., 51 pages, no date, printed Jul. 14, 1999.
Anonymous, "Sybase SQL Server 1: Performance Optimized for Real-World Results", Sybase,® Inc., 10 pages, 1995, no month.
Anonymous, (Online Directory and Windows NT Based *Web Development Services*), World Yellow Pages Network (wyp.net) Yellow White pages, [Internet], http://wyp.net, 7 pages, 1995 (no month), printed Jul. 9, 1996.
Anonymous, "CGI: Common Gateway Interface", W3C®, [Internet] http://www.w3.org/CGI, 2 pages, Oct. 13, 1999.
Anonymous, "CGI: The Common Gateway Interface", [Internet] http://hoohoo.ncsa.uiuc.edu/cgi/overivew.html, 1 page, no date, printed Feb. 21, 2005.
Arai, Toshifumi et al, Retrieving Electronic Documents with Real-World Objects on InteractiveDESK, *ACM*, pp. 37-38, Nov. 14-17, 1995.
Armbrüster, Heinrich et al., "Broadband Multimedia Applications Using ATM Networks: High-Performance Computing, High-Capacity Storage, and High-Speed Communication", *IEEE Journal On Selected Areas In Communications*, Institute of Electronics and Electrical Engineers, vol. 10, No. 9, pp. 1382-1396, Dec. 1992.
Ayre, Rick et al., "The Web Untangled", *PC Magazine*, Cover Story: Web Browsers, pp. 173-196, Feb. 7, 1995.
Baker, Steven, "Hypertext Browsing On The Internet", *Unix Review*, Net Worth section, pp. 221-27, Sep. 1994.
Balasubramanian, V., "State of the art review on hypermedia issues and applications", Graduate School of Management, Rutgers University, Newark, New Jersey, [Internet] http://www.csi.uottawa.ca/~dduchier/misc/hypertext, and http://www.isg.sfu.ca/~duchier.misc.hypertext_review.index.html, 40 pages, 1994.
Bank, David, "The Road Ahead", Information Highway 101, Part one of three parts, *San Jose Mercury News*, Business Monday Section, pp. 1D, 4D-5D, Dec. 5, 1994.
Bank, David, "Foundation for an Information Age" Information Highway 101, Part two of three parts, *San Jose Mercury News*, pp. 1A, 26A, 27A, Need Date, 1994.
Bank, David, "Info Travelers Will Determine Highway's Look", Part one of three parts, *San Jose Mercury News*, pp. 1A, 13A, , Need Date, 1994.
Barclay Rebecca O., Virtual Blood, Real Sweat, No Tears: Lesson Learned from Making a Publication about electronic Publications, 1995 IEEE International Professional Communication Conference. IPCC 95 Proceedings, entitled Smooth Sailing to the Future, Savanna GA, USA, pp. 106-109, Sep. 27-29, 1995.
Baser, K. et al., "On-Line Indexing Experiment at Chemical Abstract Service: Algorithmic Generation of Articulated Index Entries from Natural language Phrases", *J. Chem. Inf. Computer Science*, vol. 18, No. 1, pp. 18-25, 1978.
"BBN could bulk up its Internet muscle", *Electronic Engineering Times*, pp. 89-90, Dec. 19, 1994.
Beck, Bradley C., "An Interactive Forum for Convection-Diffusion Problems", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, 4 pages, Oct. 17-19, 1994.
Berners-Lee, Tim, "Electronic publishing and visions of hypertext", *Physics World*, pp. 14-16, Jun. 1992.
Berners-Lee, Tim et al., Hypertext Transfer Protocol—HTTP/1.0, Internet Draft, pp. 2-43, Dec. 19, 1994.
Berners-Lee, Tim et al., "The World-Wide Web", *Communications Of The ACM*, vol. 37, No. 8, pp. 76-82, Aug. 1994.
Berners-Lee, Tim et al., "World-Wide Web: The Information Universe", *Electronic Networking*, Vo. 2, No. 1, pp. 52-58, Spring 1992.
Bina, Eric et al., "Secure Access to Data Over the Internet", *Proceedings of the Third International Conference on Parallel and Distributed Information Systems*, Austin, Tx. USA, pp. 99-102, 1994.
Björn, Michael, "An Interactive Relational Database Gateway with Load Balancing", *Proceedings '95 AUUG95 and APWWW95 Conference & Exhibition*, [Internet] http://www.csu.edu.au/special/confernce/apwww95/papers95/mbjorn/mbjorn.html, 10 pages, updated Jul. 2, 1997.
Born, Gary, "A Knowledge Based Hpertext System for Document Generation and Checking", *IEE Colloquim on "Hypertext", Digest No. 142*, Conference London, UK, Feb. 1-4, Nov. 2, 1990.
Boutell, Thomas, "Techniques for Server-Side Dynamic Document Generation", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, 5 pages, Oct. 17-19, 1994.
Boutell, Thomas (Maintainer of web site), "World Wide Web FAQ", [Internet] http://sunrise.unc.edu/boutell/faq/www_faq.html, 39 pages, Updated Jan. 23, 1995.
Bowman, C. Mic et al., "Harvest: A Scalable, customizable Discovery and Access System", *Technical Report CU-CS-732-94*, Dept. Computer Science, University of Colorado, pp. 1-27, Aug. 26, 1994.
Brown, Marc H., "Browsing the Web with a Mail/News Reader", *ACM*, pp. 197-198, Nov. 14-17, 1995.
Calliau, Robert, "A Little History of the World Wide Web", W3C® [Internet] http://w3.org/History.html, 6 pages, crated circa 1995.
Chabrow, Eric R., "Online Employment", *Information Week*, pp. 38 etc. (3 pages Dialog printout), Jan. 23, 1995.
Cinkosky, M. J. et al., "A New Design for the Genome Sequence Data Base", *IEEE Engineering in Medicine and Biology Magazine*, vol. 14, Issue 6, pp. 725-729, Nov.-Dec. 1995.
Clark, Michele, "Net Force Gets Tough on Security", *Electronic Engineering Times*, pp. 96 & 98, Dec. 19, 1994.
Clyde, Stephen et al., "An Object-oriented Implementation of an Adaptive Classification of Job Openings", *Proceedings of the 11th*

Conference on Artificial Intelligence for Applications, Los Angeles, CA, USA, pp. 9-16, Feb. 20-23, 1995.

Cohen, Ellis S., "Review-Based Information Services: Lessons Learned from The Boston Restaurant List", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, 12 pages, Oct. 17-19, 1994.

Cortese, Amy et al., "Cyberspace—The Software That Will Take You There", a Special Report in *Business Week*, pp. 78-89, Feb. 27, 1995.

Crane, Michael L. et al., Marine Data Entry, *IEEE Proceedings OCEANS '83, vol. 1, Technical Papers*, San Francisco, CA, pp. 124-128, Aug. 29-Sep. 1, 1983.

Davis Jim et al., "'Drop-in' publishing with the World Wide Web", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, 9 pages, Oct. 17-19, 1994.

Davison, Andrew, "Coding with HTML Forms", *Dr. Dobbs Journal*, pp. 71-75, Jun. 1995.

Day John D. et al., "The OSI Reference Model", *Proceedings Of The IEEE*, vol. 71, No. 12, p. 1334-1340, Dec. 1983.

Daynès, Laurent et al., "Locking in OODBMS Client Supporting Nested Transactions", *ICDE*, a publication of IEEE, pp. 316-323, 1995, no month.

Derfler, Frank J., Jr., "Betting on the Dream", *PC Magazine*, pp. 267-288, Oct. 25, 1994.

Dolan, Donna R. et al., "Top U. S. Sources For An Online Job Search", *Database*, pp. 35-43, Oct./Nov. 1994.

Dougherty, Elizabeth, Networks—Router Roundup and SNMP Catches On, *MacWorld*, p. 158, Dec. 1994.

Dozier, Linda T., NaviPress and NaviServer: A Client-Server Publishing System for the World-Wide Web II, NaviSoft, an America Online Company, pp. 1—Index p. IV, Mar. 1995.

Duncan, Ray, "Publishing Databases on the World Wide Web", *PC Magazine*, PC TECH/Power Programming, vol. 14. No. 21, pp. 403-412, Aug. 1995.

Duncan, Ray, "Publishing HTML Forms on the Web", *PC Magazine*, PC TECH/Power Programming, vol. 14, No. 21, pp. 391-403, Dec. 5, 1995.

Duncan, Ray, "Setting Up a Web Server", *PC Magazine*, PC TECH/Power Programming, vol. 14, No. 9, pp. 273-280, May 16, 1995.

Earthlink Launches Single-Solution Premium Web Site Package; [Internet] http://www.earthlink.net/about/press/pr_pwebsite/, Mar. 12, 1997.

Eichmann, David et al., "Integrating Structured Databases Into the Web: The MORE System", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994 also published in *Computer Networks and ISDN Systems*, vol. 27, No. 2, pp. 281-288, Nov. 1994.

Fernandez, Eduardo B. et al., *Database Security and Integrity*, Addison-Wesley Publishing Company, 1981.

Flynn, Laurie, "The Executive Computer: Browsers Making Navigating The World Wide Web a Snap", *New York Times*, Sunday, Late Edition—Final, Section 3, p. 6, col. 1, Business/Financial Desk, Jan. 29, 1995.

Frank, Maurice, "Database and the Internet", *DBMS Online*, [Internet] http://www.dbmsmag.com/f19512.html, 15 pages, Dec. 1995.

Freeman-Benson, Bjorn N., "Using the Web to Provide Private Information-or-A Short Paper About Password Protection Without Client Modifications", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994.

Frentzen, Jeff, "Low-cost Windows tools fill in Internet gaps", *PC Week*, p. 19, Dec. 12, 1994.

Frentzen, Jeff et al., "Setting Up Shop on the Internet", *Windows Sources*, pp. 64-143, Feb. 1995.

Frentzen, Jeff, "SQL databases, Web servers make connection", *PC Week*, vol. 12, No. 9, Mar. 6, 1995.

Frentzen, Jeff, "The mystery of Common Gateway Interface", *PC Week*, vol. 12, No. 20, p. 13, May 22, 1995.

Frivold, Thane J. et al., "Extending WWW for Synchronous Collaboration", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW, 5 pages, Oct. 17-19, 1994.

Gee, David A. et al., "MosaicForms Database Access?: A Palaeobotanic case study", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/GenSci/Gee/pfrwww.html, 8 pages, Oct. 17-19, 1994.

Gilster, Paul, *The Internet Navigator*, John Wiley & Sons, Inc., Cover Page—p. 470, 1993.

Google Groups Search results for "common gateway interface", Google, Inc., 20 pages, originally executed 2002, reexecuted Feb. 21, 2005.

Google Groups Search results for author:usx@spud.hyperion.com, for email thread to Announce: The Used Software Exchange Google. Inc., 4 pages, Oct. 1994.

Greenfield, David, "Radware Linkproof", *Network Magazine*, [Internet] http://newworkmagazine.com/shared/article/showArticle.jhtml?articled=8702642, 2 pages, Dec. 1, 1999.

Grunin, Lori, "Publish Without Paper", *PC Magazine*, Cover Story, pp. 110-171, Feb. 7, 1995.

Gunn, Angela, "Power in pictures: a Web-page primer: easier than it looks; World-Wide Web; includes related article on how to read Uniform Resource Locators", *Computer Shopper*, vol. 14, No. 11, p. 598 etc. (6 pages total), Nov. 1994.

Gutierrez, Dan D., "Link the Web with Your Relational Databases", *Data Based Advisor*, Section-The Internet, WebDBC, 2 pages, Aug. 1995.

Halama, James R. et al, "An Interactive Electronic Bulletin Board Implementation For Mosaic and HTTP Server", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW/halam/halama.html, 4 pages, Oct. 17-19, 1994.

Halasz, Frank et al., "The Dexter Hypertext Reference", *Communications of the ACM*, vol. 37, No. 2, pp. 30-39, Feb. 1994.

Harrington, Michael, "Mosaic: Door to the On-Line World", *Uniform Monthly*, pp. 20-26, Oct. 1994.

Hastings, Edwin E. et al., "Providing Customers Information Using the WEB and CORBA", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/DDay/hastings/hastings.html, 10 pages, Oct. 17-19, 1994.

Haycox, Jamie, "Standard Generalized Markup Language (SGML) as a basis for an intelligent Data Management System", *Aerospace and Electronics Conference.NAECON*, Dayton, Ohio, also published in *Proceedings of the IEEE*, vol. 2, pp. 1017-1020, May 24-28, 1993.

Heffron, Gordon, "Teleconferencing comes of age", *IEEE Spectrum*, pp. 61-66, Oct. 1984.

Hughes, David, *Mini SOL—A Lightweight Database Engine*, Bond University, Australia, Version 1.0, Dec. 1994, Patch level: Patch 1, Jan. 1995, 21 pages.

Hughes, Kevin, "Entering the World—Wide Web: A Guide to Cyberspace", Version 6.1, 29 pages, May 1994.

Jacobsen, Lynn et al., "Providing Access to a Data Library: SQL and Full-Text IR Methods of Automatically Generating Web Structure", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/SocialSci/jacobsen/jacobsen.html, 4 pages, Oct. 17-19, 1994.

James, Edward, "Media and Hypermedia", *IEE Colloquium on 'Large Database in Press and Publishing: the Present and the Future'*, London, UK, pp. 6/1-6/2, Jun. 12, 1990.

Jennings, Donald, et al., "How to Present Lots of Volatile Information on the World Wide Web", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/Astronomy/jennings/.html, 7 pages, Oct. 17-19, 1994.

Johnson, Tony, "Spinning the World Wide Web", *Beam Line*, pp. 2-9, Fall 1994.

Jones, Kennie H., "TOPS On-Line—Automating the Construction and Maintenance of HTML Pages", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill,

USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/Autools/jones/kjoness/paper.html 7 pages, Oct. 17-19, 1994.
Jones, Russ, "Digital's World-Wide Web Server: A Case Study", First International Conference on the World-Wide Web, Cern, Geneva, Switzerland, 10 pages, May 1994.
Keizer, Gregg, "Accessing the Internet", *Computer Shopper*, pp. 533-545, Jan. 1995.
Kelly, C. W., "An Enhanced Presence Video Conferencing System", *Proceedings Computer Networks* (COMPCON Fall '82), IEEE Computer Society, pp. 545-551, Sep. 20-23, 1982.
Knowles, Anne, "Information Highway—ATM carriers outpace demand for fast data links", *PC Week*, vol. 12, No. 5, front page and p. 125, Feb. 6, 1995.
LaLiberte, Daniel et al, "A Protocol for Scalable Group and Public Annotations", [Internet] http://hypernews.org/~liberte/www/scalable-annotations.html, 9 pages, The Third International World-Wide Web Conference, (www'95), Darmstatdt, Germany, 9 pages, Apr. 12, 1995.
Lawton, Stephen, "Internet reveals its commercial potential", *ditigal news & review*, pp. 36-37, Sep. 12, 1994.
Lemay, Laura, *Teach Yourself Web Publishing with HTML in a Week*, Sams Publishing, First Ed., pp. i-403, 1995.
Lemay, Laura, *Teach Yourself More Web Publishing with HTML in a Week*, Sams.net, First Ed., pp. 1-449, 1995.
Lewis, Peter H., "Prodigy Leads Its Peers Onto the World Wide Web", *The New York Times*, Section D, p. 7, col. 1, Business/Financial Desk, Jan. 18, 1995.
Linde, Peter L, HTML and Mosaic: A taste for more, *INET94 Proceedings*, Prague, Czech Republic, 8 pages, Jun. 13-17, 1994.
Liu, Jinhui et al., Description and Recognition of Form and Automated Form Data Entry, vol. 2, pp. 579-582, Aug. 14-16, 1995.
Lynch, Russ, "Outrigger on-line with travel info", *Starr-Bulletin*, 1 page, circa Nov. 1994.
Mamrak, Sandra A. et al., "Benefits of Automating Data Translation", *IEEE Software*, vol. 10, Issue 4, pp. 82-88, Jul. 1993.
Marcus, Aaron et al., "User-Interface Developments for the Nineties", *IEEE Computer*, pp. 49-57, Sep. 1991.
Marriott, Michael et al., Super Cyber Surfers—The Web: How to get around the most fun place on the Internet, *Newsweek*, pp. 43-44, Mar. 20, 1995.
McArthur, Douglas C., "World Wide Web & HTML", *Dr. Dobb's Journal*, vol. 19, No. 15, pp. 18-23, Dec. 1994.
McGee, Marianne Kolbasuk, "Help Wanted? Find it online; JobTrak is just one new service making both job hunting and recruitment easier", *Information Week*, 1995, No. 531, p. 84(1), Jun. 12, 1995.
MCI Employment Advertisement using Resume Builder, [Internet] http://mci.com.cgi-bin-display. cg...data/main.jobs.previews.add-85699005.job, 32 pages, no date, printed Apr. 29, 1997.
McKee, Douglas, "Towards Better Integration of Dynamic Search Technology and the World-Wide Web", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, 7 pages, May 25-27, 1994.
Morton, Sanford, "A Tour of HTML Forms and CGI Scripts", CGI Resources, [Internet] http://www.jalix.org/ressources/internet/cgi/~perl-cgi/form&cgi-tour.html, 11 pages, Last modified Aug. 16, 1998, printed Feb. 21, 2005.
Mueller, B, "Implementation of the Information System", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Educ/mueller/Implementation.html, 3 pages.
Müller, Bernd, "Using World Wide Web as an information system to reduce the average period of study by better information providing and to relieve administration", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94.Proceedings/Educ/mueller/Paper.html, 10 pages, Oct. 17-19, 1994.
Nesbitt, Kenn, "Data Entry on the World Wide Web: Part 2", *Data Base Advisor*, pp. 84-86, 90-93, Aug. 1995.
Ng, Jason, "GSQL—a Mosaic—SQL gateway", [Internet] http://www.nscsa.uiuc.edu/SDG/People/jason/pub/gsql/starthere.htm, University of Ill., 2 pages, 1994.
Ng, Jason, GSQL in detail, [Internet] http://www.nscsa.uiuc.edu/SDG/People/jason/pub/gsql/howto.html, University of Ill., 3 pages, 1994.
Ng, Jason, "GSQL PROC file commands" [Internet] http://www.nscsa.uiuc.edu/SDG/People/jason/pub/gsql/proc-tmt.html, University of Ill., 7 pages, 1994.
Ng, Jason, "New Mosaic-SQL interface" [Internet] http://www.nscsa.uiuc.edu/SDG/People/jason/pub/gsql/sampleform.html., University of Ill., 2 pages, 1994.
Ogle, David M. et al., "Dynamically Selecting Protocols for Socket Applications", *IEEE Network*, pp. 48-57, May 1993.
Paoli, Jean, "Cooperative Work On the Network: Edit the WWW!", Proceedings of the Third International World Wide Web Conference, [Internet] http://www.igd.fhg.de/www/www95/proceedings/papers/76/paper.html, also published by Computer Networks and ISDN systems, pp. 841-847, Apr. 1995.
Patton, Phil, "Life On The Net", *Esquire*, pp. 131-138, Dec. 1994.
Peters, Ralph et al., "CrystalWeb-A distributed authoring environment for the World-Wide Web", Proceedings of the Third International World-Wide Web Conference, Apr. 10-14, 1995, Darmstadt, Germany also published in *Computer Networks and ISDN Systems*, vol. 27, pp. 861-870, 1995.
Pferd, William et al., "Special Feature: Interactive Graphics Teleconferencing", *IEEE Computer*, pp. 62-72, Nov. 1979.
Pierog, Karen, "Ohio—Greater Columbus Freenet", publication unknown, 1 page, circa Feb. 22, 1995.
Postel, J, et al., "White Pages Meeting Report", Network Working Group, Request for Comments: 1588, [Internet] http://www.pmg.lcs.mit.edu/cgi-bin/rfc/view-plain?number=1588, 29 pages, Feb. 1994.
Powell, James, "Adventures With The World Wide Web-Creating A Hypertext Library Information System", *Database*, pp. 59-66, Feb. 1994.
Prah, Chris et al., "Mosaic as Corporate Data Collector and Dispenser", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/CorInfSys/prah/prah.html 4 pages, Oct. 17-19, 1994.
Preece J., "Survival of the Fittest: The Evolution of Multimedia User Interface", *ACM Computing Surveys*, vol. 27, No. 4, pp. 57-559, Dec. 1995.
Press L., "The Internet and the Travel Industry", *Proceedings of ENTER '95*, [Internet] http://som.csudh.edu/cis/lpress/travel.htm., Innsbruck, Austria, 11 pages, Jan. 18-20, 1995.
Putz, Steve, "Interactive Information Services Using World-Wide Web Hypertext", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, Switzerland, May 25-27, 1994.
Raeder, Aggi, "Internet World '95 in San Jose", *Searcher: The Magazine for Database Professionals*, p. 10, 12, 14, 16,-18, May 1995.
Ramsay, Martin L., "The USA at Your Fingertips", *Computer Graphics World*, vol. 16, No. 6, p. 81(1), Jun. 1993.
Randall, L. Scott, "The Shared Graphic Workspace: Interactive Data Sharing In A Teleconference Environment", *Proceedings Computer Networks* (COMPCON Fall '82), IEEE Computer Society, pp. 535-542, Sep. 20-23, 1982.
Rasmussen, B. F., "WDB-A Web Interface to Sybase", *Astronomical Data Analysis Software And Systems IV*, ASP Conference Series, vol. 77, pp. 72-75, 1995.
Resumix Product Announcement: Resume: Resumix announces Internet service for building effective scannable resumes on-line (Resume Builder), *Edge: Work-Group Computing Report*, vol. 6, No. 264, 3 pages, Jun. 12, 1995.
Riley, Margaret F., "Resume Databases on the Internet", *The Riley Guide*, 5 pages, Jan. 20, 1997.
Rodgers, R. P. Channing et al., "On-Line Images from the History of Medicine (OLI): Creating a Large Searchable Image Database for Distribution via World-Wide Web", *Proceedings of the First International World-Wide Web Conference*. Geneva, May 25-27, 1994: 423-431 (paper available at: http://www.nlm.nih.gov/hmd.dir/oli.dir/paper/paper.html; system available at: http://www.nlm.nih.gov/hmd.dir/oli.dir/).

Rosenking, Jeffrey P. et al., "A Generic system for Directory Pagination", *Proceedings of the IEEE/ACM International Conference on Developing and Managing Expert System Programs*, pp. 166-169, Sep. 20-Oct. 2, 1991.

Rosenthal, Steve, "Mega Channels", pp. 36-46, Sep. 1993. (pp. 36 & 37 missing from copy).

Rousseau, B, "Publishing on the Web", Presented at the CERN School of Computing, Arles, France, pp. 279-293, Aug. 20-Sep. 2, 1995.

"Royalty Demands Anger Firms", *San Jose Mercury News*, 1 page, unknown date.

Saal, Harry J., "Think the info highway is great? Baby, you ain't seen nothing yet", *San Jose Mercury News*, Business Monday, p. 4D, unknown date.

Scharf, Ronald et al., "Using Mosaic for Remote Test System Control Supports Distributed Engineering", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW/scharf/scharf.html, 8 pages, Oct. 17-19, 1994.

Schroeder, Michael D., "A State-of-the-Art Distributed System: Computing with BOB", appears in Chapter 1, *Distributed Systems*, Addison-Wesley/ACM Press, 1993, no month.

Stefanac, Suzanne, Surfing the TeleNet in 2008, *NewMedia*, pp. 40-41, Sep. 1993.

Story, Guy A. et al., "The RightPages Image-Based Electronic Library for Alerting and Browsing", *COMPUTER*, vol. 25, No. 9, pp. 17-26, Sep. 1992.

Sullivan, Kristina B, "Vendors to push multimedia wares at CD ROM show" at CD-ROM Expo in Washington D.C., *PC Week*, vol. 8, N40, p. 28, Oct. 7, 1991.

"Sun joins $1 billion alliance", *San Jose Mercury News*, 1 page, unknown date.

Suryaraman, Maya, "Internet access for schools is nearer", *San Jose Mercury News*, pp. 1A and Back Page, date unknown.

Tanaka, Jennifer et al, "A (Free and) Easy Guide to the Web", *Newsweek*, p. 44, Mar. 20, 1995.

Thomas, Christoph G., "BASAR: A framework for integrating agents in the World Wide Web" *IEEE Computer*, pp. 84-86, May 1995.

Towsend, Carl et al., *Microsoft Office/Access*, QUE Computer Publishing, pp. 615-618, 646-658, 670-679, 1994, (no month).

Varela, Carlos A. et al., "Providing Data on the Web: From Examples to Programs", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/SDG/JT94/Dday/varela/paper.html. 10 pages, Oct. 17-19, 1994.

Varela, Carlos A. et al., "Zelig: Schema—Based Generation of Soft WWW Database Applications", The First International Conference on the World-Wide Web (WWW'94), Cern, Geneva, May 25-27, 1994.

Veljkov, Mark et al., *Pocket Guides To The Internet: vol. 2: Transferring files With File Transfer Protocol*, Mecklermedia, pp. 11-17, 1994.

Verity, John W. et al., "How the INTERNET will change the way you do business", *BusinessWeek*, Cover Story, pp. 80-88, Nov. 14, 1994.

Volpentesta, A, "A Multimedia Bulletin Board in WWW environment", The Second International WWW Conference (WWW'94: Mosaic and the Web, Chicago, Ill, USA, [Internet] http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/CSCW/volpentesta/giuda.html, 4 pages, Oct. 17-19, 1994.

Wagner, Mitch, "Law Firm's Verdict On Internet Is Unanimous", *Open Systems Today*, pp. 84-85, Nov. 28, 1994.

Weibel, Stuart et al, "An Architecture for Scholarly Publishing on the World Wide Web", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Pub/weibel/weibel_www_paper.html, 7 pages, Oct. 17-19, 1994.

Welch, Peter D. et al., The Internet's World Wide Web and the Simulation Community A Surfing Lesson for Beginners, *ACM*, pp. 1329-1332, Winter 1995.

Whitehead, Steven D., "Auto-FAQ: an experiment in cyberspace leveraging", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/Agents/whitehead/whitehead.html, 5 pages, Oct. 17-19, 1994.

Willard, K. E. et al., "W3 Based Medical Information Systems vs Custom Client Server Applications", The Second International WWW Conference (WWW'94: Mosaic and the Web), Chicago, Ill, USA, [Internet] http://www.archive.ncsa.uiuc.edu/SDG/IT94/Proceedings/UMHC_www/UMHC_www_paper.html, 10 pages, Oct. 17-19, 1994.

Yamamoto, Kazu, "(Ipng 7052) new multi-home technologies", [Internet] http://www.cs-ipv6.lancs.ac.uk/ipv6/mail-archive/lPng/1999-02/0045.html, 7 pages, Jan. 13, 1999, printed Feb. 16, 2005.

Young, Degi et al., "A Graphical Filter/Flow Representation of Boolean Queries: A Prototype Implementation and Evaluation", *Journal of the American Society for Information Science* (*JASIS*), vol. 44, No. 6, 327-339, Jul. 1993.

Young, Stephen et al., *Claris MacProject® II*, pp. 1-137, unknown date.

* cited by examiner

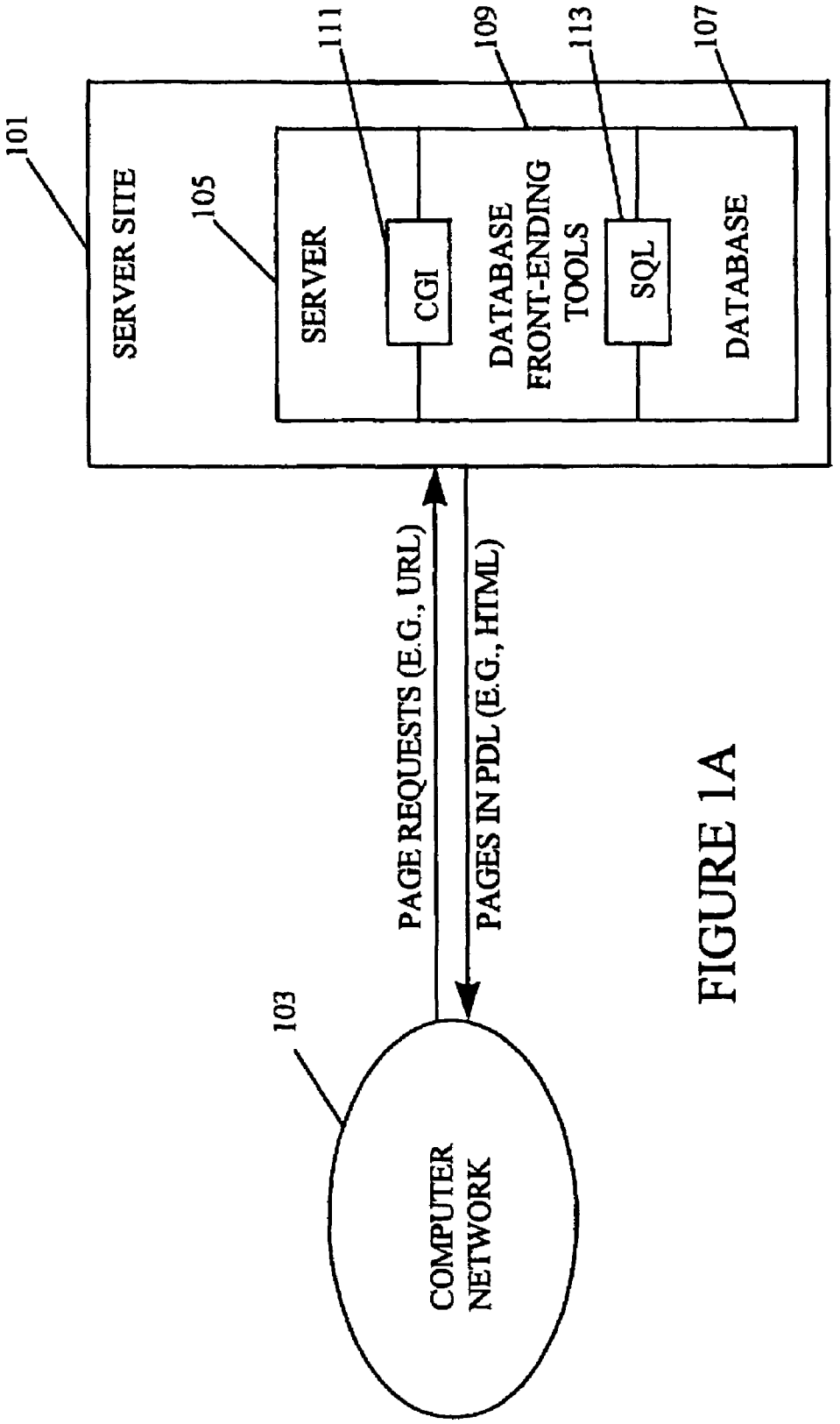

101
SERVER SITE
105
SERVER
111
CGI
109
DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1A

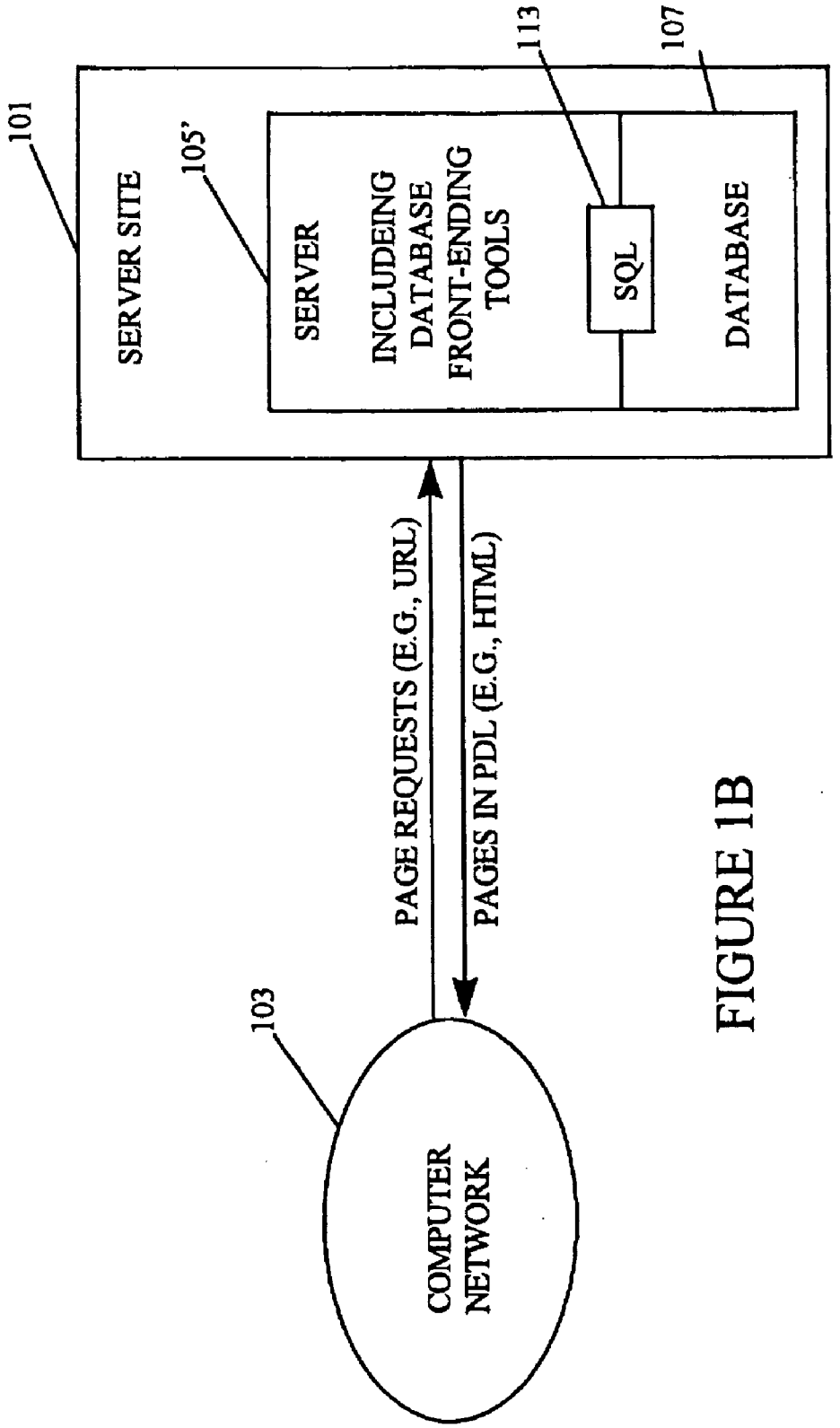

101
SERVER SITE
105'
SERVER
INCLUDEING DATABASE FRONT-ENDING TOOLS
113
SQL
107
DATABASE
PAGE REQUESTS (E.G., URL)
PAGES IN PDL (E.G., HTML)
103
COMPUTER NETWORK

FIGURE 1B

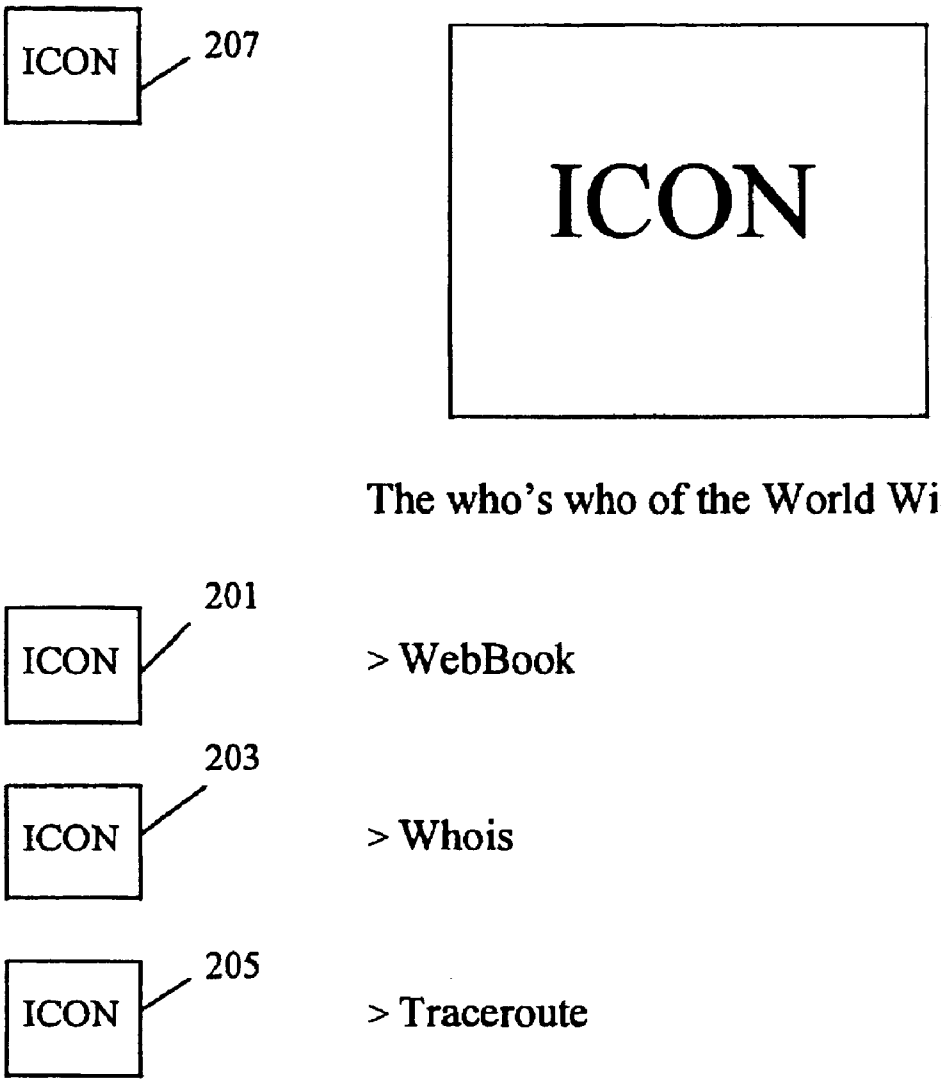

ICON
207
ICON
The who's who of the World Wide Web
201
ICON
> WebBook
203
ICON
> Whois
205
ICON
> Traceroute
This page is brought to you by the guys from _____ . Intelligent Computing for the Internet from The Internet Solution Provider.
(C)1995 SRMC.

FIGURE 2A

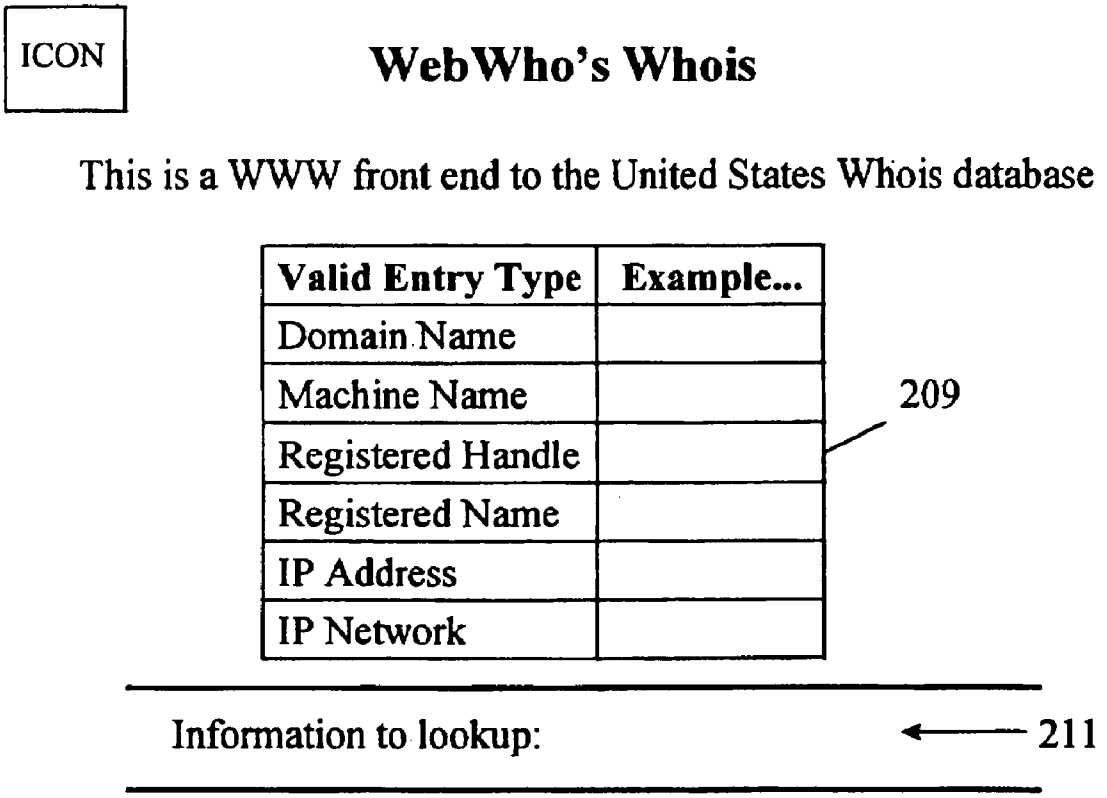

ICON
WebWho's Whois
This is a WWW front end to the United States Whois database
Valid Entry Type
Example...
Domain Name
Machine Name
Registered Handle
Registered Name
IP Address
IP Network
209
Information to lookup:
211

FIGURE 2B

Scientific Research Management Corp. (SRMC-DOM)
1714 Ringwood Avenue
San Jose, CA 95131

Domain Name: SRMC.COM

Administrative Contact:
Lyke, Howie (HL39) (No mailbox)
408 437-1800
Technical Contact, Zone contact:
Coley, Chris (CC339) ccoley@SRMC.COM
408 437-1800

215

213

Record last update on 04-Jun-95
Record created on 13-Dec-94

Domain servers in listed order:

NS.SRMC.COM	205.138.192.10
CASD.SRMC.COM	205.138.192.252
SWEB.SRMC.COM	205.138.192.253
SMAIL.SRMC.COM	205.138.192.254

The InterNIC Registration Services Host contains ONLY Internet information (Networks, ASN's, Domains, and POC's). Please use the whois server at nic.ddn.mil for MILNET Information.

FIGURE 2C

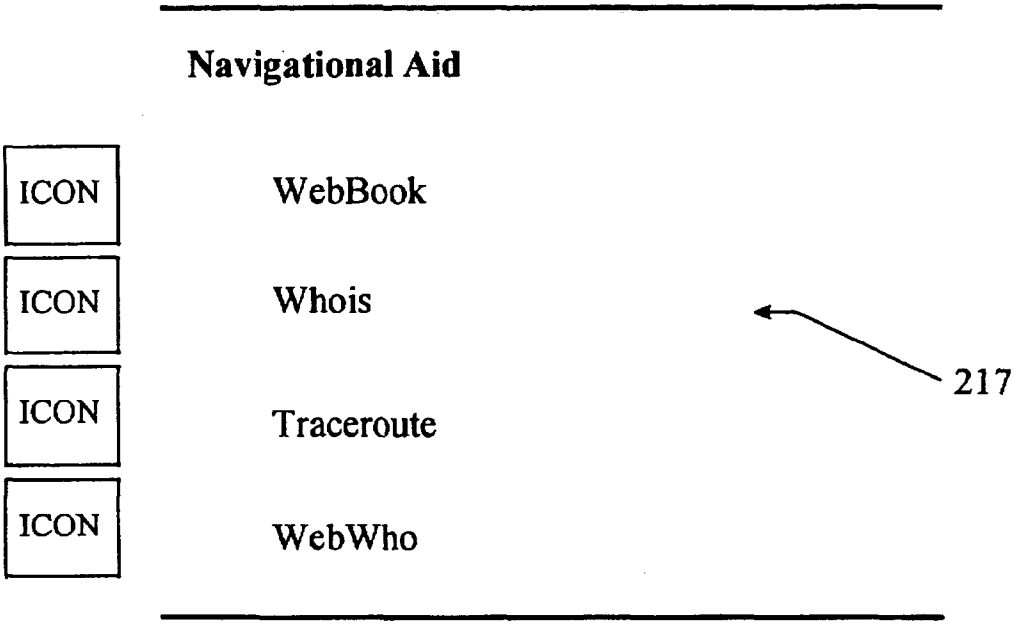

Navigational Aid
ICON
WebBook
ICON
Whois
ICON
Traceroute
ICON
WebWho
217
This page is brought to you by the guys from ____.
Intellgent Computing for the Internet from The
Internet Solution Provider.
(C) 1995 SRMC.

FIGURE 2D

ICON

WebWho's Traceroute

This is a WWW front end to the Traceroute utility
Enter the hostname or an address to trace a route to.

Host to traceroute to: 219

tracerpite to rs.internic.net (198.41.0.6), 30 hops max, 40 byte packets
1 r001-t3.srmc.com (205.138.192..1) 2ms 2ms 1ms
2 204.70.48.49 (204.70.48.49) 20ms 116ms 83 ms
3 core-fddi-0.Bloomington.mci.net (204.70.2.129) 186 ms 27 ms 268ms
4 core1-hssi-2.LosAngeles.mci.net (204.70.1.141) 19ms 26ms 19ms
5 core-hssi-3.Washington.mci.net (204.70.1.178) 335ms 245ms 348ms
6 border1-fddi-0.Washington.mci.net (204.70.2.2) 87ms 87ms 86ms
7 suranet-wtn-ds3.Washington.mci.net (204.70.56.6) 87ms 88ms 87ms
8 wtn9-wtn8-cf.sura.net (128.167.7.9) 88ms 87ms 88ms
9 netsol-wtn9-cl.sura.net (192.221.63.90) 92ms 93ms 90ms
10 rs1.internic.net (198.41.0.6) 90ms 90ms 94ms

FIGURE 2E

Navigational Aid

ICON	WebBook
ICON	Whois
ICON	Traceroute
ICON	WebWho

This page is brought to you by the guys from _____.
Intellgent Computing for the Internet from The Internet Solution Provider.

FIGURE 2F

WebBook

☒ - Search

☒ - Add

☒ - Update

☒ - Change password

☒ - Login

FIGURE 2G

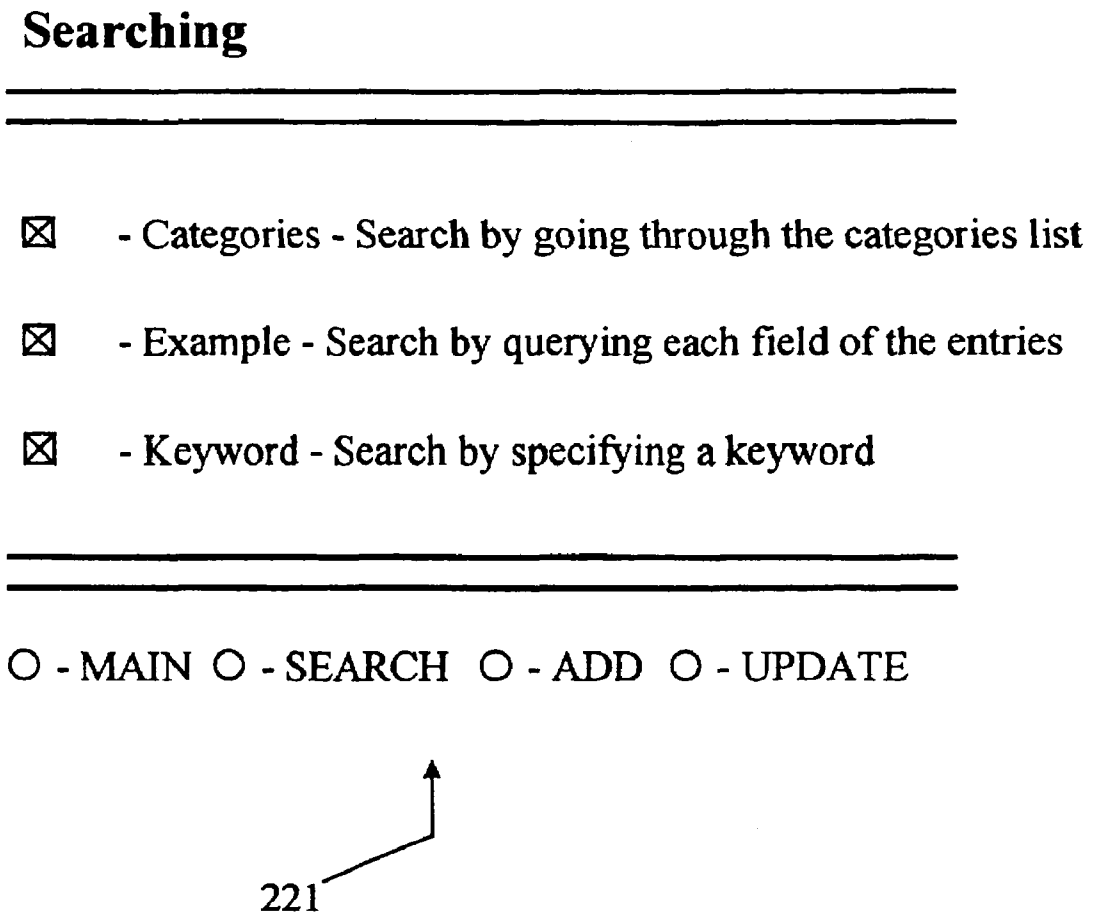

Searching
☒ - Categories - Search by going through the categories list
☒ - Example - Search by querying each field of the entries
☒ - Keyword - Search by specifying a keyword
○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE
221

FIGURE 2H

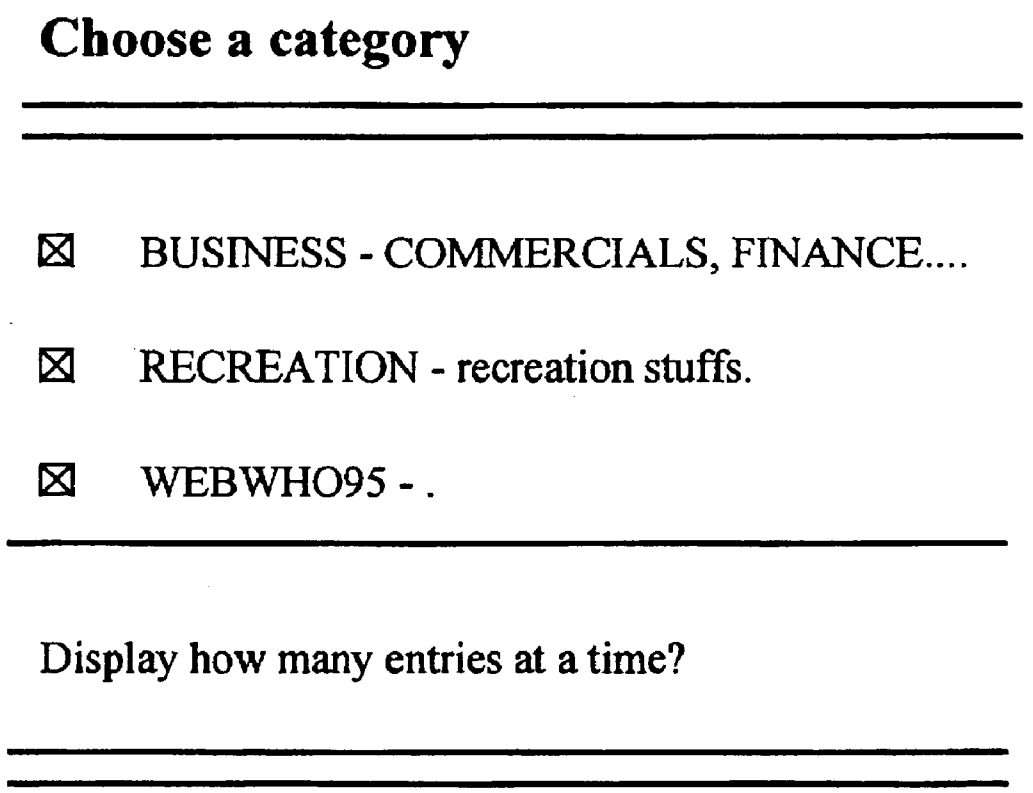

Choose a category
☒ BUSINESS - COMMERCIALS, FINANCE....
☒ RECREATION - recreation stuffs.
☒ WEBWHO95 - .
Display how many entries at a time?
O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2I

Choose a category

WEBWHO95

Sub-categories:

☒ INDEX - .

Display how many entries at a time?

9250 entries available!

9240 entries more

- ○ -Topographical Pictures
- ○ -Xtoys
- ○ -Index - The SoftSource Files
- ○ -Computer ESP
- ○ -Against Computer/Video Games
- ○ -Arrgh! The Entertainment Page
- ○ -CD-ROM Network
- ○ -Complete Gaming HeadQuarters
- ○ -Digital Nostalgia
- ○ -EINet's Gaming Resource

○ - MAIN ○ - SEARCH ○ - ADD ○ - UPDATE

FIGURE 2J

Enter any field you want to search

Title:

First Name: Last Name:

Middle Name: (optional)

Phone#:

Address:

City: State:

Zipcode: Country:

Email:

URL:

Display how many entries at a time?

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2K

Submit a new entry to WebWho

Title: (The way you want your entry to appear in WebWho)
Name: (The way it appears on your credit card)
First Name: Last Name:
Middle Name:(optional)
Phone#1:
Phone#2(optional): Fax:(optional)
Address:
City: State:
Zipcode: Country:
Email:
URL#1:(optional)
URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2L

Choose a category

BUSINESS

☒ BOOKSTORE -STORE THAT SELLS BOOKS
☒ COMPUTER -COMPUTER COMPANIES.
☒ REAL ESTATE -BUYING AND SELLING PROPERTIES.
☒ WEDDING DESIGN -PLAN AND CORRDINATE WEDDINGS.

Or define your own

Category:

Description:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2M

ANNE HOGAN PERRY REALTOR

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

Name: Perry, Anne H

Phone#1: 8087352411

Phone#2:

Fax:

Address: 4211 WALALAE AVENUE SUITE 100

City: HONOLULU State: HI

Zipcode:96816 Country: USA

FIGURE 2N

Email: aperry@warrall.com

URL#1: http://www.worrall.com/estate/estate.shtml

URL#2: http://www.worrall.com/estate/estate.shtml

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 20

Edit your post, then press UPDATE

Title: (The way you want your entry to appear in WebWho)
Name: (The way it appears on your credit card)
First Name: Last Name:
Middle Name:(optional)
Phone#1:
Phone#2(optional): Fax:(optional)
Address:
City: State:
Zipcode: Country:
Email:
URL#1:(optional)
URL#1:(optional)

Please enter your 20 keywords in the following text area.
Each keyword should not exceed 20 characters.
Remember to seperate each keyword by space(s).

Enter a description of your entry in the following text area.
It will be displayed along with your entry.

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2P

Press BACK to edit the keywords and comments again. Otherwise, press the change button if you want to change category, or press the done button to update your entry.

The keywords you have entered are:

keyword1: HAWAII
keyword2: REALTOR
keyword3: HONOLULU
keyword4: REALESTATE
keyword5: OCEAN
keyword6: FRONT
keyword7: BROKER
keyword8: PROPERTIES
keyword9:
keyword10:
keyword11:
keyword12:
keyword13:
keyword14:
keyword15:
keyword16:
keyword17:
keyword18:
keyword19:
keyword20:

FIGURE 2Q

The following description will be displayed with your entry

Anne brings to her clients the depth of her business background teamed with her strong commitment towards professionalism and client satisfaction. Anne view real estate as a team effort and partnership; her success stems from the success of her clients. Referrals from client were the key to Anne's achievement as Mary Worrall's Top Producer for 1994. Anne's focus areas have followed those of her clients. From the first time home buyer to high end sophisticated estate purchaser, all receive the same high levels of service and enthusiasm. Anne was born and raised on the "Gold Coast" of Oahu. Prior to moving back to Honolulu in 1993, she lived the past ten years on Maui and Kauai. Her Kamanina background teamed with her neighbor island exposure gives her a unique, in depth and first hand perspective on the statewide real estate market. Anne is one of the few brokers in Hawaii who has actively sold real estate on four islands.

O - Change categories O - Done update

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2R

Please enter the identification number of this post

identification number:

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2S

Your post has been updated. Thank you!

O - MAIN O - SEARCH O - ADD O - UPDATE

FIGURE 2T

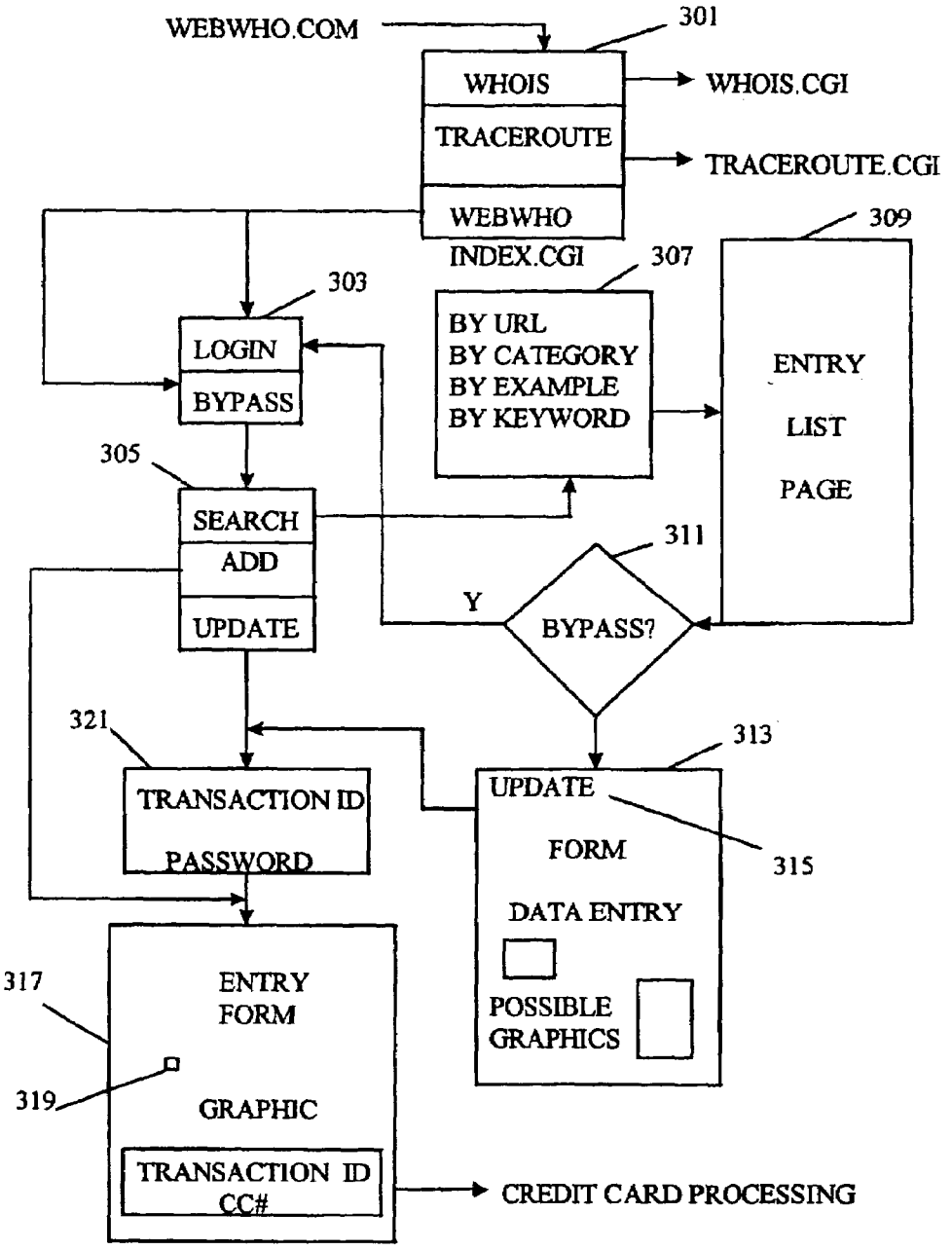

WEBWHO.COM
301
WHOIS
WHOIS.CGI
TRACEROUTE
TRACEROUTE.CGI
WEBWHO
INDEX.CGI
309
307
303
LOGIN
BYPASS
BY URL
BY CATEGORY
BY EXAMPLE
BY KEYWORD
ENTRY
LIST
PAGE
305
SEARCH
ADD
UPDATE
311
Y
BYPASS?
321
313
TRANSACTION ID
PASSWORD
UPDATE
FORM
DATA ENTRY
315
POSSIBLE
GRAPHICS
317
ENTRY
FORM
319
GRAPHIC
TRANSACTION ID
CC#
CREDIT CARD PROCESSING

FIGURE 3

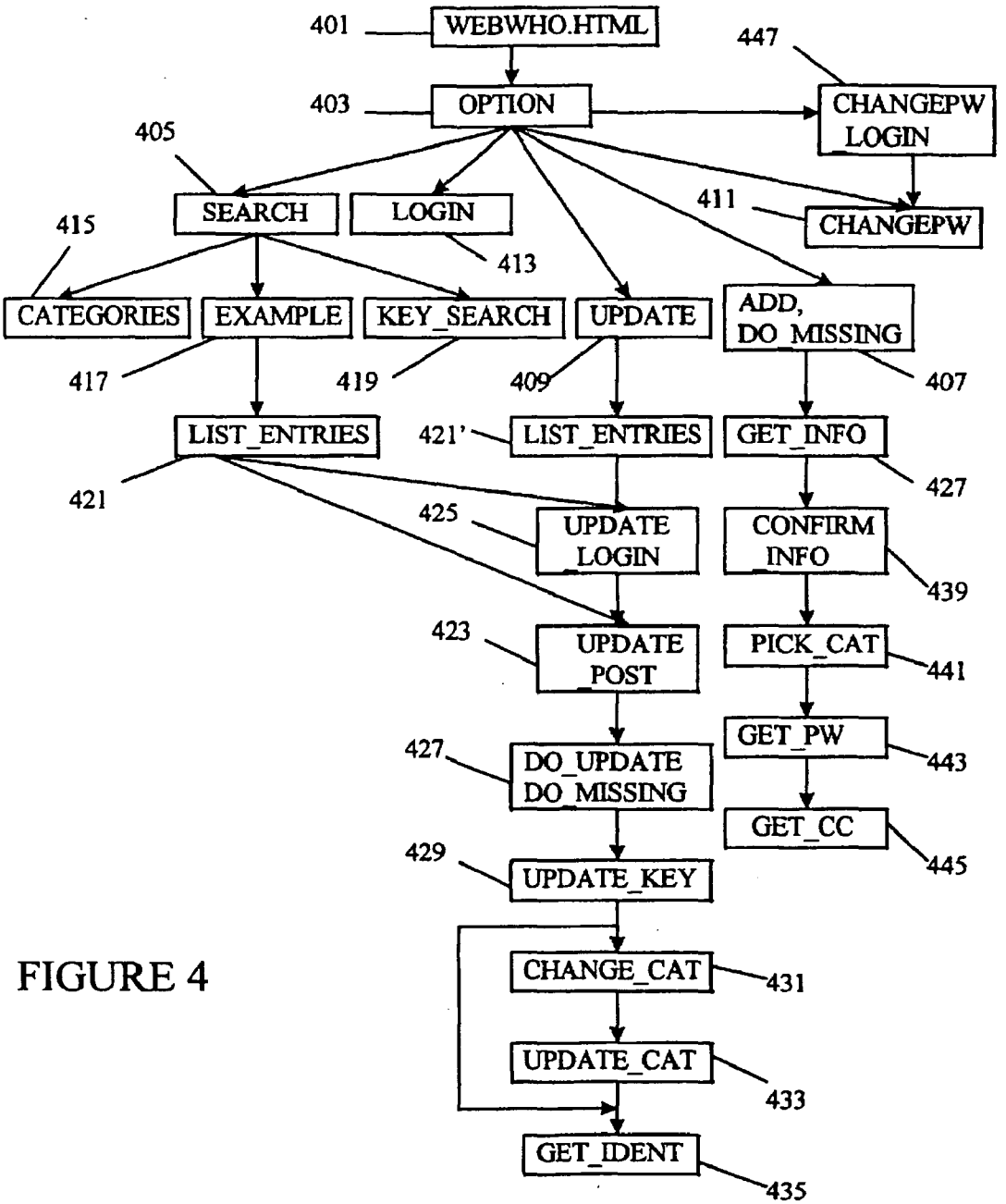

401
WEBWHO.HTML
447
403
OPTION
CHANGEPW LOGIN
405
SEARCH
LOGIN
411
CHANGEPW
415
413
CATEGORIES
EXAMPLE
KEY_SEARCH
UPDATE
ADD, DO_MISSING
417
419
409
407
LIST_ENTRIES
421'
LIST_ENTRIES
GET_INFO
421
427
425
UPDATE LOGIN
CONFIRM INFO
439
423
UPDATE POST
PICK_CAT
441
GET_PW
427
DO_UPDATE DO_MISSING
443
GET_CC
429
445
UPDATE_KEY
CHANGE_CAT
431
UPDATE_CAT
433
GET_IDENT
435

FIGURE 4

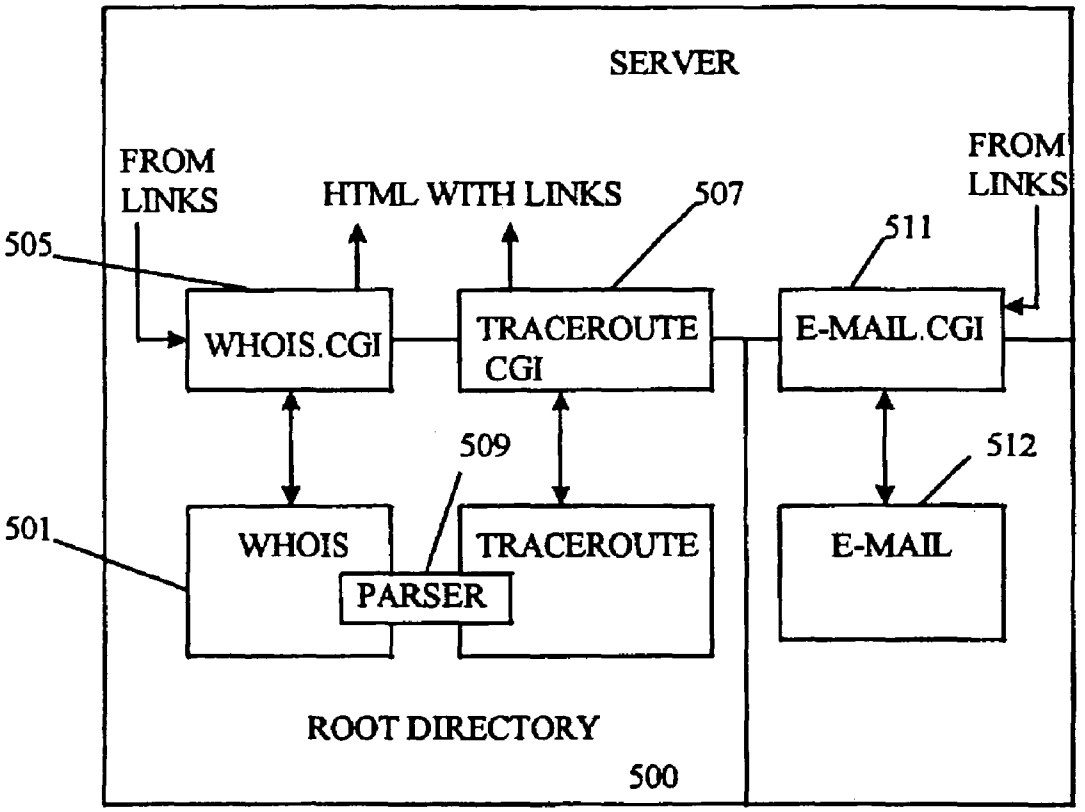

SERVER
FROM LINKS
HTML WITH LINKS
507
FROM LINKS
505
511
WHOIS.CGI
TRACEROUTE CGI
E-MAIL.CGI
509
512
501
WHOIS
TRACEROUTE
PARSER
E-MAIL
ROOT DIRECTORY
500

FIGURE 5

METHOD AND APPARATUS FOR PROVIDING A PAY-FOR-SERVICE WEB SITE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of co-pending U.S. patent application Ser. No. 10/703,823, filed Nov. 7, 2003, which is a continuation of U.S. patent application Ser. No. 09/952,985, filed Sep. 14, 2001 now U.S. Pat. No. 6,850,940, which is a continuation of U.S. patent application Ser. No. 09/110,708, filed Jul. 7, 1998, now issued as U.S. Pat. No. 6,324,538, which is a continuation of U.S. patent application Ser. No. 08/572,543, filed Dec. 14, 1995, now issued as U.S. Pat. No. 5,778,367.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to on-line services, particularly to services for the World Wide Web.

2. State of the Art

The Internet, and in particular the content-rich World Wide Web ("the Web"), have experienced and continue to experience explosive growth. The Web is an Internet service that organizes information using hypermedia. Each document can contain embedded reference to images, audio, or other documents. A user browses for information by following references. Web documents are specified in HyperText Markup Language (HTML), a computer language used to specify the contents and format of a hypermedia document (e.g., a homepage). HyperText Transfer Protocol (HTTP) is the protocol used to access a Web document.

Part of the beauty of the Web is that it allows for the definition of device-, system-, and application-independent electronic content. The details of how to display or play back that content on a particular machine within a particular software environment are left to individual web browsers. The content itself, however, need only be specified once. In some sense, then, the Web offers the ultimate in cross-platform capability.

Pre-existing collections of information, however, such as databases of various kinds, can rarely be placed directly on the Web. Rather, gateway programs are used to provide access to a wide variety of information and services that would otherwise be inaccessible to Web clients and servers. The Common Gateway Interface (CGI) specification has emerged as a standard way to extend the services and capabilities of a Web server having a defined core functionality. CGI "scripts" are used for this purpose. CGI provides an Application Program Interface, supported by CGI-capable Web servers, to which programmers can write to extend the functionality of the server. CGI scripts in large part produce from non-HTTP objects HTTP objects that a Web client can render, and also produce from HTTP objects non-HTTP input to be passed on to another program or a separate server, e.g., a conventional database server. More information concerning the CGI specification may be accessed using the following Universal Resource Locator (URL): http://hoohoo.ncsa.uiuc.edu/cgi/interfac.html.

With the explosive growth of the Web, fueled in part by the extensibility provided by CGI scripts, the need for "finding aids" for the Web, i.e., tools to allow one to find information concerning a topic of interest, has grown acute. Many hardcopy volumes are presently available that are represented to be "White Pages" or "Yellow Pages" for the Web. Of course, hard copy information becomes rapidly out of date, and in the case of the Web, is out of date before it is even printed (let alone distributed), in the sense of failing to list many interesting resources newly made available on the Web.

The only effective solution is to have such finding aids be on-line, available on the Web itself. One such finding aid is a class of software tools called search engines. Search engines rely on automated Web-traversing programs called robots or spiders that follow link after link around the Web, cataloging documents and storing the information for transmission to a parent database, where the information is sifted, categorized, and stored. When a search engine is run, the database compiled through the efforts of the robots and spiders is searched using a database management system. Using keywords or search terms provided by the user, the database locates matches and possibly near-matches as well.

An example of one such search engine is known as Yahoo, offered by Yahoo! Corporation of Mountain View, Calif., and may be accessed at the URL http://www.yahoo.com. Persons having pages on the Web, rather than simply waiting to have their Web page be found by a robot or spider, can also have their Web page listed in the Yahoo database by providing information concerning the resource they wish to list and paying a fee. The result is an on-line-searchable directory of Web resources that is regularly updated.

While such services are indeed extremely useful, nevertheless, from the standpoint of a person wishing to publicize their Web site, they are typically attended by a number of drawbacks. In particular, the person wishing to publicize their Web site typically has very limited control of the content of the resulting listing. Submissions, including textual description and suggested categories, are often subjected to editorial control that may range from strict to arbitrary. As a result, a listing may be placed under an entirely different category from the category intended by the person making the submission. Furthermore, the textual description may be heavily edited (in some instances almost beyond recognition)—or even deleted—depending on the exaction of the editor. Because of this editorial process, posting of the listing is not immediate. Furthermore, once the listing has been posted to the database, if the person making the listing later wishes to change the listing in some respect, the change must again pass through the same laborious channel. Hence, the process of adding and updating listings is inconvenient and unsatisfactory.

Moreover, the nature of the listing is rather prosaic. The listing is in title/brief-description format and does not include graphical elements or otherwise appeal to the artistic sensibilities of the viewer. In this sense, the listing is comparable to the standard telephone book listing, which appears in plain text, nothing added, as compared, say, to a quarter-page advertisement with custom artwork and the like.

To use the foregoing service, one is required have a Web homepage. If a user has no Web presence but wishes to establish one, the foregoing service is entirely unavailable. The typical user must first establish a Web presence by paying a Web consultant to produce a homepage and then paying an Internet Service Provider to house that homepage on the Web. This undertaking can prove to be quite costly for an individual or a small business.

What is needed, then, is an information service that overcomes the foregoing disadvantages.

SUMMARY OF THE INVENTION

The present invention, generally speaking, uses a computer network and a database to provide a hardware-independent, dynamic information system in which the information content is entirely user-controlled. Requests are received from individual users of the computer network to electronically publish information, and input is accepted from the individual users. Entries from the users containing the information to be electronically published are automatically collected, classified and stored in the database in searchable and retrievable form. Entries are made freely accessible on the computer network. In response to user requests, the database is searched and entries are retrieved. Entries are served to users in a hardware-independent page description language. The entries are password protected, allowing users to retrieve and update entries by supplying a correct password.

Preferably, the process is entirely automated with any necessary billing being performed by secure, on-line credit card processing. The user making a database entry has complete control of that entry both at the time the entry is made at any time thereafter. The entry, when served to a client, is transformed on-the-fly to the page description language. Where the page description language is HTML and the computer network is the World Wide Web, the entry may function as a "mini" homepage for the user that made the entry. Provision is made for graphics and other kinds of content besides text, taking advantage of the content-rich nature of the Web.

Because the user controls both the content of an entry and the manner in which it is classified, the database functions as a directory to allow the Web public to quickly and precisely find current and accurate data about the user, the user's products and services, etc., without requiring the user to have a conventional Web homepage. The user's mini homepage can be included in many different categories, with the user having the flexibility to change the categories or the descriptive content of the page at any time. Preferably, hyperlink services are also provided, by including within the page links to an E-mail address or to one or more other conventional homepages (or other mini homepages). The E-mail address may be a private E-mail address established on the host machine, avoiding the need to obtain a conventional E-mail address. An inexpensive way is therefore provided to set up a Web site with key information that might otherwise be very costly to widely distribute, and to achieve an Internet presence with a minimum of effort and expense.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be further understood from the following description in conjunction with the appended drawing. In the drawing:

FIGS. **1**A and **1**B are simplified block diagrams of alternative embodiments of the system of the present invention;

FIG. **2**A through FIG. **2**T are screen shots showing use of the system and method of the present invention;

FIG. **3** is a flowchart of the operational steps involved in the present system and method;

FIG. **4** is a block diagram showing various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships; and

FIG. **5** is a simplified block diagram showing the manner in which whois and traceroute services are made readily available through HTML front-ending and augmented with hyperlink services.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. **1**A, there is shown a simplified block diagram of the system of the present invention. A server site **101** is connected to the computer network **103** such as the Web or a Wide Area Network (WAN) other than the Web. At the server site, server software runs on a suitable server platform. In the case of the Web, for example, the server of FIG. **1**A might be a server available from the National Center for Supercomputing Applications (NCSA), or a secure server package of a known, commercially-available type, running on a super-minicomputer such as a SunServer machine available from Sun Microsystems of Menlo Park, Calif., or on any of a wide variety of suitable UNIX platforms. Also running, either on the same machine or a network-accessible machine, is a database management system **107**. Preferably, the database management system **107** supports Standard Query Language, or SQL. One suitable database management system is MiniSQL, which is also commercially available.

SQL databases, however, are not inherently "Web-friendly." Accordingly, a variety of HTML front-ending tools **109** are provided which run as extensions to the server software, allowing computer network users to each add entries to a database, search entries in the database, and update entries by that particular user, all using the Web (or a Web-like) graphical user interface. The server software and the HTML front-ending tools communicate through the Common Gateway Interface **111**. In accordance with another embodiment, shown in FIG. **1**B, the HTML front-ending tools may be fully integrated with the server software. The HTML front-ending tools and the database communicate through SQL (**113**).

When a network user visits the server site, the user is served a main page in a page description language such as HTML. The user interacts with the page, making selections or requests. These selections or requests, although they may not appears as such to the user, are in effect page requests, e.g., URLs that access a page directly or that call a CGI script to perform some sort of processing. The result of the selection or request may be a page eliciting a further selection or request, or may be contain the desired information itself.

In order to convey the manner in which the automated information service and directory is used, screen displays of the graphical user interface will now be described.

When a user first visits the site, he or she is presented with a main page as shown in FIG. **2**A. Along the side of the page are icons that may be clicked on to select different services. An icon **201** selects a "WebBook" service in which database entries may be searched, viewed and updated. An icon **203** selects a "WebWho Whois" service, providing a graphical front end to the United States Whois database, with additional hypertext link integration. An icon **205** selects the "WebWho Traceroute" service, providing a graphical front end to the Traceroute utility, again with additional hypertext link integration. An icon **207** in the top left shows the current page's icon and is not linked.

When the icon **201** is selected, the user is presented with a page like that shown in FIGS. **2**B, **2**C, and **2**D. At the top of the page appears a table **209** presenting examples of valid

entry types for Whois, i.e., Domain Name, Machine Name, Registered Handle, Registered Name, IP Address and IP Network. Next appears a text input field **211** to receive the information to be looked up. Next appears an example of the results of a specific lookup. The user has input his or her request, and results have been received back and displayed in a results area **213**. As described more fully below, links are embedded in the results such that, by clicking on an area **215** displaying ccoley@SRMC.COM, for example, an E-mail utility will be invoked showing a blank E-mail addressed to ccoley@SRMC.COM. Similarly, domain names, IP addresses, etc. may be clicked on, with the result that Whois is queried once again with respect to the selected information.

At the bottom of the page appears a Navigational Aid **217** used throughout the user interface where appropriate to allow the user to return directly to a particular entry point in the program flow without having to follow numerous links as is typical of the prior art.

When the icon **203** is selected, the user is presented with a page for the Traceroute utility like that shown in FIGS. **2**E and **2**F. The various features of the page will be evident from the preceding description. One feature, however, bears particular mention. That is, just as clicking a domain name or the like in Whois produces a further query, bringing up additional information, similarly, clicking on names or addresses in FIG. **2**C also produces a further query, not of Traceroute but of Whois. For example, if one wanted to find additional information about the machine on line number of 1 of FIG. **2**C, one could simply click on the IP address 205.138.192.1 displayed in the area **219**. This action would produce the same result as if the user had copied down the IP address, navigated to Whois and entered the IP address in the lookup field.

When the icon **205** is selected, the user is presented with a page like that shown in FIG. **2**G. The navigation aid previously described, although not shown in FIG. **2**G, may also be included if desired. The user is given the options of searching the database, adding a new entry, updating an existing entry, changing the user's password, or logging in. As described below, login is typically not required to view a listing of entries satisfying a particular search request, although login may be required to view an actual entry itself and is required to update an entry.

When the Search option is selected, the user is presented with a page like that shown in FIG. **2**H. Within WebBook, a different type of navigational aid **221** is included that allows the user to quickly move about within WebBook, between Search, Add and Update, or to go to the main page of FIG. **2**A. The screen of FIG. **2**H allows the user to select between different searching methods, including searching by Categories (going through a categories list), by Example (querying each field of the entries), and by Keyword (specifying a keyword).

When Categories is selected, the user is presented with a page like that shown in FIG. **21**. In the example shown, three root-level categories are presented, BUSINESS, RECREATION, and WEBWHO95. The user selects one of these categories to show further subcategories, as seen in FIG. **23**, which is displayed in response to the user selecting WEBWHO95. A single subcategory is shown—INDEX, having 9250 entries. The entries are listed by title within the lower part of the page. The user may select how many entries are to be displayed at a time in order to quicken response time. Also, presorts are used in order to quickly display the results of a category or keyword search.

When Example is selected, the user is presented with a page like that shown in FIG. **2**K. The user enters the information to be searched in any field or combination of fields to be searched.

To add a new entry to the database, the user is presented with a page like that shown in FIG. **2**L. Each information item in the upper portion of the form is required, unless otherwise indicated. If a required item is not provided, the program will redisplay the form and request the user to complete all required items. Optional items include middle name, alternate phone number, fax number, URL#1, and URL#2.

The remainder of the form is used to enter up to twenty keywords and a description of the user's entry, to be displayed with the entry.

Following entry of keywords and a description of the entry, the user is requested to choose a category for the entry by presenting the user with a page like that shown in FIG. **2**M. The user can navigate the category tree until he or she has located the desired category and then select that category. If none of the categories is adequate, then the user may define his or her own category, by entering the name of the category and a short description of the category. The new category will then be added to the category tree.

A sample mini homepage is shown in FIGS. **2**N and **2**O. The mini homepage may be located by searching the database and then selecting the corresponding entry, or may be retrieved directly by URL. The URL of the mini homepage itself should not be confused with URL#1 and URL#2 listed on the mini homepage. The latter refer to independent resources. The URL of the mini homepage itself is, for example, based on a unique transaction ID assigned to each entry and may be entered into a browser program to view the mini homepage directly without searching.

When Update is selected (FIG. **2**G), the user, having entered the correct transaction ID and password, is presented with a page like that shown in FIG. **2**P. The corresponding mini homepage is displayed, and the user is requested to update the mini homepage (the "post"). When the user has edited the entry to his or her satisfaction, the user presses UPDATE. The user is then presented with a further page like that shown in FIGS. **2**Q and **2**R, giving him or her the opportunity to review one final time the comments and keywords. To change the comments or keywords, the user presses BACK. The user can also change the category of the entry by pressing the Change category button. To accept and complete the update, the user presses a Done update button.

A page like that shown in FIG. **2**S is then presented. The user is required to enter the identification number of the post. If the identification number is entered correctly, the post is updated, and a page like that shown in FIG. **2**T is presented to the user, confirming the update.

Referring now to FIG. **3**, the operational steps involved in the present system and method are represented. The system is accessed either directly by the user or by following a link to the server site, for example the URL WebWho.com. The name WebWho™ is a trademark of the present assignee.

The user is first presented with a page **301** (index.shtml) allowing the user to select from different services, including whois and traceroute. As described previously, whois is an Internet service that looks up information about a user in a database. Traceroute is a program that permits a user to find the path a packet will take as it crosses the Internet to a specific destination. Whois and traceroute are known services. Previously, however, use of these services has typically required "root-user access" on a UNIX host. In accordance with one aspect of the present invention, these

services are HTML front-ended and made available to all users, together with further hyperlink services that greatly increase the utility of the underlying whois and traceroute services.

Referring to FIG. **5**, whois and traceroute are made readily available to all network users through HTML front-ending using CGI scripts. The actual whois code **501** and traceroute code **503** remains within the root directory **500** on a UNIX host. Respective CGI scripts are provided, namely whois.cgi (**505**) and traceroute.cgi (**507**), that have root user privileges and that provide HTML front-ending between the user and their respective services. For example, when a user selects the WebWho Whois service from the main page of FIG. **2**A, the whois.cgi script **505** is invoked to pass the user input to the root directory whois service **501** and cause it to service the user's request. Output from the root directory whois service **501** is passed back from the whois.cgi script **505** in HTML format. The same description applies equally to the traceroute.cgi script and the root directory traceroute service.

To further augment the whois and traceroute services, hyperlink services are provided. The root directory whois and traceroute services are provided with a parsing routine **509** that parses the output of these services to identify E-mail addresses, domain names, IP names, etc.—character strings containing period separators and/or the character "@." The parser then passes back this information to the CGI scripts in the form of links, links to the whois.cgi script **505** in the case of names and links to an E-mail.cgi script **511** in the case of E-mail addresses. The E-mail.cgi script **511** controls an E-mail utility **513** that may be located in the root directory or in a different directory.

Whois and traceroute, as implemented as part of the present invention, provide powerful new tools for serious Internet tools. Using whois, the user may type in any address with a ".com", ".edu" or ".net" extension and find the physical address, phone number and the individual(s) that the address represents. This ability may be used as a powerful marketing tool to find a wealth of information about people on the Internet. Also, whois can be used to instantly check a domain name.

Traceroute may be used by System Administers to obtain information to make their jobs much easier. Previously, System Administrators have not been allowed to use traceroute on a PC running any operating system other than UNIX.

Whereas whois and traceroute are more technically oriented, "WebBook" allows non-technical users to take advantage of the capabilities of the Web with a minimum of effort. WebBook allows a user to have HTML-front-ended access to a database of mini homepages in order to search, add entries to, or update previous entries in the database.

Referring again to FIG. **3**, if WebBook is chosen, a login routine **303** may request the to enter identifying information of the type that would normally be found on a business card, for example. Presently, although Web sites are able to track the user's access point to the Web (for example, a particular slip connection through an Internet Service Provider), this information often gives no indication who the user really is. Such information is important in order to evaluate the extent to which a target audience is being reached.

The user may choose an option that allows the user to bypass the login request. The request for information as to the identity of the user therefore may or may not be complied with; moreover, the information provided may or may not be accurate. As an incentive to provide the requested information (and, it is hoped, the correct information), users providing the requested information may be given more complete access to the database than users who do not provide the requested information. Users providing the requested information are assigned a user ID to be used during subsequent accesses and are requested to choose a password. The password may be required to access some system services. To further encourage voluntary login, users that have complied with the login request and have been assigned a user ID may be afforded the ability to customize the user interface and maintain the resulting look and feel between uses. This customization is performed in a known manner by storing on the host a user preferences file and accessing the file to restore user preferences when a valid user ID is provided.

For a period during the initial stages of the service, while the database is still being built up, it may be desirable to allow all users complete access to the database regardless of whether or not they have identified themselves.

Following the login procedure, the user is provided with a page **305** presenting the different ways that the user may interact with the database. For example, a user may search the database, add a new entry to the database, or update a previous entry to the database by that user. Each of these options will be described in turn.

If the user chooses to search the database, the user is provided with a page **307** concerning different search options. A search may be performed on one or more of a number of different database fields, depending on the organization of the database entries. For example, in a preferred embodiment, the database entries include the following defined fields:

uid	country
fname	email
lname	url
mname	keywords
title	comment
ident	category
phone 1	active
phone 2	start.sub.-- date
fax	expire.sub.-- date
addr	info1 (Reserved)
city	info2 (Reserved)
state	info3 (Reserved)
zipcode	info4 (Reserved)

In one embodiment, searches may be performed by category, by keyword, by URL, or by example. To facilitate rapid retrieval of information, presorted listings may be stored for each category and keyword or for some number of the most common categories and keywords. To search by example, the user is provided with a form having the same organization as the database entries. The user fills in information in the fields of interest. The search then returns information concerning entries having matching information in those fields. Entries are displayed in list fashion by title on a page **309**.

The number of entries produced by a search may be very large. Therefore, instead of displaying a listing for all of the entries at once, the entries may be displayed ten at a time, for example. Alternatively, only the first 100 or 200 entries may be displayed.

While some sites may provide information and services free of charge, for example as a result of volunteerism or advertising subsidies, other sites may have a business model in which users are charged for information or services or both. For such a site, it becomes critical to protect the

information stored in the database. Therefore, unlike some existing databases in which actual hypermedia links to Web homepages are stored in the listed items, in order to prevent effectual pirating of the database, links are embedded only in the full entry itself, not in the entry listings. Otherwise a user could simply store a voluminous listing or various different listings, with their accompanying hypermedia links, and thereby capture in large part the entire benefit of the database. Instead, an item in a listing is intended only to give the user enough information to gauge the user's further interest in an item. If the user is interested in an item, the user may select that item, causing the full-page entry to be provided. The full page entry includes links to any E-mail address or URL that the owner of the entry may have provided, thereby providing a link to that person's or organization's homepage (or to some other homepage).

If the user bypassed login, as determined in step **311**, he or she will normally be returned to the login procedure when attempting to select an entry to view it in its entirety. If the user has logged in, then the user may select an entry and the corresponding full page **313** will be served to the user.

The full page entry **313** need not be limited to text alone but may be a complete hypermedia page, including possible graphics or other non-textual content. In this manner, for person's or organizations not having any independent Web homepage, the entry can function as a "mini-homepage," i.e., a single page hypermedia document. Furthermore, the mini-homepage may have its own URL, allowing it to be accessed directly without performing a search of the database. For example, a URL for a mini homepage might be http://webwho.com/view?id=xxxx, where xxxx represents a transaction ID assigned to each entry in a manner described below.

A link **315** is embedded in the mini-homepage to allow for the page to be updated. Prior to describing the manner in which the mini-homepage is updated, however, the manner of adding a new entry to the database will first be described.

In order to add an entry to the database, a user must login, during which the user chooses a password, or must have logged in during a previous visit to the site. When the user chooses to add a new entry to the database, a unique transaction ID is created for that entry, to be used throughout the life of the entry. A unique transaction ID may be created in any of many different ways. For example, the transaction ID might be the date (e.g., 951215) and the entry number for that date (e.g., 00215). Alternatively, the transaction ID might be the time of day (e.g., HHMMSS) and the process ID of the host machine process that is servicing the user's request. In one embodiment, the transaction ID is a 14-digit hexadecimal number in which eight digits represent the number of seconds since an arbitrary date (e.g., Jan. 1, 1970), four digits represent the process ID running on the host machine, and two digits represent a portion of the machine IP address (to distinguish between different host machines).

Once a transaction ID has been assigned, the user is then provided with an entry form **317** having fields corresponding to the various fields of a database entry as described previously. The user fills out the form and presses a screen button when the entry is complete. The form may have one or more checkboxes **319** to indicate the desire to include with the entry one or more non-textual elements, such as a graphic image, etc. Also, if desired, different templates may be provided governing the appearance of the finished page, with the user selecting a desired template.

Non-textual content may be obtained from the user in any of a number of different ways. For example, the user may transfer to the site a file containing the non-textual content using the File Transfer Protocol (FIP) with the same user ID and password as when the entry was added.

During the entry process, the user is prompted to enter keywords to facilitate later searching of the database and location of the entry. Furthermore, the HTML front-end tools may assist in developing keywords for the entry. A pre-searchtsort tool, for example, might take the 2000 top keywords found in the database within the keyword field and do a total text search throughout the database for these keywords. If one or more of these keywords appears in the description ("comment" field) of an entry but not in the keyword list, these keywords are then added to a keyword extension field for up to some number of keywords, e.g. five.

If the server site is based on a pay-for-service model, the form will also call for the user to enter a credit card number as the last piece of information. Secure, on-line credit card processing will then be performed to bill the user, either on a onetime basis, on a periodic basis, or on an occasional basis as future services may require. Although various methods of processing credit card transaction on-line have been proposed, with various degrees of attendant security, such processing is preferably performed in accordance with a proprietary method developed by the assignee to provide the highest level of security possible.

After an entry has been made, it may be updated at any time by one able to provide the transaction ID assigned to the entry and the user password, i.e., by the user or one acting on behalf of the user. The update option may be entered directly, or the entry to be updated may first be viewed as the result of a search and the update screen button **315** then pressed. The user is then prompted to supply the correct transaction ID and password (page **321**), failing which the user will not be allowed to update the entry.

If the transaction ID and password are correctly supplied, then the equivalent of a new entry form will be provided to the user will the current information pertaining to the entry already filled in. The user may then modify the entry. If a charge is made for updating the entry, preferably the credit card information from the earlier creation of the entry will have been stored in a highly secure fashion, avoiding the need to reenter the information. Both security and convenience are thereby enhanced.

Nothing in the process of adding, searching and updating entries requires manual intervention. Rather, the entire process is automated and may be made available continuously, 24 hours a day, 365 days a year. Like a publicly-accessible bulletin board, the content that is posted on the database is entirely within the control of the user, both at the time the entry is posted and all times thereafter.

Referring now to FIG. **4**, various ones of the HTML front-ending tools of FIG. **1** and their functional interrelationships will now be described.

When a user visits the site and the WebWho option is selected, a page WebWho.html (**401**) is served to the user, offering the user various options, including, for example, options to search the database, add a new entry, update an existing entry, change the user's password, or to log in if the user has not previously done so. In an exemplary embodiment, the routines illustrated in FIG. **4** are standard C routines, called from a single CGI script. In other embodiments, the routines may be called by separate scripts, and may be written other languages such as in a UNIX shell language, or in one of a number of emerging Internet computer languages such as Java.

The Options routine **403** reads in the user's choice and invokes one of the five following routines: Search (**405**), Add (**407**), Update (**409**), Changepw (**411**), and Login (**413**). Each of these options will be described in turn.

If Search is chosen, the Search routine **405** initiates one of several possible search functions. In a preferred embodiment, these functions include a categories search, an example search, and a keyword search. According to the search function chosen, the Search routine invokes one of the following routines: Categories (**415**), Example (**417**), and Key.sub.—Search (**419**).

Categories are represented in computer memory in the form of a tree structure. A categories search starts from the root level, with the Categories routine **415** displaying all the categories available at that level, and all the entries (or up to some number of entries) belonging to that level. The user can click on any category to go to the next level, and can click on any entry to bring up the mini page of the entry.

If Example is chosen, the Example routine **417** displays a form for the user to fill in any field he or she wants to search on. The Example routine **417** reads in the information and displays all the entries that match what has been specified.

If Keyword is chosen, the Key.sub.—ysearch routine **419** displays text boxes to read in up to a specified number of keywords (e.g., four) to search on. The Key.sub.—search routine **419** displays all the entries that match the specified keywords.

When a user clicks on one of the entries returned by a search function, the mini page is displayed by a List.sub.—entries routine **421**. List.sub.—entries displays the mini page for a particular entry and also contains an update button for the user to update that particular entry.

When a user specifies that he or she wants to edit the entry currently being displayed, the Update routine **409** performs a check to see if that page belongs to the user currently logged in. If so, updating is initiated by invoking an Update post routine **423**. Otherwise, an Update.sub.—login routine **425** is called to allow the user to perform the correct login sequence. The Update.sub.—login routine **425** reads in a user ID and password and matches them against the database to determine if the user is the owner of the mini page currently being displayed. Updating is not allowed until the correct user ID and password are entered.

The Update-post routine **423** displays an entry form with values filled in from the information stored in the database. It invokes a Do.sub.—update routine **427** to process the new values being entered. The Do.sub.—update routine reads in the new information, makes sure that all the required information is filled. If not, a routine Do.sub.—missing is invoked. When all of the required information has been supplied, a Update.sub.—key routine **429** reads in the keywords and comments from the database entry, displays them, and asks the user to confirm. The user can go ahead and update the database or can change the category the entry currently belongs to.

If the user chooses to change the category, a Change-.sub.—cat routine **431** displays all the categories at the root level. The user can click on one of the categories to go to the next level or can specify a new category on the current level. If the user chooses to go ahead and update the database, another form is displayed to read in the identification number of the entry. A Get.sub.—ident routine **435** is then invoked. If the user chooses to change the category, an Update.sub.—cat routine **433** handles navigation through the categories tree. It will keep displaying the categories on the current level until the user has decided on a category or has specified a new category.

The routine Get.sub.—ident **435** reads in the identification number and matches it against the identification number stored in the database for the current entry. If they match, the database is updated; otherwise, the program declines the update.

Entries may also be updated directly without searching, using the Update routine **409**. If a user is currently logged in, the Update routine **409** displays all the entries belonging to that user. Otherwise, the Update.sub.—login routine **425** performs a login and displays all the entries belonging to the newly logged-in user. The remaining update routines have already been described as a continuation of the search options and will therefore not be further described.

When Add is selected, the Add routine **407** displays an empty form to allow the user to fill in all the information. The Add routine **407** processes the information that has been entered, using the Do.sub.—missing routine to make sure that all the required information is entered. The Do.sub.—missing routine displays the form again until all the required information is entered.

After all the required information has been entered, a Get.sub.—info routine **437** displays another form to read in the keywords and comments. A Confirm.sub.—info routine **439** processes the keywords and comment being entered and displays them again, asking the user to confirm. After the user confirms the keywords and comments, a Pick.sub.—cat routine **441** acquires the category using the same mechanism previously described in relation to Update.sub.—cat. If the user is not logged, in he or she is logged in, and a new user ID is determined. A form is then displayed to read in the user's password. A Get.sub.—pw routine **443** reads in the password and displays a form to read in credit card information. A Get.sub.—cc routine **445** verifies the credit card information. If the transaction is authorized, it adds the new entry into the database; otherwise, it rejects the entry.

The remaining routines are administrative in nature. The user may wish to change his or her password. If the user is not currently logged in, a login is performed by calling a Changepw.sub.—login routine **447**. Changepw.sub.—login reads in the user ID and password and matches them against the values in the database. A form is then displayed to read in the new password. The Changepw routine **411** actually updates the database with the new password.

The Login routine **413** reads in the user ID and password and checks them against the database. If the user ID and password are correct, operation begins at the main page with the user logged in as the new user.

It will be appreciated by those of ordinary skill in the art that the invention can be embodied in other specific forms without departing from the spirit or essential character thereof. The foregoing description is therefore considered in all respects to be illustrative and not restrictive. The scope of the invention is indicated by the appended claims, and all changes which come within the meaning and range of equivalents thereof are intended to be embraced therein.

The invention claimed is:

1. A method for providing a pay-for-service web site comprising:

providing a web server coupled to a computer network having a database operatively disposed within and accessible on said network;

providing an HTML front-end entry process associated with the web server;

executing an HTML front-end entry process, said HTML front-end entry process being configured to:

create a personal homepage for an owner;

store said personal home page in said database;

index said personal homepage in said database in a user-defined category; and

receive a fee from said owner for making said personal homepage accessible on said network.

2. The method of claim **1** wherein said personal homepage includes a description associated with said user-defined category.

3. The method of claim **2**, further including non-textual information associated with said user-defined category.

4. The method of claim **3**, wherein said non-textual information includes graphics.

5. The method of claim **1** further including the act of indexing said personal homepage using keywords.

6. The method of claim **5** wherein said indexing includes associating said user-defined category to said keywords.

7. The method of claim **6** wherein said indexing includes associating said user-defined category to a second set of keywords.

8. The method of claim **7** wherein said graphical information is associated to an additional user-defined category.

9. The method of claim **1** wherein said personal homepage further includes personalized information.

10. The method of claim **9**, where said personalized information includes a URL to the owner's homepage.

11. The method of claim **1**, further including the act of password-protecting an account associated with said owner.

12. A web server for providing a pay-for-service web site comprising:

a web server coupled to a computer network having a database operatively disposed within and accessible on said network;

an HTML front-end entry process associated with the web server;

the HTML front-end entry process configured to:

create a personal homepage for an owner;

store said personal home page in said database;

index said personal homepage in said database in a user-defined category; and

receive a fee from said owner for making said personal homepage accessible on said network.

13. The web server of claim **12** wherein said personal homepage includes a description associated with said user-defined categories.

14. The web server of claim **13**, further including non-textual information associated with said user-defined category.

15. The web server of claim **14**, wherein said non-textual information includes graphics.

16. The web server of claim **12** further configured to index said personal homepage using keywords.

17. The web server of claim **16** wherein said indexing includes associating said user-defined category to said keywords.

18. The web server of claim **17** wherein said indexing includes associating said user-defined category to a second set of keywords.

19. The web server of claim **18** wherein said graphical information is associated to an additional user-defined category.

20. The web server of claim **12** wherein said personal homepage further includes personalized information.

21. The web server of claim **20**, wherein said personalized information includes a URL to the owner's homepage.

22. The web server of claim **12**, further configured to password-protect an account associated with said owner.

* * * * *

EXHIBIT E

WATSON
WR
ROUNDS

KELLY G. WATSON [1]
MICHAEL D. ROUNDS [1]
MATTHEW D. FRANCIS [2]

ARTHUR A. ZORIO [1]
CASSANDRA P. JOSEPH [1]
MELISSA P. BARNARD
RYAN E. JOHNSON
TARA A. SHIROFF
MATTHEW G. HOLLAND
ADAM P. McMILLEN [2]
ELIZA BECHTOLD [4]
ADAM YOWELL

OF COUNSEL-
MARC D. FOODMAN [1,3]

[1] Also licensed in California
[2] Also licensed in Utah
[3] Also licensed in Massachusetts
[4] Licensed only in California

5371 Kietzke Lane
Reno, Nevada 89511
(775) 324-4100
Fax (775) 333-8171
renoinfo@watsonrounds.com

777 North Rainbow Boulevard
Suite 350
Las Vegas, Nevada 89107
(702) 636-4902
Fax (702) 636-4904
vegasinfo@watsonrounds.com

One Market-Steuart Tower
Suite 1600
San Francisco, CA 94105
(415)243-4090
Fax (415)243-0226
sfinfo@watsonrounds.com

www.watsonrounds.com

Reply to: Reno

January 18, 2010

Jim Buckmaster, CEO
Craigslist
1381 9th Ave.
San Francisco, CA 94122-2308

Re: *Craigslist Website*

Dear Mr. Buckmaster:

Watson Rounds represents GraphOn Corporation, a Santa Cruz company that owns an extensive patent portfolio for internet-based products and services. We have reviewed the Craigslist website in detail, and believe that there may be interest on the part of Craigslist in licensing four of GraphOn's patents, U.S. Patent No.'s 6,324,538, 6,850,940, 7,028,034 and 7,269,591. We have attached these patents, along with preliminary charts outlining the patent claim elements, the corresponding Craigslist website pages for its paid employment listings that satisfy these elements, a Markman Order from the Eastern District of Texas that interprets two of the patents' key elements, and a sample licensing agreement.

Once you have reviewed these materials, we would appreciate an opportunity to meet with you to discuss licensing options for these patents, and perhaps other patents in the GraphOn portfolio. To date, GraphOn has licensed its portfolio, to AutoTrader.com, Classified Ventures (Cars.com). Careerbuilder.com, Google, Yahoo!, eBay and others, and it would appreciate the opportunity to add Craigslist to this growing list without time-consuming and costly litigation for both parties.

We look forward to hearing from you.

Sincerely yours,

Michael D. Rounds, Esq.
WATSON ROUNDS
A Professional Corporation

LICENSE AGREEMENT

This License Agreement is made between GraphOn Corporation ("GraphOn"), a Delaware corporation with its principal place of business at 5400 Soquel Avenue, Suite A2, Santa Cruz, California, and Craigslist, Inc. ("Craigslist"), a corporation duly organized and existing under the laws of the State of Delaware, having a place of business at 1381 9th Avenue, San Francisco, CA 94122. GraphOn and Craigslist may be referred to herein singularly as "Party" or collectively as "the Parties." The effective date of this Agreement is August ___, 2009 ("Effective Date.").

WHEREAS, GraphOn alleges infringement of U.S. Patent No.'s 6,324,538 and 6,850,940 against Craigslist;

WHEREAS, the Parties desire to settle and resolve all differences and disputes that exist or may exist between them and in connection with such resolution, GraphOn wishes to license Craigslist (as defined in paragraph 3) certain patent rights and Craigslist wishes to obtain such patent rights;

NOW THEREFORE, in consideration of the following terms, covenants and conditions, the Parties agree as follows:

1. "Patent Rights" means:

(a) The patents acquired through GraphOn's acquisition of Network Engineering Software, Inc. including United States Patent Nos. 5,870,550, 6,647,422, 7,386,880, 5,778,367, 6,324,538, 6,850,940, 7,028,034, 7,269,591, 5,826,014, 6,061,798, 7,127,464, 7,360,244, 7,380,273, 7,383,573, 5,898,830, 6,052,788, 6,804,783, 6,751,738, 7,269,847, 7,249,378, 7,028,336, 7,249,376, 7,424,737 and 5,790,664 ("the Patents");

(b) all patents issued or issuing on any continuation, continuation-in-part or divisional application, claiming priority to any of the Patents;

(c) all patents issued or issuing on all foreign patent applications claiming priority to any of the Patents; and

(d) all re-issues, re-examinations and extensions of any of the Patents; and

2. GraphOn warrants that it owns all right, title and interest in and to the Patent Rights and that it owns no patents as of the Effective Date other than the patents listed in Section 1 above.

3. The term "Craigslist" shall mean Craigslist, Inc. and any corporation, company, or other entity which is now or in the future directly or indirectly controlled by Craigslist (each, a "Craigslist Affiliate"). The term "control" as used in this Section 3

shall mean ownership of more than 50 percent of the outstanding shares representing the right to vote for directors or other managing officers of such corporation, company or other entity, or, for a corporation, company or other entity which does not have outstanding shares, more than 50 percent of the ownership interest representing the right to make decisions for such corporation, company or other entity; provided, however, such corporation, company or other entity shall be deemed part of Craigslist only so long as such "control" exists. Where Craigslist and/or any Craigslist Affiliate(s) now or in the future jointly or collectively control an entity (through aggregation of their respective ownership interests), that entity shall also be included in the definition of Craigslist within the meaning of this paragraph. However, control of any future entity shall be acquired for a legitimate business purpose and not for the purpose of undermining GraphOn's ability to license its Patent Rights to third parties.

4. (a) GraphOn hereby grants Craigslist a world-wide, non-exclusive, fully paid up, irrevocable license to practice and have practiced on behalf of Craigslist all claims to the Patent Rights.

(b) GraphOn covenants not to sue Craigslist, its officers, directors, employees, successors, paragraph 4(c) sublicensees or assigns, or any provider, customer or user of any web site or other product, system or service operated by or on behalf of Craigslist for violation of Patent Rights based upon any activity prior to or after the Effective Date of this Agreement.

(c) Craigslist has no right to assign, license or sublicense any of the Patent Rights, except in the case of an acquisition, merger, reorganization or sale of all or substantially all of the assets of Craigslist, in which case the rights under this Agreement may be assigned to the applicable successor or acquiring entity without the prior consent of GraphOn, but only to the extent of the operational scope of Craigslist's business at the time of the transfer. Craigslist may also sublicense its rights under this Agreement to an entity acquiring a portion of Craigslist's business, but only to the extent of the operational scope of the acquired portion of Craigslist's business at the time of the transfer. Any such sublicense shall be for a legitimate business purpose and not for purposes of undermining GraphOn's ability to license its Patent Rights to third parties.

(d) Any transfer of any of the Patent Rights by GraphOn in the future shall be made expressly subject to the licenses, releases and covenants not to sue granted Craigslist herein.

5. Craigslist shall pay a one-time fee to GraphOn of $_____ for the license to the Patent Rights identified herein. Craigslist shall pay the one time fee in a single payment within seven (7) business days of the execution of this Agreement. Payment shall be made by wire transfer to Watson Rounds, counsel for GraphOn: First Independent Bank of Nevada, Watson Rounds Client Trust Account, Routing No. 121202062, Account No. 013014519.

6. GraphOn, on the one hand, and Craigslist, on the other, forever mutually discharge and release each other, and their past and present officers, directors, shareholders, subsidiaries, affiliates, agents, representatives, employees and attorneys, from any and all claims and causes of action of whatever kind or nature, whether known or unknown, that relate in any way to the infringement, validity or unenforceability of the Patents. The Parties understand and agree that the releases set forth in this Agreement extend to all claims of any nature and kind, whether known or unknown, suspected or unsuspected, except for actions necessary to enforce the terms of this Agreement. With respect to such releases, the Parties hereby expressly waive and relinquish any and all rights under Section 1542 of the California Civil Code, which provides as follows:

> "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which, if known to him, must have materially affected his settlement with the debtor."

7. The terms of this Agreement are confidential between the Parties and may not be disclosed to any third party person, entity or organization except as required by the SEC, subpoena, written discovery or other law or regulation. In the event disclosure is required, the disclosing Party shall limit the disclosure and maintain the confidentiality of this Agreement and its terms to the extent permitted by the SEC, subpoena, written discovery, applicable law or regulation. For example, GraphOn shall use its best efforts to disclose in its SEC filings only the gross amounts that it has received in settlement and licensing revenues from Craigslist and perhaps other third parties, but not the amount paid as a fee by any one entity. Any press release issued by either Party shall simply state that the Parties have resolved their differences. Notwithstanding the foregoing, subject to the restriction of this Section 7, each Party is permitted to disclose the terms of this Agreement to necessary officers, directors, employees, contractors, auditors and professional advisors and Craigslist is permitted to disclose the terms of this Agreement to any corporation, company or entity that has rights hereunder, including any entity in the definition of Craigslist and any of Craigslist's actual or potential successors, sublicensees or assigns herein.

8. The term of this Agreement shall be from the Effective Date until the last to expire of the Patent Rights, however the covenants not to sue in Section 4(b) and the release in Section 6 shall survive any such expiration.

9. Each of the Parties represents, warrants and agrees that it has not assigned or otherwise transferred to any third party any interest in any claim it may have against another Party to this Agreement, and agrees to indemnify and hold all other Parties hereto harmless from any liability, including but not limited to, attorneys fees, costs and expenses, resulting from its having assigned or transferred such an interest to a third party.

10. This Agreement may be executed by the Parties in counterparts and exchanged by electronic means, with the same effect as if all Parties had signed the same instrument.

11. This Agreement shall be governed by the laws of the State of California, exclusive of its conflicts of law principles. The Parties consent to exclusive jurisdiction of the state and federal courts located in the Northern District of California for the resolution of any disputes arising out of this Agreement.

12. This Agreement constitutes the complete, final and exclusive embodiment of the entire agreement between the Parties with regard to the subject matter hereof. It is entered into without reliance on any promises or representations, written or oral, other than those expressly contained herein, and it supersedes any other promises, warranties or representations. This Agreement can not be modified or amended except in writing, signed by the Party to be bound by the modification or amendment which specifically mentions this Agreement.

13. The Parties to this Agreement and their counsel have participated jointly in the negotiation and drafting of this Agreement, and for all purposes this Agreement shall be deemed to have been drafted jointly by the Parties and their counsel.

14. The Parties execute this Agreement freely and voluntarily and without acting under any duress or in reliance upon any threat made by or on behalf of the other Party. Each Party has consulted with or has had an opportunity to consult with counsel of their own choice about the legal effect of entering into this Agreement.

15. If a court of competent jurisdiction determines that any term or provision of this Agreement is invalid or unenforceable, in whole or in part, then the remaining terms and provisions hereof shall be unimpaired. Such court will have the authority to modify or replace the invalid or unenforceable term or provision with a valid and enforceable term or provision that accurately embodies the Parties' intention with respect to the invalid or unenforceable term or provision.

16. In the event of any action or proceeding alleging the breach of this Agreement, the Party prevailing in such action or proceeding shall be entitled to recover from the Party who breaches the Agreement, not only the amount of any judgment or order, but also such other costs and expenses as may be reasonably incurred by said Party, including court costs and reasonable attorney fees and all other reasonable cost and expenses, whether taxed or otherwise, incurred in connection with said action or proceeding. Such additional recovery, provided for in this paragraph 16, will be contingent upon a finding of the Court that the recovering Party was the prevailing Party in the action and that the breach giving rise to the recovery was a material breach of this Agreement.

17. The Parties acknowledge and agree that all rights and licenses granted by GraphOn under or pursuant to this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the United States Bankruptcy Code, as amended (the "Bankruptcy Code"), licenses of rights to "intellectual property" as defined under Section 101 of the Bankruptcy Code. The Parties agree that, notwithstanding anything else in this Agreement, Craigslist, as a licensee of such intellectual property rights under this Agreement, shall retain and may fully exercise all of its rights and elections under the Bankruptcy Code (including, without limitation, Craigslist's right to the continued enjoyment of the rights and licenses granted by GraphOn under this Agreement).

18. Each person who executes this Agreement on behalf of GraphOn or Craigslist, respectively, represents and warrants to the other Party that he or she has the authority of the directors and officers of said entity to do so, and each Party agrees to indemnify and hold harmless the other Party from any claim that such authority did not exist.

19. This Agreement shall be binding upon and inure to the benefit of the permitted successors and assigns of each of GraphOn and Craigslist.

20. Nothing in this Agreement, including the payment described in Section 5, shall be deemed an admission of patent infringement, validity or enforceability or any other liability by Craigslist.

GraphOn Corporation,
a Delaware corporation

Dated: _____

By: _____

Its: _____

Craigslist, Inc.,
a Delaware corporation

Dated: _____

By: _____

Its: _____

craigslist

SF bay area[w] sfc sby eby pen nby scz

post to classifieds

my account

help, faq, abuse, legal

search craigslist

for sale >

event calendar

26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22

avoid scams & fraud

personal safety tips

craigslist blog

craigslist factsheet

best-of-craigslist

job boards compared

weather quake tide

progressive directory

craigslist movie & dvd

craigslist foundation

system status

terms of use privacy

about us help

community

activities	lost+found
artists	musicians
childcare	local news
general	politics
groups	rideshare
pets	volunteers
events	classes

personals

strictly platonic
women seek women
women seeking men
men seeking women
men seeking men
misc romance
casual encounters
missed connections
rants and raves

discussion forums

1099	gifts	pets
apple	haiku	philos
arts	health	politic
atheist	help	psych
autos	history	queer
beauty	housing	recover
bikes	jobs	religion
celebs	jokes	rofo
comp	kink	science
crafts	l.t.r.	shop
diet	legal	spirit
divorce	linux	sports
dying	loc pol	t.v.
eco	m4m	tax
educ	money	testing
etiquet	motocy	transg
feedbk	music	travel
film	npo	vegan
fitness	open	w4w
fixit	outdoor	wed
food	over 50	wine
frugal	p.o.c.	women
gaming	parent	words
garden	pefo	writers

housing

apts / housing
rooms / shared
sublets / temporary
housing wanted
housing swap
vacation rentals
parking / storage
office / commercial
real estate for sale

for sale

appliances	arts+crafts
antiques	auto parts
barter	baby+kids
bikes	beauty+hlth
boats	cars+trucks
books	cds/dvd/vhs
business	cell phones
computer	clothes+acc
free	collectibles
furniture	electronics
general	farm+garden
jewelry	garage sale
materials	household
rvs	motorcycles
sporting	music instr
tickets	photo+video
tools	toys+games
wanted	video gaming

services

beauty	automotive
computer	farm+garden
creative	household
event	labor/move
financial	skill'd trade
legal	real estate
lessons	sm biz ads
pet	therapeutic
adult	travel/vac
	write/ed/tr8

jobs

accounting+finance
admin / office
arch / engineering
art / media / design
biotech / science
business / mgmt
customer service
education
food / bev / hosp
general labor
government
human resources
internet engineers
legal / paralegal
manufacturing
marketing / pr / ad
medical / health
nonprofit sector
real estate
retail / wholesale
sales / biz dev
salon / spa / fitness
security
skilled trade / craft
software / qa / dba
systems / network
technical support
transport
tv / film / video
web / info design
writing / editing
[ETC] [part time]

gigs

computer	event
creative	labor
crew	writing
domestic	talent
	adult

resumes

us cities

atlanta
austin
boston
chicago
dallas
denver
houston
las vegas
los angeles
miami
minneapolis
new york
orange co
philadelphia
phoenix
portland
raleigh
sacramento
san diego
seattle
sf bayarea
wash dc
more ...

canada

calgary
edmonton
halifax
montreal
ottawa
saskatoon
toronto
vancouver
victoria
winnipeg
more ...

intl cities

amsterdam
bangalore
bangkok
barcelona
berlin
buenosaires
hongkong
london
manila
mexico
paris
riodejaneiro
rome
shanghai
sydney
tokyo
zurich

us states

alabama
alaska
arizona
arkansas
california
colorado
connecticut
dc
delaware
florida
georgia
guam
hawaii
idaho
illinois
indiana
iowa
kansas
kentucky
louisiana
maine
maryland
mass
michigan
minnesota
mississippi
missouri
montana
n carolina
n hampshire
nebraska
nevada
new jersey
new mexico
new york
north dakota
ohio
oklahoma
oregon
pennsylvania
puerto rico
rhode island
s carolina
south dakota
tennessee
texas
utah
vermont
virginia
washington
west virginia
wisconsin
wyoming

countries

argentina
australia
austria
bangladesh
belgium
brazil
canada
caribbean
chile
china
colombia
costa rica
czech repub
denmark
egypt
finland
france
germany
great britain
greece
hong kong
hungary
india
indonesia
ireland
israel
italy
japan
korea
lebanon
luxembourg
malaysia
mexico
micronesia
netherlands
new zealand
norway
pakistan
panama
peru
philippines
poland
portugal
russia
singapore
south africa
spain
sweden
switzerland
taiwan
thailand
turkey
UAE
UK
uruguay
US
venezuela
vietnam

FIGURE 1

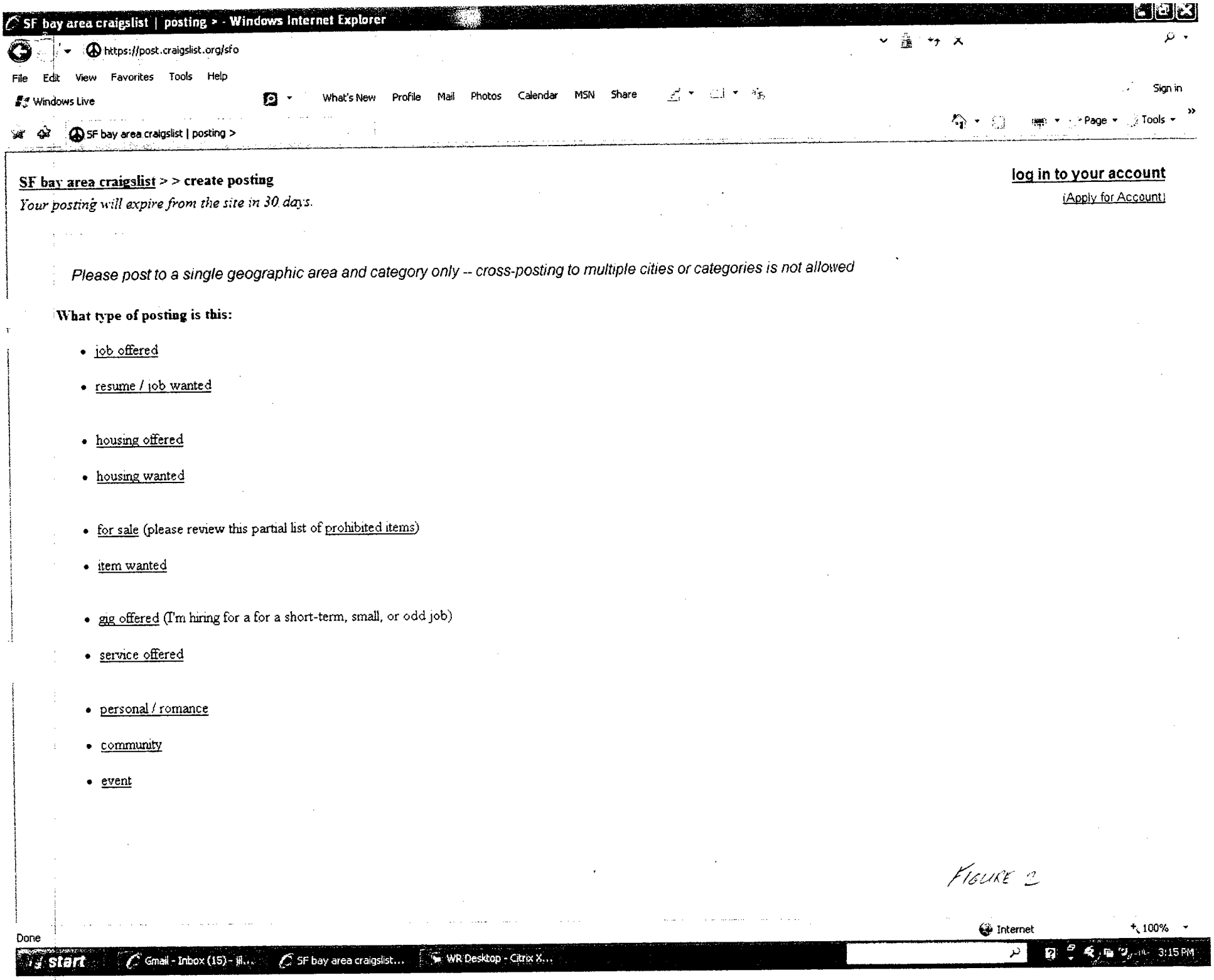

SF bay area craigslist | posting > - Windows Internet Explorer
https://post.craigslist.org/sfo
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting >
Page Tools
SF bay area craigslist > > create posting
Your posting will expire from the site in 30 days.
log in to your account
(Apply for Account)
Please post to a single geographic area and category only -- cross-posting to multiple cities or categories is not allowed
What type of posting is this:
job offered
resume / job wanted
housing offered
housing wanted
for sale (please review this partial list of prohibited items)
item wanted
gig offered (I'm hiring for a for a short-term, small, or odd job)
service offered
personal / romance
community
event
Done
Internet
100%
start
Gmail - Inbox (15) - jil...
SF bay area craigslist...
WR Desktop - Citrix X...
3:15 PM

FIGURE 2

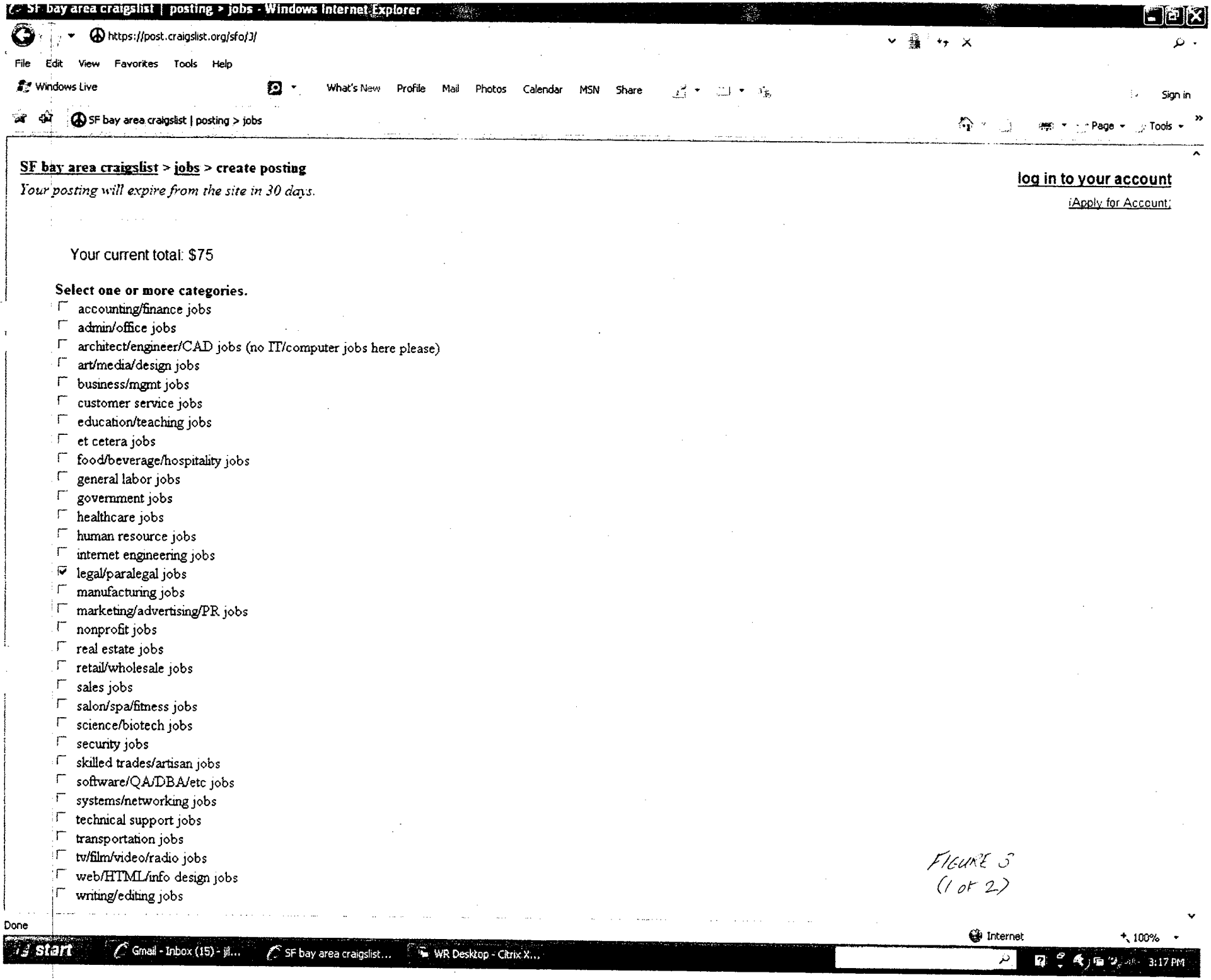


FIGURE 5
(1 of 2)

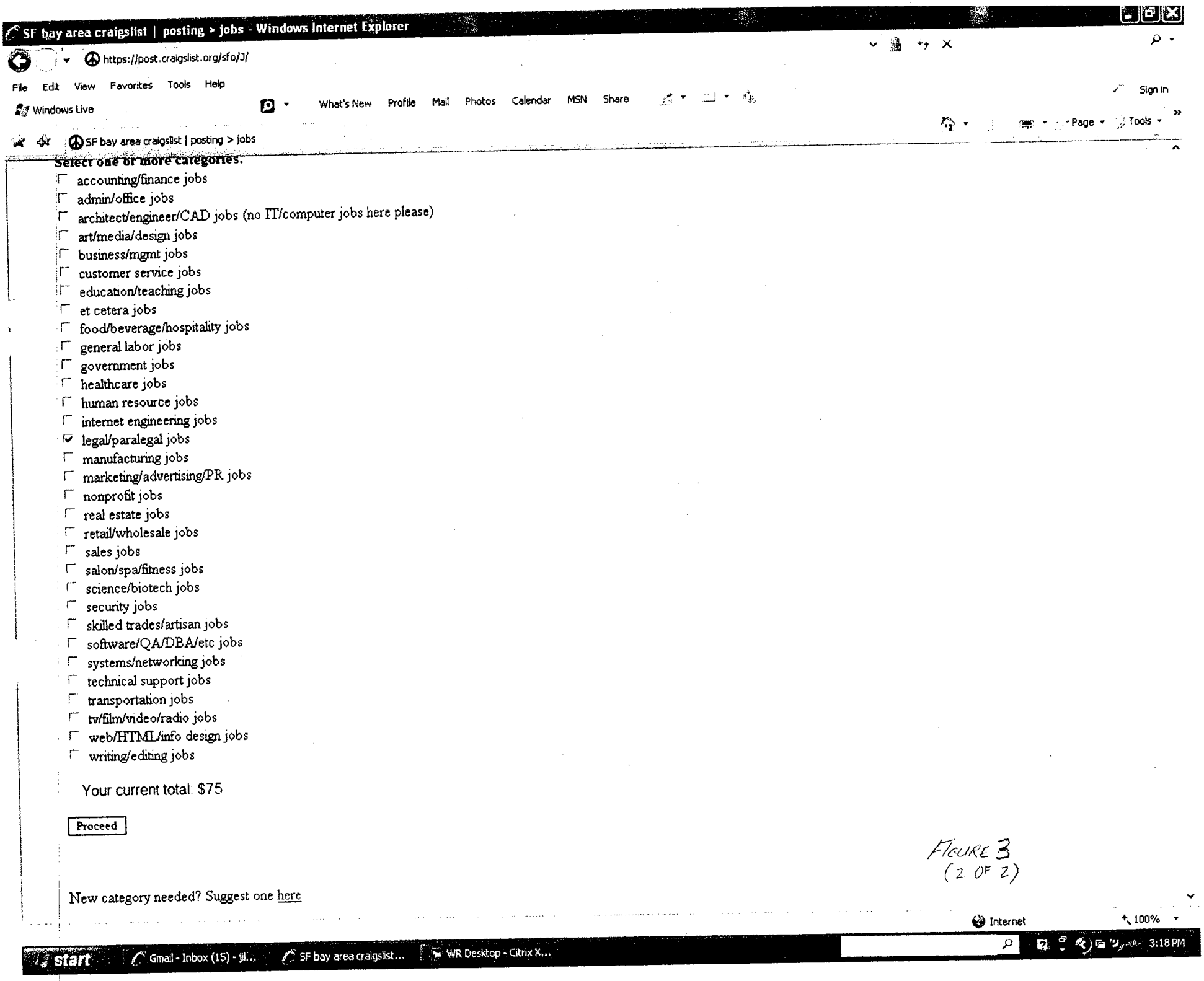


FIGURE 3
(2 OF 2)

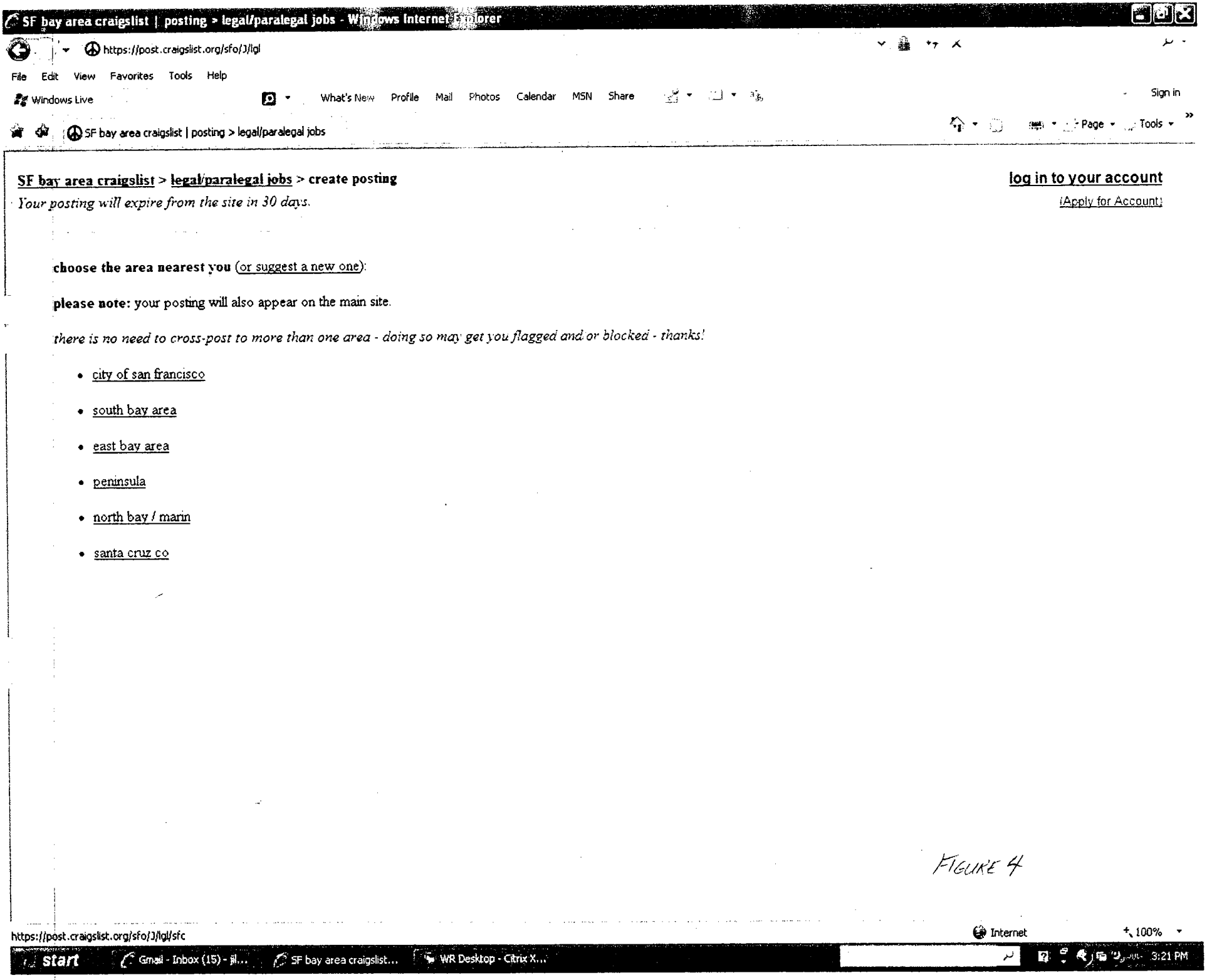

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
choose the area nearest you (or suggest a new one):
please note: your posting will also appear on the main site.
there is no need to cross-post to more than one area - doing so may get you flagged and/or blocked - thanks!
city of san francisco
south bay area
east bay area
peninsula
north bay / marin
santa cruz co
https://post.craigslist.org/sfo/J/lgl/sfc
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:21 PM

FIGURE 4

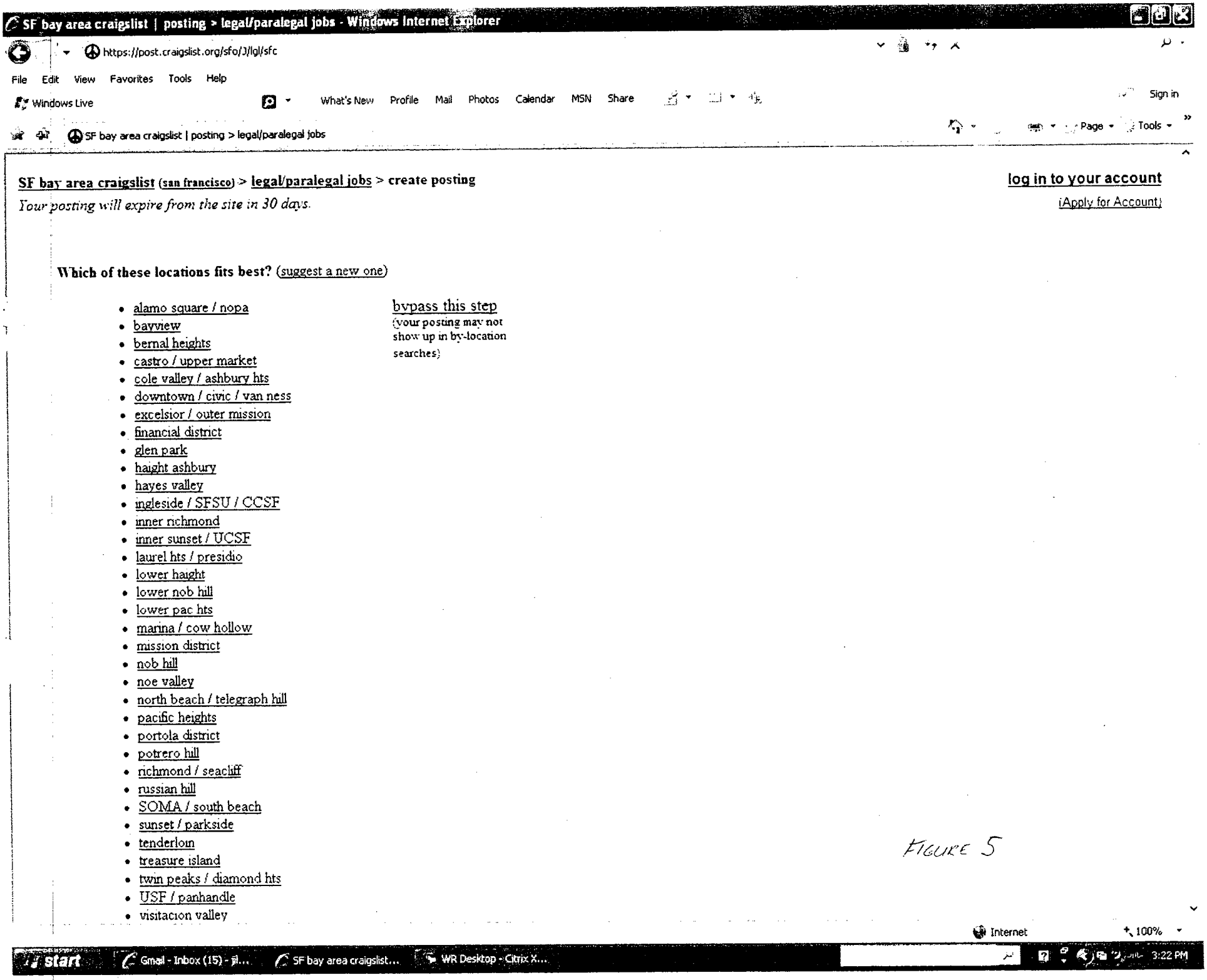
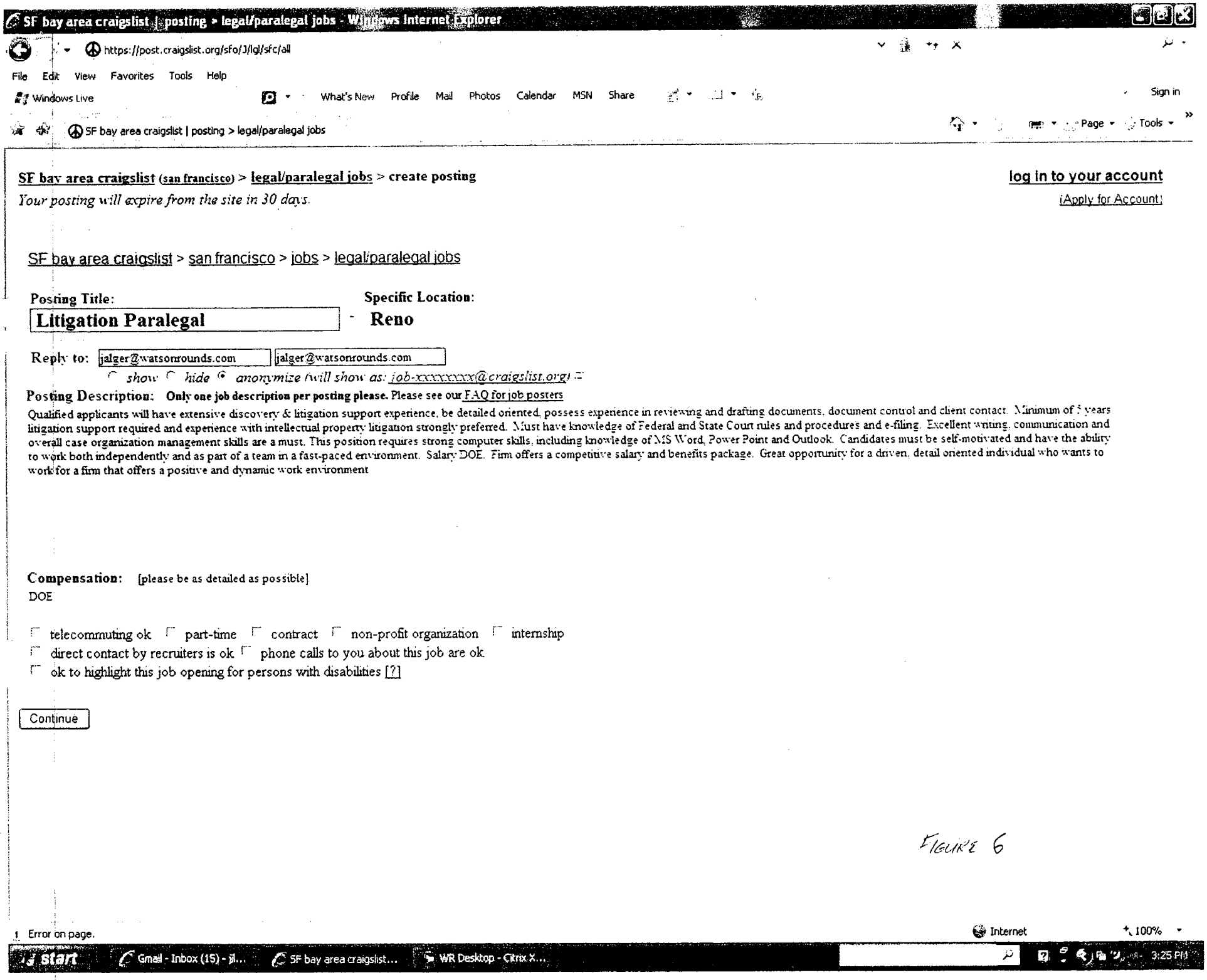

SF bay area craigslist | posting » legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
Which of these locations fits best? (suggest a new one)
bypass this step
(your posting may not show up in by-location searches)
alamo square / nopa
bayview
bernal heights
castro / upper market
cole valley / ashbury hts
downtown / civic / van ness
excelsior / outer mission
financial district
glen park
haight ashbury
hayes valley
ingleside / SFSU / CCSF
inner richmond
inner sunset / UCSF
laurel hts / presidio
lower haight
lower nob hill
lower pac hts
marina / cow hollow
mission district
nob hill
noe valley
north beach / telegraph hill
pacific heights
portola district
potrero hill
richmond / seacliff
russian hill
SOMA / south beach
sunset / parkside
tenderloin
treasure island
twin peaks / diamond hts
USF / panhandle
visitacion valley
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:22 PM

FIGURE 5


SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/all
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
Your posting will expire from the site in 30 days.
¡Apply for Account!
SF bay area craigslist > san francisco > jobs > legal/paralegal jobs
Posting Title:
Litigation Paralegal
Specific Location:
Reno
Reply to: jalger@watsonrounds.com jalger@watsonrounds.com
show hide anonymize (will show as: job-xxxxxxxx@craigslist.org)
Posting Description: Only one job description per posting please. Please see our FAQ for job posters
Qualified applicants will have extensive discovery & litigation support experience, be detailed oriented, possess experience in reviewing and drafting documents, document control and client contact. Minimum of 5 years litigation support required and experience with intellectual property litigation strongly preferred. Must have knowledge of Federal and State Court rules and procedures and e-filing. Excellent writing, communication and overall case organization management skills are a must. This position requires strong computer skills, including knowledge of MS Word, Power Point and Outlook. Candidates must be self-motivated and have the ability to work both independently and as part of a team in a fast-paced environment. Salary DOE. Firm offers a competitive salary and benefits package. Great opportunity for a driven, detail oriented individual who wants to work for a firm that offers a positive and dynamic work environment
Compensation: [please be as detailed as possible]
DOE
telecommuting ok part-time contract non-profit organization internship
direct contact by recruiters is ok phone calls to you about this job are ok
ok to highlight this job opening for persons with disabilities [?]
Continue
FIGURE 6
Error on page.
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:25 PM

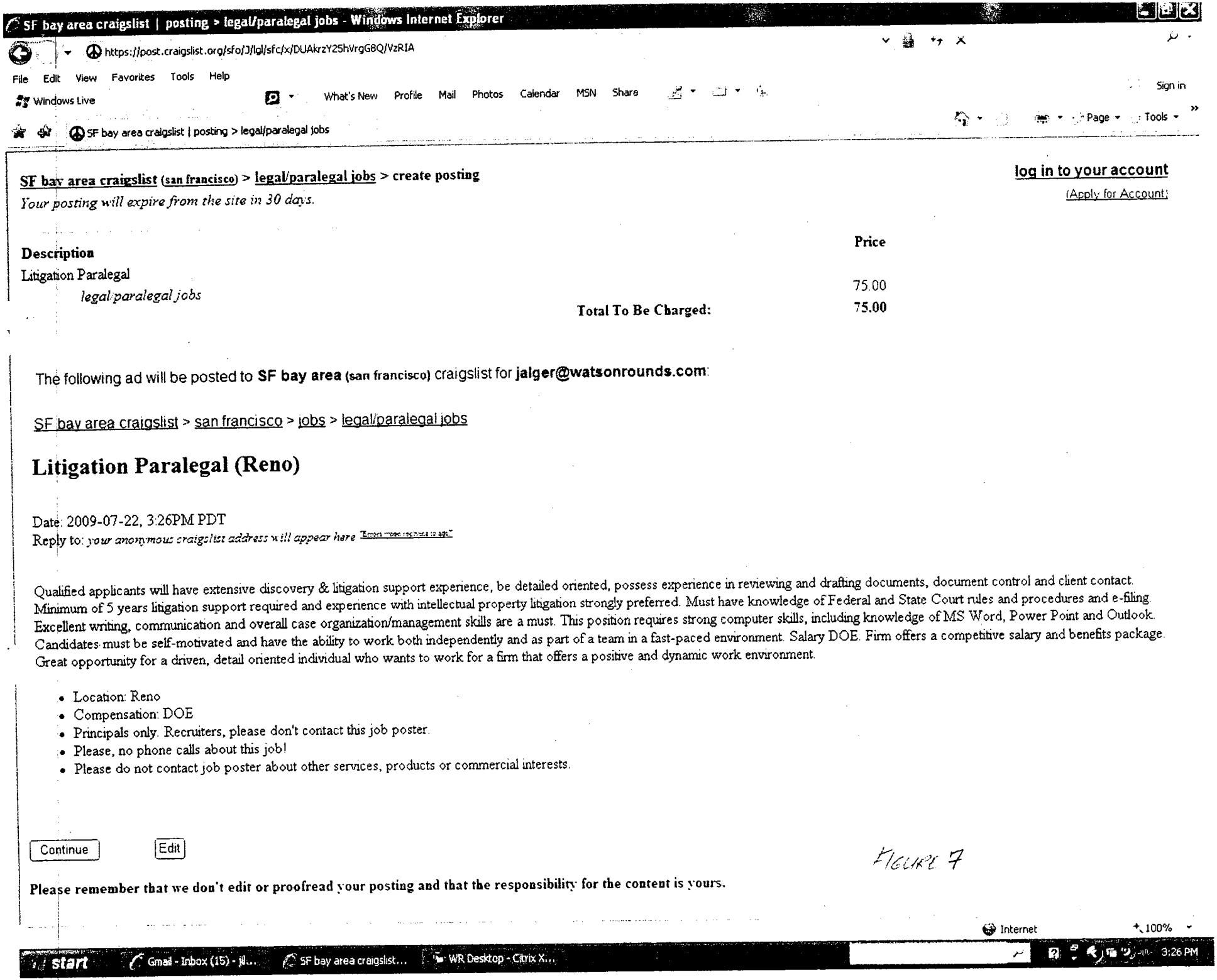

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/x/DUAkrzY25hVrgG8Q/VzRIA
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
Description
Price
Litigation Paralegal
legal/paralegal jobs
75.00
Total To Be Charged:
75.00
The following ad will be posted to SF bay area (san francisco) craigslist for jalger@watsonrounds.com:
SF bay area craigslist > san francisco > jobs > legal/paralegal jobs
Litigation Paralegal (Reno)
Date: 2009-07-22, 3:26PM PDT
Reply to: your anonymous craigslist address will appear here
Qualified applicants will have extensive discovery & litigation support experience, be detailed oriented, possess experience in reviewing and drafting documents, document control and client contact. Minimum of 5 years litigation support required and experience with intellectual property litigation strongly preferred. Must have knowledge of Federal and State Court rules and procedures and e-filing. Excellent writing, communication and overall case organization/management skills are a must. This position requires strong computer skills, including knowledge of MS Word, Power Point and Outlook. Candidates must be self-motivated and have the ability to work both independently and as part of a team in a fast-paced environment. Salary DOE. Firm offers a competitive salary and benefits package. Great opportunity for a driven, detail oriented individual who wants to work for a firm that offers a positive and dynamic work environment.
Location: Reno
Compensation: DOE
Principals only. Recruiters, please don't contact this job poster.
Please, no phone calls about this job!
Please do not contact job poster about other services, products or commercial interests.
Continue
Edit
Please remember that we don't edit or proofread your posting and that the responsibility for the content is yours.
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:26 PM

FIGURE 7

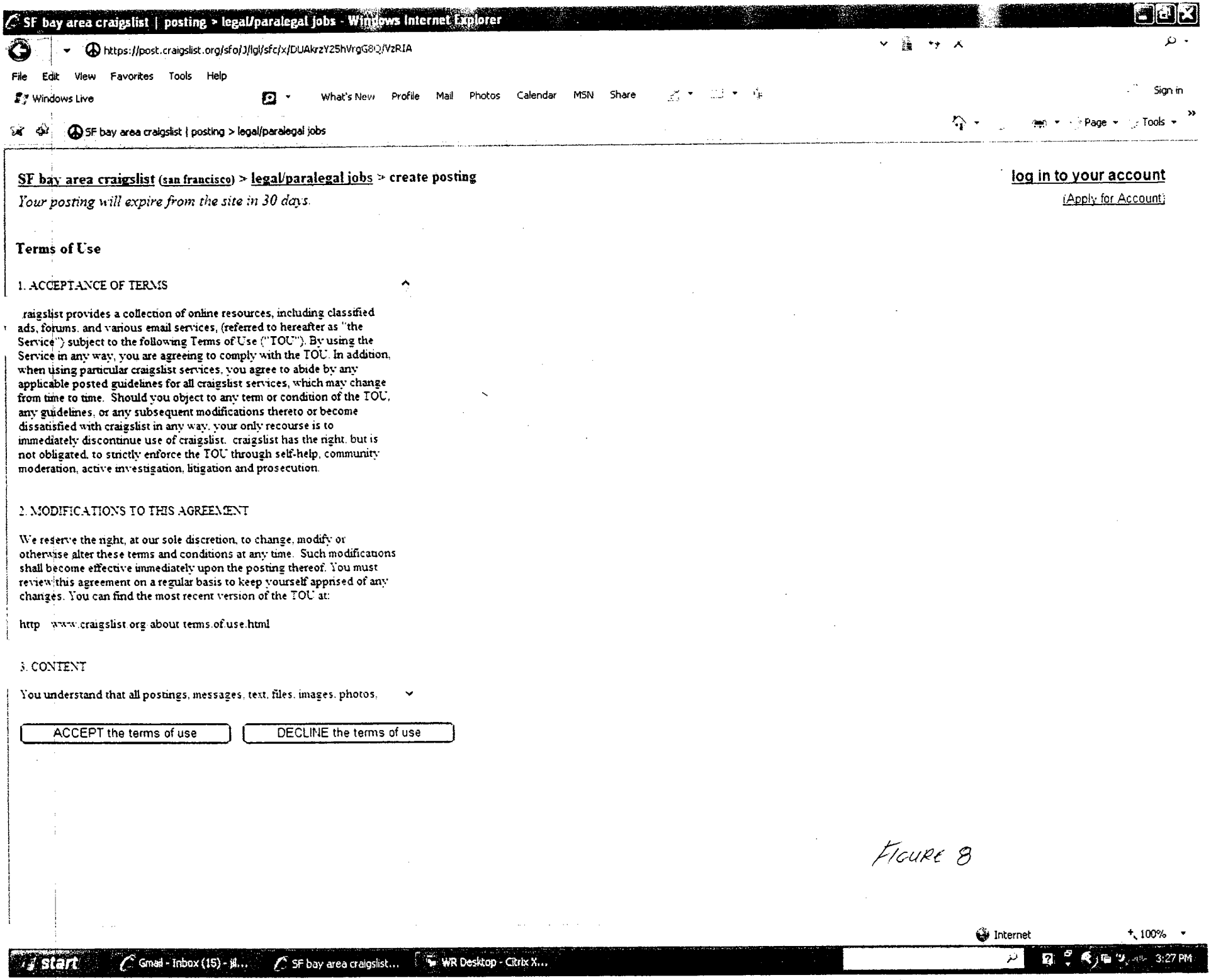

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/x/DUAkrzY25hVrgG8Q/VzRIA
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
Terms of Use
1. ACCEPTANCE OF TERMS
raigslist provides a collection of online resources, including classified ads, forums, and various email services, (referred to hereafter as "the Service") subject to the following Terms of Use ("TOU"). By using the Service in any way, you are agreeing to comply with the TOU. In addition, when using particular craigslist services, you agree to abide by any applicable posted guidelines for all craigslist services, which may change from time to time. Should you object to any term or condition of the TOU, any guidelines, or any subsequent modifications thereto or become dissatisfied with craigslist in any way, your only recourse is to immediately discontinue use of craigslist. craigslist has the right, but is not obligated, to strictly enforce the TOU through self-help, community moderation, active investigation, litigation and prosecution.
2. MODIFICATIONS TO THIS AGREEMENT
We reserve the right, at our sole discretion, to change, modify or otherwise alter these terms and conditions at any time. Such modifications shall become effective immediately upon the posting thereof. You must review this agreement on a regular basis to keep yourself apprised of any changes. You can find the most recent version of the TOU at:
http www.craigslist.org about terms.of.use.html
3. CONTENT
You understand that all postings, messages, text, files, images, photos,
ACCEPT the terms of use
DECLINE the terms of use
Internet
100%
start
Gmail - Inbox (15) - jil...
SF bay area craigslist...
WR Desktop - Citrix X...
3:27 PM

FIGURE 8

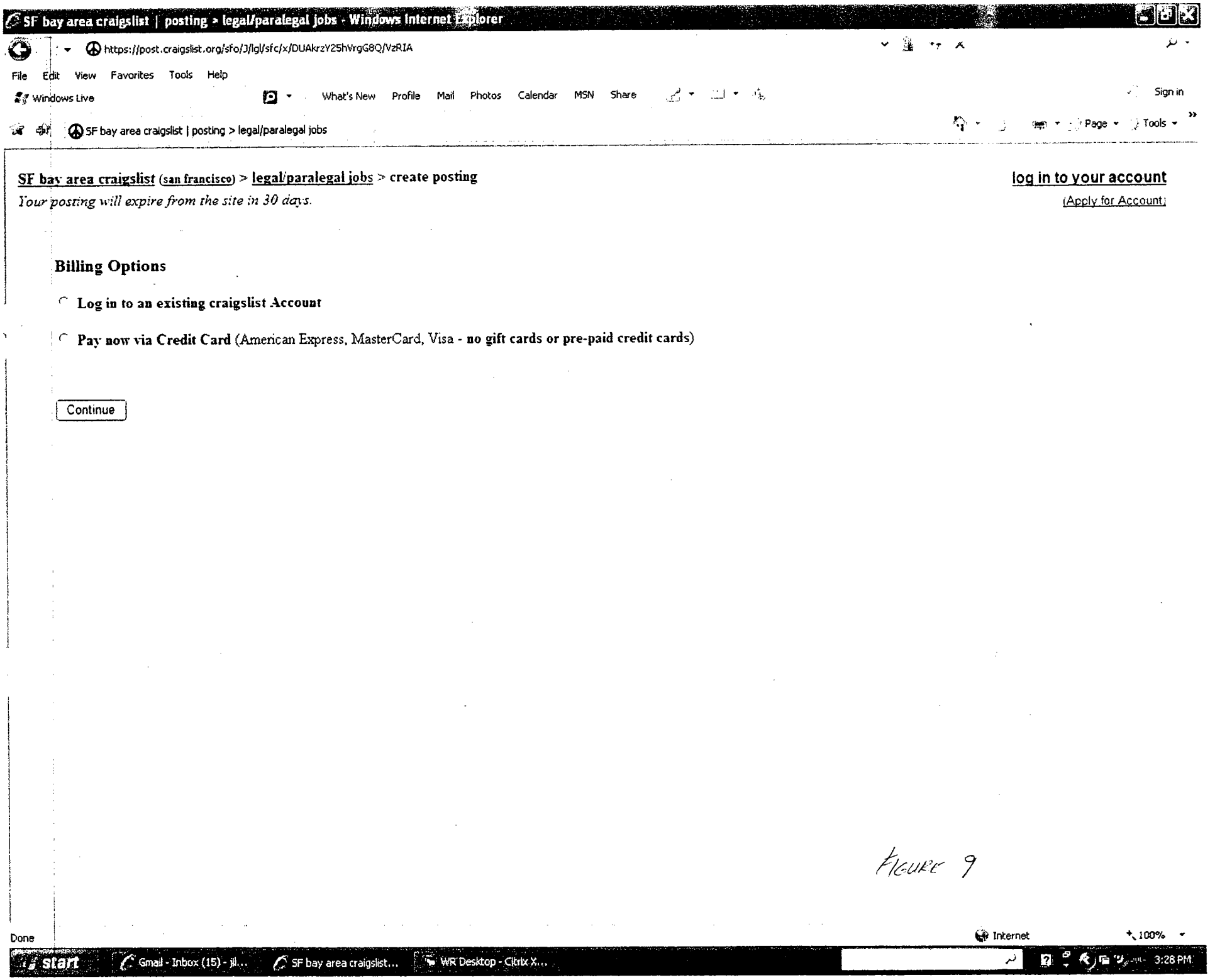

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/x/DUAkrzY25hVrgG8Q/VzRIA
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
Billing Options
Log in to an existing craigslist Account
Pay now via Credit Card (American Express, MasterCard, Visa - no gift cards or pre-paid credit cards)
Continue
Done
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:26 PM

FIGURE 9

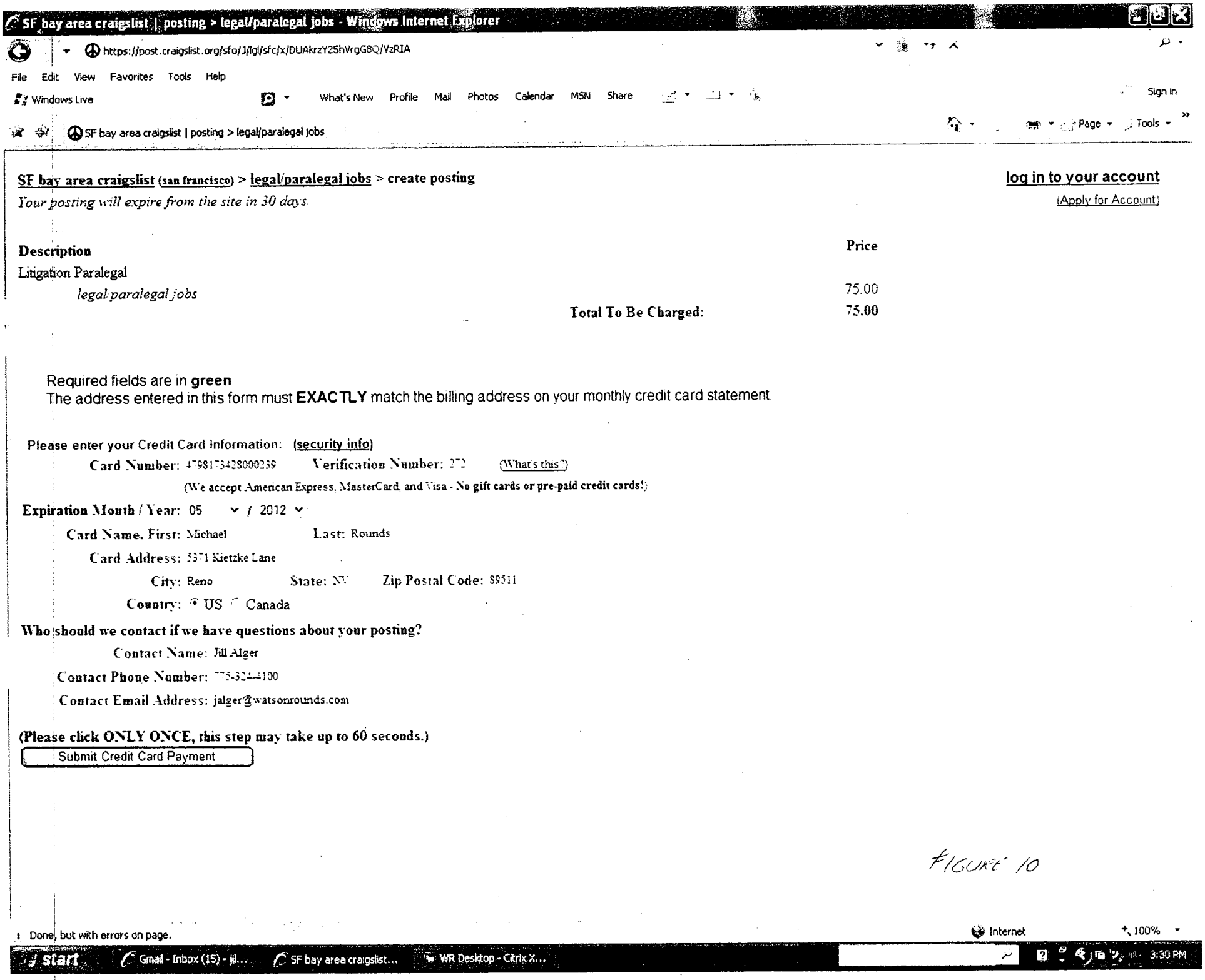

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/x/DUAkrzY25hVrgG8Q/VzRIA
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
log in to your account
(Apply for Account)
Your posting will expire from the site in 30 days.
Description
Price
Litigation Paralegal
legal paralegal jobs
75.00
Total To Be Charged:
75.00
Required fields are in green.
The address entered in this form must EXACTLY match the billing address on your monthly credit card statement.
Please enter your Credit Card information: (security info)
Card Number: 4798173428000239
Verification Number: 272
(What's this?)
(We accept American Express, MasterCard, and Visa - No gift cards or pre-paid credit cards!)
Expiration Month / Year: 05 / 2012
Card Name. First: Michael
Last: Rounds
Card Address: 5371 Kietzke Lane
City: Reno
State: NV
Zip Postal Code: 89511
Country: US Canada
Who should we contact if we have questions about your posting?
Contact Name: Jill Alger
Contact Phone Number: 775-324-4100
Contact Email Address: jalger@watsonrounds.com
(Please click ONLY ONCE, this step may take up to 60 seconds.)
Submit Credit Card Payment
Done, but with errors on page.
Internet
100%
start
Gmail - Inbox (15) - jl...
SF bay area craigslist...
WR Desktop - Citrix X...
3:30 PM

FIGURE 10

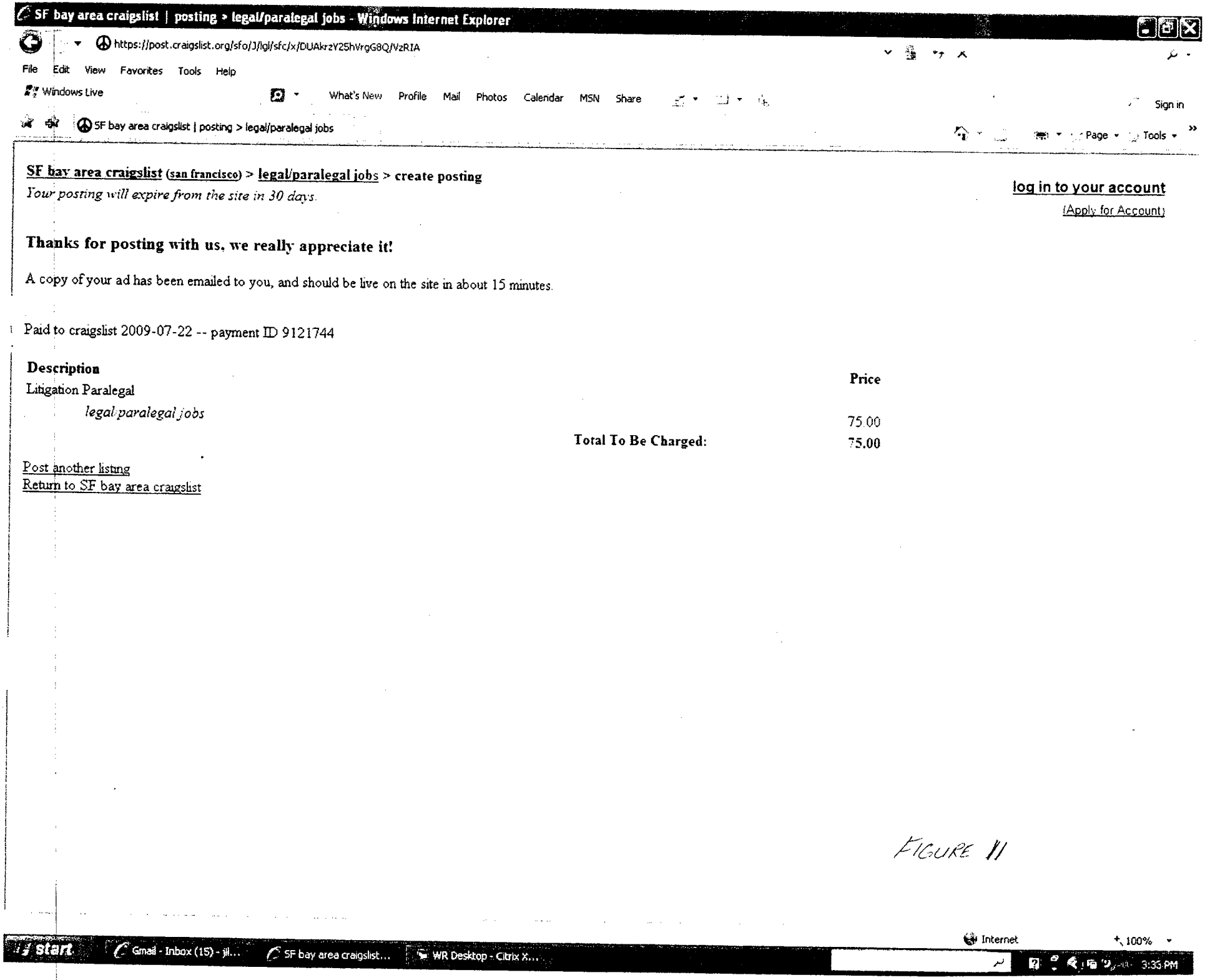

SF bay area craigslist | posting > legal/paralegal jobs - Windows Internet Explorer
https://post.craigslist.org/sfo/J/lgl/sfc/x/DUAkrzY25hVrgG8Q/VzRIA
File Edit View Favorites Tools Help
Windows Live
What's New Profile Mail Photos Calendar MSN Share
Sign in
SF bay area craigslist | posting > legal/paralegal jobs
Page Tools
SF bay area craigslist (san francisco) > legal/paralegal jobs > create posting
Your posting will expire from the site in 30 days.
log in to your account
(Apply for Account)
Thanks for posting with us, we really appreciate it!
A copy of your ad has been emailed to you, and should be live on the site in about 15 minutes.
Paid to craigslist 2009-07-22 -- payment ID 9121744
Description
Price
Litigation Paralegal
legal/paralegal jobs
75.00
Total To Be Charged:
75.00
Post another listing
Return to SF bay area craigslist
Internet
100%
start
Gmail - Inbox (15) - jil...
SF bay area craigslist...
WR Desktop - Citrix X...
3:33 PM

FIGURE 11

If this looks OK you're done!

READ ALL OF THIS! -- TO SEE YOUR CHANGES:

- Go see your ad at http://sfbay.craigslist.org/sfc/lgl/1283817746.html
- While viewing that page, hold down the <Ctrl> key and press the <F5> key.
- The page should now show your ad, with your new changes included.

Your edits **have** been made. If you still don't see them after the above steps, try restarting your browser and looking again.

This ad will expire 30 days after it was created.

edit delete

Back to Craigslist | Return to my account page

Litigation Paralegal (Reno)

Date: 2009-07-22, 3:32PM PDT
Reply to: job-cugsx-1283817746@craigslist.org [Error? Open original email]

Qualified applicants will have extensive discovery & litigation support experience, be detailed oriented, possess experience in reviewing and drafting documents, document control and client contact. Minimum of 5 years litigation support required and experience with intellectual property litigation strongly preferred. Trial experience is also strongly perferred. Must have knowledge of Federal and State Court rules and procedures and e-filing. Excellent writing, communication and overall case organization management skills are a must. This position requires strong computer skills, including knowledge of MS Word, Power Point and Outlook. Candidates must be self-motivated and have the ability to work both independently and as part of a team in a fast-paced environment. Salary DOE Firm offers a competitive salary and benefits package. Great opportunity for a driven, detail oriented individual who wants to work for a firm that offers a positive and dynamic work environment

- Location: Reno
- Compensation: DOE
- Principals only. Recruiters, please don't contact this job poster.
- Please, no phone calls about this job!
- Please do not contact job poster about other services, products or commercial interests.

PostingID: 1283817746

FIGURE 12

FW: jalger@watsonrounds.com - Found word(s) do not reply if you received this in error in the Text body - resending - craigslist self-posting URL(s) - Message (Plain Text)

Reply | Reply to All | Forward

File Edit View Insert Format Tools Actions Help

Sent: Thu 7/30/2009 2:50 PM

From: Jill Alger

To: Jill Alger

Cc:

Subject: FW: jalger@watsonrounds.com - Found word(s) do not reply if you received this in error in the Text body - resending - craigslist self-posting URL(s)

-----Original Message-----
From: craigslist.org [mailto:nobody@craigslist.org] Posted At: Thursday, July 30, 2009 2:48 PM Posted To: Junk Mail
Conversation: jalger@watsonrounds.com - Found word(s) do not reply if you received this in error in the Text body - resending - craigslist self-posting URL(s)
Subject: jalger@watsonrounds.com - Found word(s) do not reply if you received this in error in the Text body - resending - craigslist self-posting URL(s)

per your request, here are the self-publishing / edit / deletion URL(s) for your recent posting(s):

To access postings associated with your craigslist account log in here:

https://accounts.craigslist.org/login

7-22-2009 -- SF bay area / san francisco -- Litigation Paralegal (legal jobs):
https://post.craigslist.org/manage/1283817746/3g5ch

7-9-2009 -- reno -- IP Litigation Paralegal (legal jobs):
https://post.craigslist.org/manage/1261385675/7hg9j

If you received this in error, please email help@craigslist.org. This is an automated message. Please do not reply.

Figure 13

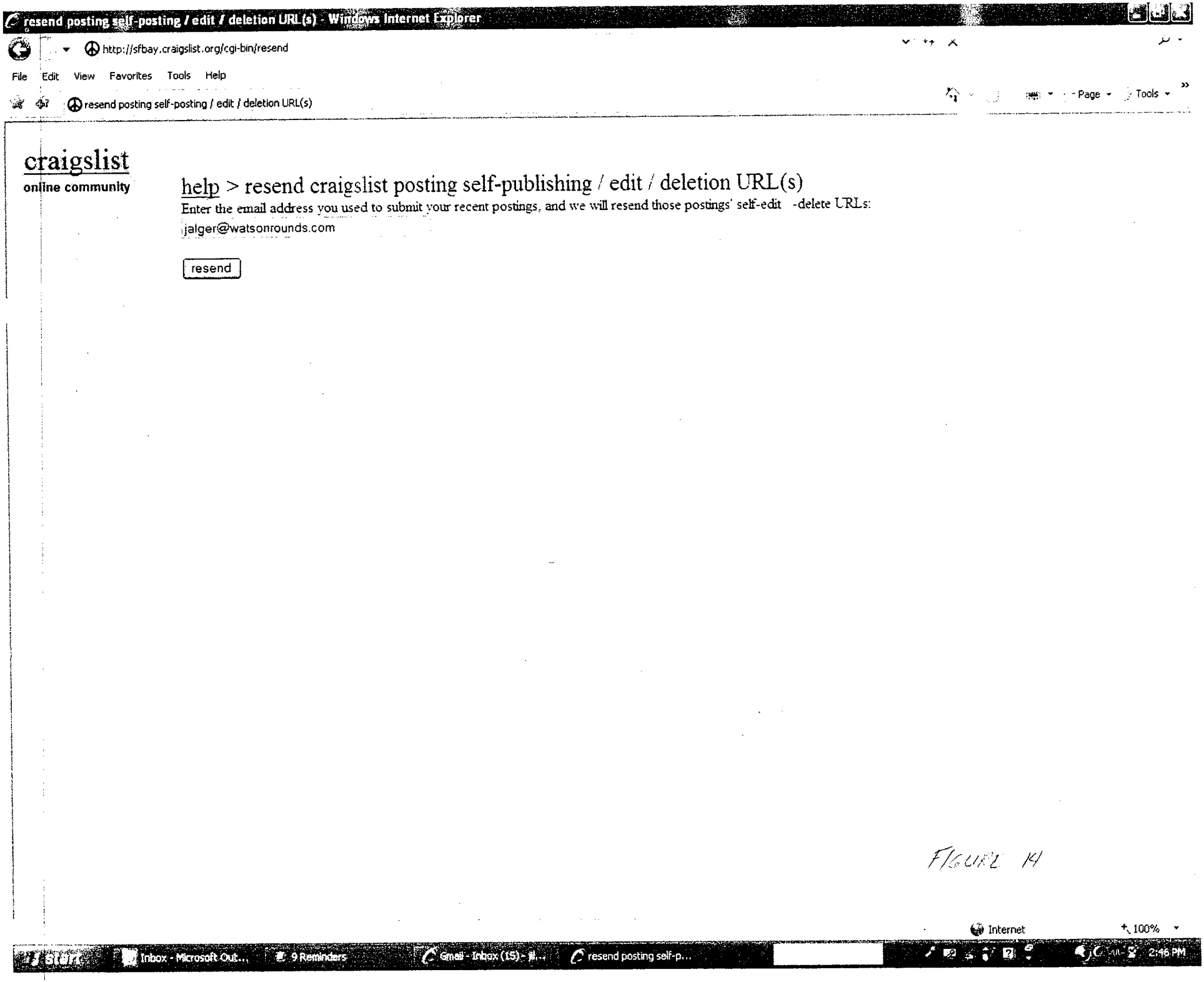

resend posting self-posting / edit / deletion URL(s) - Windows Internet Explorer
http://sfbay.craigslist.org/cgi-bin/resend
File Edit View Favorites Tools Help
resend posting self-posting / edit / deletion URL(s)
Page Tools
craigslist
online community
help > resend craigslist posting self-publishing / edit / deletion URL(s)
Enter the email address you used to submit your recent postings, and we will resend those postings' self-edit -delete URLs:
jalger@watsonrounds.com
resend
Internet
100%
start
Inbox - Microsoft Out...
9 Reminders
Gmail - Inbox (15) - ...
resend posting self-p...
2:46 PM

FIGURE 14

craigslist: Account Log In

Log in to your craigslist account

NOTE: Not all prior posters have craigslist accounts.
If you are not sure, check for the existence of an account by having your password reset.

Email / Handle:

Password:

Log In (Cookies must be enabled.)

forgot password?

Don't have an account? Click here to sign up.

need help? Click here for additional information.

FIGURE 15

craigslist
online community

about > help

search help

Updated:
Jul 16th 2009 05:59 PM

classified postings

- how much does it cost?
- how to submit a post
- how to reply to a post
- how to edit or delete a post
- how to repost
- how to include a picture
- resend publish/edit/delete email
- craigslist user accounts

frequently asked questions

- where is my post?
- where is my self-publishing email?
- why was my posting deleted?
- what are "flags" and "flagging"
- what HTML tags are supported?
- where can i advertise my services?
- more frequently asked questions
- erotic services posting guidelines

general help

- system status
- searches on craigslist
- subscriptions
- feedback

job classified postings

- job posting fees
- how to submit a job post
- lifespan of job posts
- how to edit or delete a job post
- how to repost a job post
- about paid posting accounts
- log in to your account
- pay an invoice online
- more frequently asked questions

paid housing post (NYC only)

- brokered housing post fees
- posting guidelines for NYC housing ads
- buy a block of ads with a credit card
- buy a block of ads and pay by check

harassment, legal stuff, spam, email

- personal harassment
- copyright violations
- spam
- law enforcement (subpoenas etc.)
- Email rejected - Non-generic DNS
- Email rejected - rDNS Failure

Still have questions? try our help desk discussion forum or send us a note.

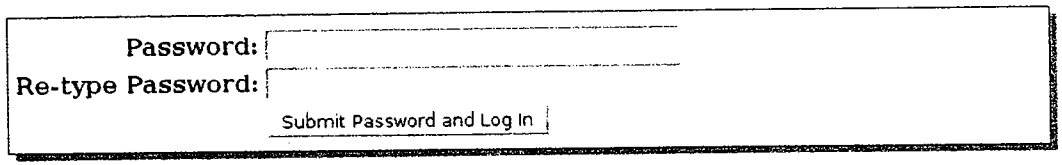
FIGURE 16

craigslist
online community

about > help > how

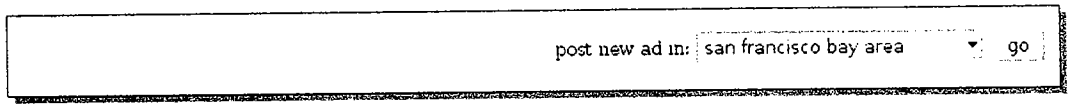
Updated:
Sep 15th 2008 04:29 PM

- Start by going here to set up a free account: https://accounts.craigslist.org/login/signup
- You will be sent an email that contains a link.
- Clicking on this link will take you to a page to enter a password.



Once you've entered a password of your choosing, click on "Submit Password and Log in."
Review the Terms of Use on the next page (at least glance at it!), then click "I ACCEPT" if you agree.

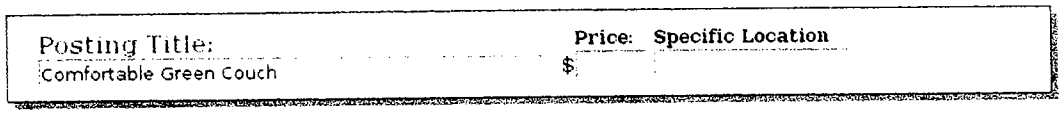
- You are now logged into your account. To submit a post, select your city from the drop down menu at the upper right and click "go".



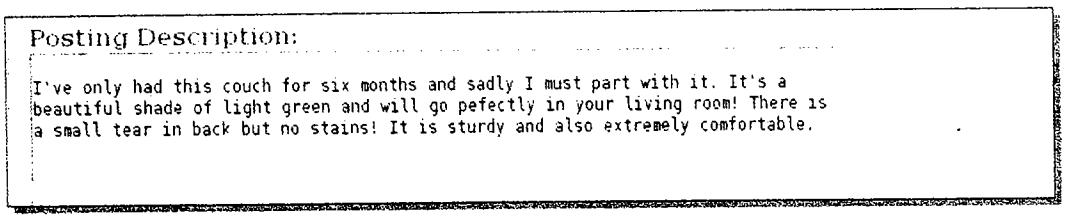
Make the appropriate selections in the next few screens, until you get to the main posting form

Note: the fields on this form may vary according to the category selected, but the basic required fields are covered here
All fields with green text are required.

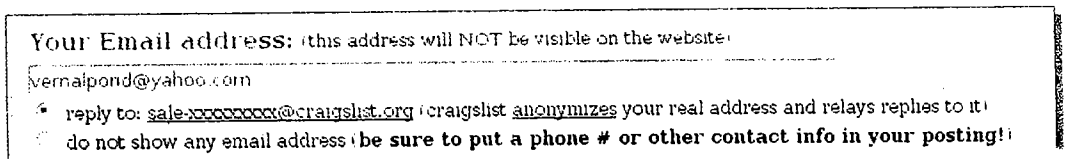
- Enter a title in the Posting Title field. This is what people will click on to see the details of your posting description.



Enter all the details and information you want people to see in the Posting Description box.



Your email address will be masked with a craigslist anonymous address, but responses are forwarded to your email account. If you'd rather not receive replies by email, select "do not show any email address" and provide other contact information in the posting description.

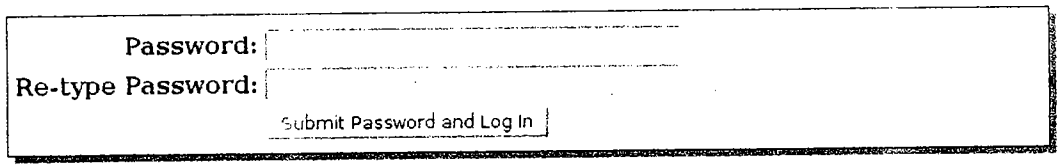


Once you have completed all the required fields, click "continue" at the bottom.
You are taken to a review screen of what your post will look like If

FIGURE 17
(1 OF 2)

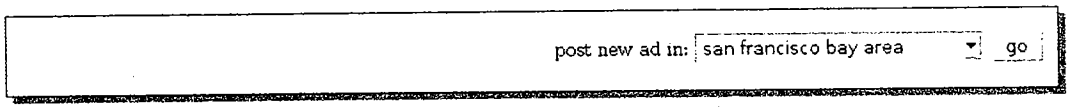
about > help > how

Updated:
Sep 15th 2008 04:29 PM



Once you've entered a password of your choosing, click on "Submit Password and Log in."
Review the Terms of Use on the next page (at least glance at it!), then click "I ACCEPT" if you agree.

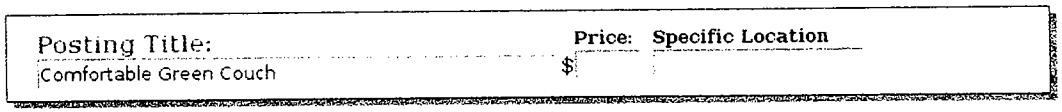
- You are now logged into your account. To submit a post, select your city from the drop down menu at the upper right and click "go".



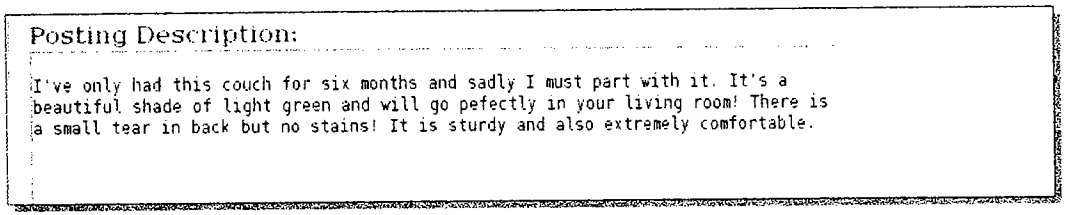
Make the appropriate selections in the next few screens, until you get to the main posting form.

Note: the fields on this form may vary according to the category selected, but the basic required fields are covered here.
All fields with green text are required.

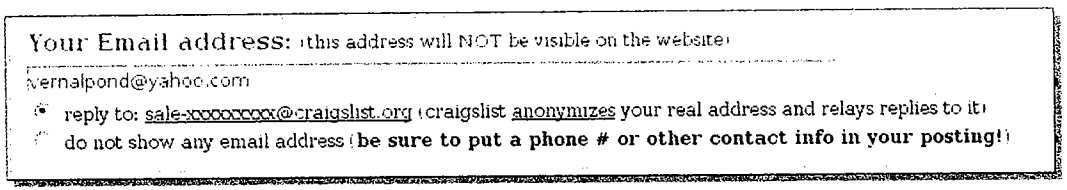
- Enter a title in the Posting Title field. This is what people will click on to see the details of your posting description.



Enter all the details and information you want people to see in the Posting Description box.



Your email address will be masked with a craigslist anonymous address, but responses are forwarded to your email account. If you'd rather not receive replies by email, select "do not show any email address" and provide other contact information in the posting description.



Once you have completed all the required fields, click "continue" at the bottom.
You are taken to a review screen of what your post will look like. If you need to make changes, click "Edit." When everything looks the way you want it, click "continue."

- Your post will appear on the site in approximately fifteen minutes.
Still having trouble? try our help desk discussion forum.

Still have questions? try our help desk discussion forum or send us a note.

FIGURE 17
(2 OF 2)

craigslist
online community

about > help > user accounts

create new user account
log in, view recent posts
reset password
paid posting accounts

Updated:
Dec 16th 2008 01:29 PM

What is my craigslist user account? Do I need one?

You can manage posts efficiently with a craigslist user account. The process of creating posts, editing and deleting them, and re-posting ads that have expired is much easier

If you post frequently, or if you need to post paid ads, it makes sense to set up a user account.

How do I create a user account?

- Go to the account signup form.
- Enter your email address, type the five-letter verification word that appears on the screen, and click "create account"
- We'll send you an email with the instructions for completing the account setup process.

How do I create an ad with my user account?

- Log in to your user account.
- Use the pop-down menu in the upper right corner of your home page to select the craigslist site where you want to post.
- Click "Go"

How do I edit a current post?

- Log in to your user account.
- Locate the post you want to edit, click on its title.
- Click "Edit this Posting".
- Edit the ad.
- Click the "Make Changes" button to confirm.

How do I repost an old ad?

- Log in to your user account.
- Locate the post you want to re-post, click on its title.
- Click "Repost this Posting".
- Select the category for the ad.

FIGURE 18
(1 OF 3)

about > help > user accounts

How do I repost an old ad?

- Log in to your user account.
- Locate the post you want to re-post, click on its title.
- Click "Repost this Posting".
- Select the category for the ad.
- Verify the title and body of your new ad, edit the text or add images if necessary, click "Continue"
- Check the preview of your post, then click "Continue" to publish the ad.

How do I delete a current post?

- Log in to your user account.
- Locate the post you want to delete, click on its title.
- Click "Delete this Posting".

How do I set a default craigslist city for my ads?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option for "default site", then click the "change" button.
- Click "account home" to return to your user account home page

---

How can I control the number of posts that will appear on my user account home page?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option for "maximum number of postings displayed", then click the "change" button.
- Click "account home" to return to your user account home page.

How do I adjust my default log-in duration?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option titled "stay logged in for", then click the "change" button.
- Click "account home" to return to your user account home page.

Can I remove an ad from my user account home page, or change the order of ads?

Not yet -- we hope to offer these features soon. For now, all posts associated with your user account are displayed in chronological order, the most recent ads are listed at the top.

FIGURE 18
(2 of 3)

about > help > user accounts

How do I delete a current post?

- Log in to your user account
- Locate the post you want to delete, click on its title
- Click "Delete this Posting".

How do I set a default craigslist city for my ads?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option for "default site", then click the "change" button.
- Click "account home" to return to your user account home page.

How can I control the number of posts that will appear on my user account home page?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option for "maximum number of postings displayed", then click the "change" button.
- Click "account home" to return to your user account home page.

How do I adjust my default log-in duration?

- Click the "Settings" link at the top of your user account home page.
- Adjust the pop-down menu option titled "stay logged in for", then click the "change" button.
- Click "account home" to return to your user account home page.

Can I remove an ad from my user account home page, or change the order of ads?

Not yet -- we hope to offer these features soon. For now, all posts associated with your user account are displayed in chronological order, the most recent ads are listed at the top

---

Do I need a user account to submit new ads?

User accounts may be required, depending on a number of circumstances (e.g., category, city, etc). In general, it is much easier to edit, delete and re-post your ads if you manage them through an account. If you post frequently, it makes sense to set up a user account.

Still have questions? try our help desk discussion forum or send us a note.

FIGURE 18

(3 OF 3)

craigslist
online community

Updated:
8m 2nd 2009 09:35 PM

about > help > posting fees

All craigslist postings are free, except for:

1. **Job posts in the San Francisco Bay Area**

- The fee for posting a job in the SF Bay Area is $75. This fee pays for one job in one category.
  (One job posted in two different categories would cost $150.)

2. **Job posts in Atlanta, Austin, Boston, Chicago, Dallas, Denver, Houston, Los Angeles, New York, Orange County, Philadelphia, Phoenix, Portland, Sacramento, San Diego, Seattle, South Florida, and Washington DC**

- The fee for posting a job in these cities is $25. This fee pays for one job in one category.
  (One job posted in two different categories would cost $50.)

3. **Brokered apartment rental listings in New York**

- The fee for posting a brokered apartment rental in New York City is $10.

4. **Posts in adult services and therapeutic services on craigslist sites in the United States**

- The fee for posting ads in these categories is $10. Live approved ads can be re-posted for $5.

There are two options for purchasing paid posts:

- **post ads individually and pay by credit card for each ad**
- **buy a block of ads and pay for the block with a check**

Still have questions? try our help desk discussion forum or send us a note.

FIGURE 19

craigslist
online community

about > help > job-edit

Updated:
Oct 15th 2008 03:10 PM

PAID JOB POSTS (paid by credit card)
(ATL, AUS, BOS, CHI, DAL, DEN, HOU, LAX, MIA, NYC, ORC, PHI, PHX, PDX, SAC, SDO, SFO, SEA, WDC)

If you used a credit card to post your job, refer to the posting confirmation email you received when your job was posted. That email contains the information you will need to edit or delete your post.

If you don't have this email (never received it, lost it, deleted it), you can request a new edit/delete link.

PAID JOB POSTS (posted through a craigslist account)
(ATL, AUS, BOS, CHI, DAL, DEN, HOU, LAX, MIA, NYC, ORC, PHI, PHX, PDX, SAC, SDO, SFO, SEA, WDC)

If you posted your job using a craigslist paid jobs account, log in to your account, select the appropriate post, and click the "Edit this Posting" button.

FREE JOB POSTS
(all other cities)

If you posted a job in a craigslist city that offers free job posting, refer to the posting confirmation email you received when your job was posted. That email contains the information you will need to edit or delete your post.

If you don't have this email (never received it, lost it, deleted it), you can request a new edit/delete link.

Still have questions? try our help desk discussion forum or send us a note.

FIGURE 20

Found: 18 Displaying: 1 - 18

Jul 28 - F/T PARALEGAL - (financial district)

Jul 28 - Calendar / Docket Legal Clerk - (financial district)

Jul 28 - Corporate Paralegal - (Costa Mesa, CA)

Jul 22 - Litigation Paralegal - (Reno)

Jul 22 - Litigation Paralegal - (financial district)

Jul 20 - Litigation Legal Assistant - (north beach / telegraph hill)

Jul 19 - MID LEVEL LIT PARALEGAL (2) - (SF/PA)

Jul 16 - Litigation Support Specialist (2 positions) - (San Francisco & Palo Alto)

Jul 14 - Hybrid Paralegal/Legal Secretary for Great Boutique Firm -

Jul 14 - Contract Litigation Paralegal - (financial district)

Jul 10 - Paralegal - (downtown / civic / van ness)

Jul 10 - Temporary Paralegal - San Francisco - $25+ per hour - (San Francisco)

Jul 9 - Temporary Litigation Paralegal - (San Francisco)

Jul 2 - Family Law Secretary/Paralegal - Financial District - (financial district)

Jul 2 - F/T PARALEGAL - (financial district)

Jul 1 - Legal Assistant Needed Immediately - (SOMA / south beach)

Jul 1 - Regional Litigation Support Specialist - (financial district)

Jul 1 - Litigation Paralegal Coordinator (NLDNC-36636) -

Found: 18 Displaying: 1 - 18

Litigation Paralegal (Reno)

Date: 2009-07-22, 3:32PM PDT

Reply to: job-cugsx-1283817746@craigslist.org (Errors when replying to ads?)

Qualified applicants will have extensive discovery & litigation support experience, be detailed oriented, possess experience in reviewing and drafting documents, document control and client contact. Minimum of 5 years litigation support required and experience with intellectual property litigation strongly preferred. Trial experience is also strongly perferred. Must have knowledge of Federal and State Court rules and procedures and ndidates must be self-motivated and have the ability to work both independently and as part of a team in a fast-paced environment. Salary DOE. Firm offers a competitive salary and benefits package. Great portunity for a driven, detail oriented individual who wants to work for a firm that offers a positive and dynamic work environment.

- Location: Reno
- Compensation: DOE
- Principals only. Recruiters, please don't contact this job poster.
- Please, no phone calls about this job!
- Please do not contact job poster about other services, products or commercial interests.

PostingID: 1283817746

Exhibit 22

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GRAPHON CORPORATION, Plaintiff,	§ §	
v.	§	CIVIL ACTION NO. 2-05-CV-530 (TJW)
AUTOTRADER.COM, INC. Defendant.	§ §	

MEMORANDUM OPINION AND ORDER

After considering the submissions and the arguments of counsel, the court issues the following order concerning the claim construction issues:

I. Introduction.

Plaintiff Graphon Corporation ("Graphon") accuses Autotrader.com, Inc. ("Autotrader") of infringing United States Patent Nos. 6,324,538 ("the '538 patent") entitled "Automated On-line Information Service and Directory, Particularly for the World Wide Web" and 6,850,940 ("the '940 patent") also entitled "Automated On-line Information Service and Directory, Particularly for the World Wide Web." This opinion resolves the parties' various claim construction disputes.

II. Background of the Technology

The '538 and the '940 patents originate from the same specification. The patents disclose an on-line information system including a database in which the user controls both the content of the information in the database and the manner in which that information is classified. The system receives user requests to publish electronic user information and also accepts information from users. Database entries are accessible on a computer network. The system protects the database entries by requiring a user to provide a correct password to create or modify an entry in the database. Bearing

this background in mind, the court now addresses the claim construction issues.

III. General Principles Governing Claim Construction

"A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. Under the patent law, the specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. A patent's claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's claims. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). And, although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader

than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the *claims* of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (*quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention. The patent is addressed to and intended to be read by others skilled in the particular art. *Id.*

The primacy of claim terms notwithstanding, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id.* at 1315 (*quoting Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314-17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid

in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. The prosecution history helps to demonstrate how the inventor and the PTO understood the patent. *Phillips*, 415 F.3d at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence. That evidence is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims.

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Id.* at

1319-24. The approach suggested by *Texas Digital*–the assignment of a limited role to the specification–was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id.* at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of the claim terms within the context of the patent." *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id.* The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. *Id.* at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant. The court now turns to a discussion of the disputed claim terms.

The '538 and the '940 Patents include claim limitations that fall within the scope of 35 U.S.C. § 112 ¶ 6. Section 112 ¶ 6 states "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure. . . in support thereof, and such claim shall be construed to cover the corresponding structure . . .

described in the specification and equivalents thereof." 35 U.S.C. § 112 ¶ 6 (2007). The first step in construing a means-plus-function limitation is to identify the recited function. *See Micro Chem., Inc. v. Great Plains chem. Co.*, 194 F.3d 1250 1258 (Fed. Cir. 1999). Then, the court must identify in the specification the structure corresponding to the recited function. *Id.* The "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Medical Instrumentation and Diagnostics, Corp. v. Elekta AB,* 344 F.3d 1205, 1210 (Fed. Cir. 2003)(*citing B. Braun v. Abbott Labs,* 124 F.3d 1419, 1424 (Fed. Cir. 1997)).

The patentee must clearly link or associate structure with the claimed function as part of the *quid pro quo* for allowing the patentee to express the claim in terms of function pursuant to § 112 ¶ 6. *See id.* at 1211; *see also Budde v. Harley-Davidson, Inc.* 250 F.3d 1369, 1377 (Fed. Cir. 2001). The "price that must be paid" for use of means-plus-function claim language is the limitation of the claim to the means specified in the written description and equivalents thereof. *See O.I. Corp. v. Tekmar Co.,* 115 F.3d 1576, 1583 (Fed. Cir. 1997).

If a patent purports to use software as the structure to perform the claimed function, a failure to associate that software with the recited function constitutes a failure to particularly point out and claim that particular structure as a means of performing the function. *See Medical Instrumentation and Diagnostics Corp.,* 344 F.3d at 1211. Further, it is "important to determine whether one of skill in the art would understand the specification itself to disclose the structure, not simply whether that person would be capable of implementing the structure. *See Atmel Corp. v. Info. Storage Devices, Inc.,* 198 F.3d 1374, 1382 (Fed. Cir. 1999). Fundamentally, it is improper to look to the knowledge of one skilled in the art separate and apart from the disclosure of the patent. *See Medical*

Instrumentation and Diagnostics Corp., 344 F.3d at 1211.

IV. Terms in Dispute

A. '538 Patent

1. "creating a database entry containing information received from a user" (claim 1)

The plaintiff argues that this term means "that an entry in a database is created containing information submitted by a user over a computer network." Defendant argues that the term means "creating a database entry containing information received from a user in which the content is entirely user controlled." The disagreement between the parties is whether the claim requires that the user control the content of the information contained in a database entry.

The defendant cites to portions of the specification that expressly require the user to control the content and the classification of the information content of a database entry. *See, e.g.*, 1:13-3:40; 10:34-42. Plaintiff's arguments ignore the plain language in the specification concerning the user's control over the content and classification of the information contained in a database entry. For example, the specification states that the "information content is entirely user-controlled" and that "the user controls both the content of an entry and the manner in which it is classified." 2:60-64; 3:22-28.

The court agrees with the defendant that the user controls the content of the information contained in the database. Consequently, the court construes the phrase to mean "creating a database entry containing information received from a user in which the user entirely controls the information content of a database entry and the manner in which the information is classified."

2. "computer network" (claims 1 & 7) and "network" (claim 4)

The plaintiff proposes that "computer network" and "network" mean "a public computer network, such as the Internet, comprised of two or more computers interconnected by communication channels." The defendant proposes that "computer network" and "network" mean "the World Wide Web." The parties disagree about the breadth of the network. Defendant argues that the terms should be construed solely to the World Wide Web, which is described in the preferred embodiment.

Defendant argues that its proposed claim construction is proper largely based on the preferred embodiment described in the written description. Plaintiff does not dispute that the World Wide Web fits within the claimed invention, but argues that the breadth of the terms "computer network" or "network" includes public networks other than the World Wide Web. The court is persuaded that Plaintiff is correct. The written description states that the server site is connected to a computer network "such as the 'Web or a Wide Area Network (WAN) other than the Web.'" 3:65-67. Accordingly, the court construes these terms to mean "any public computer network comprised of two or more computers interconnected by communication channels."

3. "creating a database entry containing the information submitted via the entry form" (claim 4)

This term necessarily incorporates the court's first two claim constructions. Plaintiff argues that this term means "that an entry in a database is created containing information submitted by a user via an entry form displayed to the user over a computer network." Defendant argues that the term should be construed to mean "creating a database entry containing information in an entry form submitted by the user over the World Wide Web in which the content is entirely user-controlled." Again, the parties' disputes relate to the breadth of the network and the user's control over the

information content. For the reasons outlined above, the court construes this term to mean "creating a database entry containing information submitted by a user via an entry form displayed to the user over a public computer network wherein the information content and classification is entirely controlled by the user."

4. "creating a database entry containing information accepted from a user " (claim 7)

This term also incorporates the court's first two claim constructions. Plaintiff argues that the term means "an entry in a database is created containing information submitted by a user over a computer network." Defendant argues that the term should be construed to mean "creating a database entry containing information accepted from a user in which the content is entirely user-controlled." For the reasons previously addressed, the court construes this term to mean "creating a database entry containing information accepted from a user over a public computer network wherein the information content and classification is entirely controlled by the user."

5. "data representing text, a universal resource locator, an image, and a user-selected category"

The plaintiff argues that this term means that "the information submitted to the database by the user communicating over a computer network includes text, a universal resource locator, an image, and a user-selected category." The defendant argues that the term means "data representing (I) text, (ii) the Web address of a document or other resource, (iii) an image, and (iv) a category capable of being selected and defined without limitation by the user. The parties' disagreement with respect to this term concerns the universal resource locator ("URL"). Defendant argues that the URL should be limited to a Web address. Plaintiff proposes that a universal resource locator is a unique

address for a file that is accessible on the internet.

This dispute focuses on the breadth of the computer network. Defendant argues that URL should be limited to a Web address. This limitation would necessarily limit the computer network to the World Wide Web, which requires importing a limitation from the preferred embodiment to the claims. The written description, however, states that the term "computer network" is broader than the World Wide Web. *See* 3:65-67. Consequently, the court construes the term to mean "data representing text, a universal resource locator, an image, and a user-selected category."

6. "generating a transaction ID corresponding to the database entry" (claims 1 & 4) and "generating a unique transaction ID corresponding to the database entry" (claim 7)

The plaintiff defines these terms to mean "that a unique identifier is generated which corresponds to the database entry allowing the user to create, access, or update an entry." The defendant's proposed construction is "generating a unique identifier of an entry." The defendant further proposes that the "generating a transaction ID" step of the method occurs before the "creating a database entry" step. Both parties try to import limitations from the written description to the claims. Plaintiff suggests that the court should construe the claim to include functional limitations that are simply not supported by the record. The record makes it clear that a unique transaction ID is generated when the user adds a new entry to the database and that ID is effective for the life of the entry. *See, e.g.*, 9:30-46. Plaintiff asks the court to construe the term to limit the purposes for which the transaction ID may be used. That limitation is not supported by the record.

Similarly, the defendant asks the court to add a limitation that is not supported in the record. Specifically, the defendant asks the court to construe this term so that the "generating a transaction ID" step occurs before the "creating a database entry" step. The intrinsic record cited by the

defendant in support of its position, however, does not support this limitation. Indeed, there is no support in the record for importing this limitation into the claim language. In fact, the patent provides that "[w]hen the user chooses to add a new entry to the database, a unique transaction ID is created for that entry. . ." *Id.* The court construes "generating a transaction ID corresponding to the database entry" to mean "generating a unique identifier for a particular database entry" and rejects Defendant's proposed limitation that the "generating a transaction ID" step of the method occurs before the "creating a database entry" step.

7. "password protecting the entries" (claim 1) and "password protecting the entry" (claims 4 & 7)

The plaintiff contends that this term means "that the database entry or entries are protected by a word, string of characters and/or numbers which must be supplied before a user can create, access, or update an entry." The defendant proposes that the term should be construed to mean "restricting access to the data by means of a password." Plaintiff's proposed construction asks the court to import a variety of limitations from the specification to the claim language. Specifically, Plaintiff asks the court to limit "password protecting" the entry or entries such that a password is required to access, update, or create a database entry. But the patent states that users are asked to choose a password and that the password "may be required to access some system services." 7:60-67.

The claims make it clear that the password must be used to "protect" the database entries. The court is persuaded that Defendant's proposed claim construction "restricting access to the data by means of a password" is consistent with the plain meaning of "protecting" without importing additional unsupported limitations from the specification. Accordingly, the court construes this term

to mean "restricting access to the data by means of a password."

8. "publishing information" (preamble of claims 4 & 7)

Plaintiff proposes that this term should be construed to mean "making information available over the computer network," and the defendant argues that no construction is necessary as the term is part of a non-limiting preamble. The court agrees with defendant's position and declines to construe this term.

9. "displaying search results in hyper text markup language as a sequence of universal resource locators directed to the database entries" (claims 5 & 7)

Plaintiff argues that this term means "that when a search is performed, the search results include universal resource locators 'URLs' that point to entries in the database. 'Hyper text markup language' is a computer language used to specify the contents and format of a hypermedia document." Defendant proposes the following construction "displaying web search results in an HTML format that embeds the Web addresses linked to database entries."

Defendant's proposed construction functionally limits the computer network to the World Wide Web. The defendant's construction essentially construes an URL to mean a Web address. As discussed previously, the court does not limit the computer network in the claims of the '538 patent to the World Wide Web and does not require an URL to mean a Web address. The patent specification expressly states that the computer network in the claims is broader than the World Wide Web. 3:65-67. Consequently, the URL must be broader than a web address because the network is broader than the World Wide Web.

The court believes that it is not necessary to construe "hyper text markup language" because

one of ordinary skill in the art knows what HTML means. Accordingly, the court construes "displaying search results in hyper text markup language as a sequence of universal resource locators directed to the database entries" to mean "displaying search results in hypertext markup language where the results are displayed as a sequence of universal resource locators directed to the database entries."

10. "in response to a user selecting one of the entries' universal resource locator" (claims 5 & 7)

Plaintiff argues that this term means "that information is presented to the user after the user selects one of the search results displayed as a result of the search." Defendant proposes that the term should be construed to mean "in response to a user selecting one of the embedded web addresses." This is another instance in which the defendant asks the court to limit the computer network to the World Wide Web by requiring an URL to be limited to a Web address. That argument previously was rejected.

The construction proposed by the plaintiff is consistent with the record. The court construes "in response to a user selecting one of the entries' universal resource locator" to mean that information is presented to the user after the user selects one of the search results displayed as a result of the search."

11. "displaying search results in hyper text markup language as a sequence of universal resource locators directed to the database entries" (claims 5 & 7)

Plaintiff argues that this term means "that when a search is performed, the search results include universal resource locators 'URLs' that point to entries in the database. 'Hyper text markup

language' is a computer language used to specify the contents and format of a hypermedia document." Defendant proposes the following construction "displaying web search results in an HTML format that embeds the Web addresses linked to database entries."

Defendant's proposed construction functionally limits the computer network to the World Wide Web. The defendant's construction also requires an URL to mean a Web address. As discussed previously, the court does not limit the computer network in the claims of the '538 patent to the World Wide Web and does not construe an URL to mean a Web address. The court construes this term to mean "in response to the user selecting one of the URL's associated with the search results."

B. '940 Patent

Claims 15-21 in the '940 patent are means-plus-function claims. Claim 15 is an independent claim and claims 16-21 are depend from claim 15.

When a claim limitation uses the term "means" to describe a limitation, there is a presumption that the inventor uses the term to invoke § 112 ¶ 6. *See Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1367, 1375 (Fed. Cir. 2003). This presumption may be rebutted when the limitation recites structure sufficient to perform the claimed function in its entirety. *See id.*

After concluding that a claim limitation is a means-plus-function limitation, the court must first identify the function of the limitation and then look to the specification to identify the corresponding structure for that function. *See Medical Instrumentation*, 344 F.3d at 1210. If there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite. *See Atmel*, 198 F.3d at 1378-79. To link structure to the claimed function, the structure must be disclosed in the written description in a manner such that

one of ordinary skill in the art would be able to identify the structure that corresponds to the means limitation. *See id.* at 1382. "Otherwise, one does not know what the claim means." *Id.*

1. "means for generating said record with said information" (claim 15)

The parties agree that this limitation is a means-plus-function claim limitation. Plaintiff argues that the recited function is "generating said record with said information" and the defendant argues that it is "generating a record from the user-supplied information." The court agrees with the plaintiff that the recited function is "generating said record with said information."

The next step in this analysis is to determine the structure disclosed in the written description corresponding to the recited function. Plaintiff argues that the corresponding structure is "server software such as HTML, front-ending tools communicating through the Common Gateway Interface to a database, to an SQL or miniSQL database for performing the recited function, and equivalents thereof." Defendant argues that the written description discloses no structure corresponding to the recited function and argues that "said information has no antecedent basis."

Plaintiff cites to the following passages in the '940 patent: 1:25-62; 3:4-11; 4:1-48; 7:44-47; and figs 1A, 1B, 3, 4, and 5 to support its position. The court concludes that the sections of the specification cited by Plaintiff do not link the recited function to any structure. The court has reviewed the entire patent specification and determined that no structure is linked to the recited function.

The corresponding structure of a means-plus-function limitation must be disclosed in the written description in such a manner that one skilled in the art will know and understand what structure corresponds to the means limitation. *See Atmel Corp. v. Info Storage Devices, Inc.* 198 f.3d 1374, 1382 (Fed. Cir. 1999). A proper indefiniteness analysis requires description of the structure

in the specification and then asking whether one of ordinary skill in the art would identify the structure from the description. *See id.* at 1381. Title 35 U.S.C. § 112 ¶ 6 requires the patentee to disclose some structure. "There must be some structure in the specification" and the requirements of § 112 ¶ 6 will not be met when there is "total omission of structure." *Atmel*, 198 F.3d at 1382. In this instance, because the written description discloses no structure clearly linked to the recited function, the court finds that this limitation is indefinite.[1] The court declines to address Defendant's argument concerning the lack of an antecedent basis for "said information" in the claim because it is moot.

2. "means for storing said record in said network accessible database" (claim 15)

The parties agree that this limitation is a means-plus-function claim limitation. Plaintiff argues that the recited function is "generating said record in said network accessible database" while the defendant argues that it is "generating a record in the Web accessible database." The court agrees with the plaintiff that the recited function is "generating said record in said network accessible database" because the court (as discussed below) must construe "network" more broadly than the World Wide Web.

The next step in this analysis is to determine the structure disclosed in the written specification corresponding to the recited function. Plaintiff argues that the corresponding structure is "server software such as HTML, front-ending tools communicating through the Common Gateway Interface to a database, to an SQL or miniSQL database for performing the recited function, and equivalents thereof." Defendant argues that the written description discloses no structure

[1]For the purpose of review, the court will construe similar limitations. However, based on the court's conclusion that this limitation is indefinite, claim15 and all claims depending from claim 15 are invalid.

corresponding to the recited function and argues that "said information has no antecedent basis."

Plaintiff cites to cols. 1:25-62; 3:4-11; 4:1-48; 7:44-47; and figs 1A, 1B, 3, 4, and 5 to support its position. The court concludes that the sections of the specification cited by Plaintiff do not link the recited function to any structure. Additionally, the court reviewed the entire specification to find structure linked to the recited function. The specification does not link any structure to the recited function. Accordingly, the court finds that this limitation is indefinite. The court declines to address Defendant's argument concerning the lack of an antecedent basis for "said information" in the claim because it is moot.

3. "means for storing an identification of said user indicating that said user is authorized to modify said record in said network accessible database" (claim 15)

The parties agree that this limitation is a means-plus-function claim limitation. Plaintiff argues that the recited function is "storing said record in said network accessible database" while the defendant argues that it is "storing the record in a Web accessible database." The court agrees with the plaintiff that the recited function is "storing said record in said network accessible database" because the court has construed "network" more broadly than the World Wide Web.

The next step in this analysis is to determine the structure disclosed in the specification corresponding to the recited function. Plaintiff argues that the corresponding structure is "server software such as HTML front-ending tools communicating through the Common Gateway Interface to a database, to an SQL or miniSQL database for performing the recited function, and equivalents thereof." Defendant argues that the written description discloses no structure corresponding to the recited function.

Plaintiff cites to cols. 1:25-62; 3:4-11; 4:1-48; and figs 1A, 1B, 3, 4, and 5 to support its

position. The court concludes that the sections of the specification cited by Plaintiff do not link the recited function to any structure. Once again, the court has reviewed the entire specification to find structure linked to the recited function. The specification does not link any structure to the recited function. Accordingly, the court finds that this limitation is indefinite.

The court has determined that the three means-plus-function limitations specifically addressed in this order are indefinite. Consequently, claim 15 and all dependent claims depending from claim 15 are indefinite. Further consideration of means-plus-function claim limitations for the '940 patent is unnecessary.

1. "network" (claims 1, 5, 6, 15, 19, 20)[2]

In light of the court's prior holding, "network" is construed to mean "a public network comprised of two or more computers interconnected by communication channels."

2. "user authorization information" (claims 1 & 15)

Plaintiff proposes that this "user authorization information" should be construed to mean "a password or user ID used to authenticate a user." Defendant argues that the term should mean "any user information upon which access is determined."

Plaintiff's proposed claim construction is not supported by the record. Plaintiff asks the court to limit "user authorization information" to a password or a user ID used to authenticate the user, but does not provide any support for substantially limiting this term. Unlike the '538 patent in which password protection was a limitation expressed in the claims themselves, claims 1 and 15 of the '940

[2]As previously noted, claim 15 and claims depending from claim 15 are invalid. Nevertheless, the court will evaluate the manner in which claim terms are used in those claims to the extent that the court finds that instructive for purposes of construing claim terms as they are used in other claims in the '940 patent.

patent do not include any such limitation. For example, claim 1 includes the limitation of "determining whether a user is authorized to add said record from said user authorization information." *See* claim 1 of the '940 patent. Similarly, claim 15 includes the following language "means for receiving user authorization information. . . . means for determining whether a user is authorized to add said record from said user authorization information. . . ." *See* claim 15 of the '940 patent. Neither claim 1 nor claim 15 limits the user authorization information to a password or user ID.

The court declines to adopt Plaintiff's proposed construction. "User authorization information" means "user information upon which access is granted."

3. "said information" (claims 1, 2, 5, 6, 16, 19, 20)

Plaintiff argues that this term means "information submitted by the user to be included in a record." Defendant argues that there is no antecedent basis for this term and the court should invalidate the claim as indefinite. The requirement of antecedent basis is a rule of patent drafting. The Manual of Patent Examining Procedure states that the failure to provide explicit antecedent basis does not always render a claim indefinite. MPEP § 2173.05(e) (8th ed. Rev. 2 May 2004). The Federal Circuit has held that "despite the absence of explicit antecedent basis, 'if the scope of a claim would be readily ascertainable by those skilled in the art, then the claim is not indefinite.'" *Energizer Holdings, Inc. and Eveready Battery Co., Inc. v. International Trade Commission,* 435 f.3d 1366, 1370-71 (Fed. Cir. 2006)(citing *Bose Corp. v JBL, Inc.,* 274 f.3d 1354, 1359 (Fed. Cir. 2001)).

Within the context of independent claims 1 and 15, "said information" is clearly understood to mean the information submitted by the user to be included in a record. For example, in claim 1, the pertinent part states "said information to be included in said record responsive to said request"

while claim 15 states in relevant part "means for receiving said information to be included in said record responsive to said transmitting said request." *See* claims 1 & 15 of the '940 patent. Accordingly, the court construes "said information" to mean "information submitted by the user to be included in a record."

4. "storing an identification of said user" (claims 1 & 15)

Plaintiff argues that this term should be construed to mean that the "system stores a transaction ID" while Defendant proposes that it means "storing an identifier of a specific person." The language of claims 1 and 15 requires that the identification of the user will be used to determine whether the user is authorized to add a record in the database. *See* claims 1 and 15 of the '940 patent. Based on the specification, the transaction ID is different from the user ID. For example, the specification provides that a unique transaction ID is assigned to each *entry*. *See, e.g.*, 6:24-28. The specification effectively defines or at least clearly distinguishes a user ID from a transaction ID in columns 7 and 8:

> Users providing the requested information are assigned a user ID to be used during subsequent accesses and are requested to choose a password. The password may be required to access some system services. To further encourage voluntary login, users that have complied with the login request and have been assigned a user ID may be afforded the ability to customize the user interface and maintain the resulting look and feel between uses. The customization is performed in a known manner by storing on the host a user preferences file and accessing the file to restore user preferences when a valid user ID is provided.

7:65-8:9.

The patent specification demonstrates that the transaction ID is tied to a particular database entry, while the user ID is tied to a particular user. Plaintiff asks the court to construe this term such that the line between a user ID and a transaction ID is eliminated. The court rejects Plaintiff's proposed construction. The term "storing an identification of said user" means "storing an identifier

of a specific person."

V. Conclusion

The court adopts the constructions set forth in this opinion for the disputed terms of the '538 and the '940 patents. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 28th day of June, 2007.

T. John Ward

T. JOHN WARD
UNITED STATES DISTRICT JUDGE