Exhibit 1

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(12) **United States Patent**
Arav

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(54) **HYPERLINK WITH GRAPHICAL CUE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 190 days.

This patent is subject to a terminal disclaimer.

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(51) **Int. Cl.**

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G06F 3/0484	(2013.01)

(52) **U.S. Cl.**

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(58) **Field of Classification Search**

CPC G06F 17/2235

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,754,176	A	5/1998	Crawford
5,854,630	A	12/1998	Nielson
6,065,051	A	5/2000	Steele et al. 709/219

(Continued)

FOREIGN PATENT DOCUMENTS

WO	WO 02/03243 A1	1/2002
WO	WO 02/061610 A1	8/2002

(Continued)

OTHER PUBLICATIONS

BoardCentral Website (Feb. 15, 2006).

(Continued)

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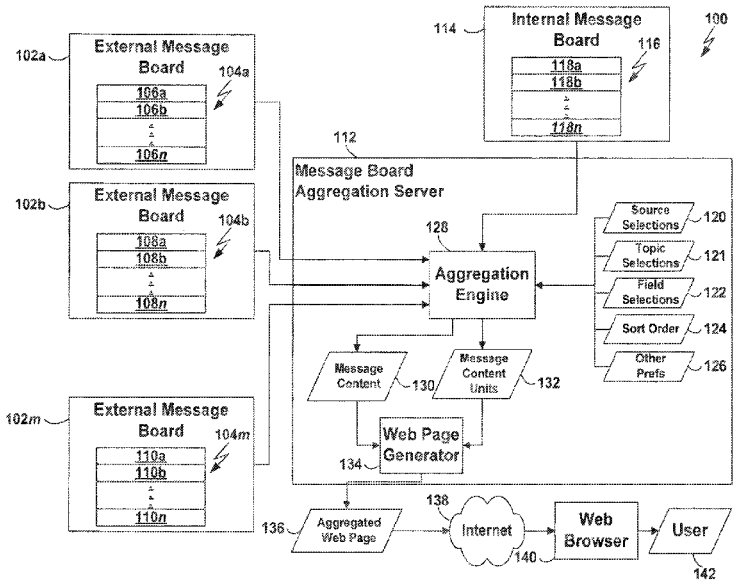
(57) **ABSTRACT**

A system, method, and computer program product are provided for causing display of a first set of representations of a first set of hyperlinks. In operation, a first input from a user is received indicating a selection of one of the first set of hyperlink representations and causes, in response to receiving the first input, display of a second set of representations of a second set of hyperlinks. Further, a second input from the user is received indicating a selection of one of the second set of hyperlink representations, and causes, in response to receiving the second input, navigation to a destination specified by the selected one of the second set of hyperlink representations.

31 Claims, 8 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

6,199,077 B1 3/2001 Inala et al. 707/501
6,199,157 B1 3/2001 Dov et al. 713/1
6,208,339 B1 3/2001 Atlas et al. 715/780
6,216,141 B1 4/2001 Straub et al.
6,253,325 B1 6/2001 Steele et al. 713/201
6,314,458 B1 11/2001 Steele et al. 709/219
6,336,133 B1 1/2002 Morris et al. 709/204
6,393,468 B1 5/2002 McGee 709/218
6,405,238 B1 6/2002 Votipka
6,421,651 B1 7/2002 Tedesco et al. 705/8
6,430,537 B1 8/2002 Tedesco et al. 705/8
6,456,303 B1 9/2002 Walden et al.
6,484,149 B1 11/2002 Jammes et al. 705/26
6,498,835 B1 12/2002 Skladman et al.
6,515,681 B1 2/2003 Knight 345/751
6,564,213 B1 5/2003 Ortega et al.
6,633,311 B1 10/2003 Douvikas et al. 345/731
6,661,877 B1 12/2003 Lee et al.
6,691,158 B1 2/2004 Douvikas et al. 709/219
6,704,727 B1 3/2004 Kravets
6,748,449 B1 6/2004 Dutta
6,879,691 B1 4/2005 Koretz 380/255
6,889,213 B1 5/2005 Douvikas et al. 705/67
6,952,730 B1 10/2005 Najork et al. 709/225
7,017,109 B1 3/2006 Douvikas et al. 715/501.1
7,024,451 B2 4/2006 Jorgenson 709/203
7,069,308 B2 6/2006 Abrams 709/218
7,117,254 B2 10/2006 Lunt et al. 709/218
7,188,080 B1 3/2007 Walker et al. 705/26
7,188,153 B2 3/2007 Lunt et al. 709/218
7,194,552 B1 3/2007 Schneider 709/245
7,194,691 B1 * 3/2007 Zilka G06F 17/30876 707/E17.112
7,216,301 B2 5/2007 Moehrle
7,231,428 B2 6/2007 Teague 709/206
7,233,997 B1 6/2007 Leveridge et al. 709/229
7,340,419 B2 3/2008 Walker et al. 705/27
7,373,338 B2 5/2008 Thompson et al. 707/3
7,451,161 B2 11/2008 Zhu et al. 707/104.1
7,478,078 B2 1/2009 Lunt et al. 707/1
7,487,441 B2 2/2009 Szeto 715/234
7,499,940 B1 3/2009 Gibbs 707/102
7,526,440 B2 4/2009 Walker et al. 705/26
7,590,687 B2 9/2009 Bales et al. 709/203
7,606,687 B2 10/2009 Galbreath et al. 703/3
7,606,865 B2 10/2009 Kumar et al. 709/206
7,669,123 B2 2/2010 Zuckerberg et al. 715/273
7,680,882 B2 3/2010 Tiu et al. 709/203
7,685,036 B1 3/2010 Hsu et al. 705/35
7,725,492 B2 5/2010 Sittig et al. 707/784
7,765,568 B1 * 7/2010 Gagnon H04H 60/25 715/787
7,788,260 B2 8/2010 Lunt et al. 707/727
7,797,256 B2 9/2010 Zuckerberg et al. 705/319
7,809,805 B2 10/2010 Stremel et al. 709/219
7,827,208 B2 11/2010 Bosworth et al. 707/802
7,827,265 B2 11/2010 Cheever et al. 709/223
7,835,950 B2 11/2010 Walker et al. 705/27
7,890,501 B2 2/2011 Lunt et al. 707/722
7,912,758 B2 3/2011 Walker et al. 705/26
7,913,185 B1 * 3/2011 Benson G06F 8/38 715/762
7,933,810 B2 4/2011 Morgenstern 705/26.1
7,945,653 B2 5/2011 Zuckerberg et al. 709/223
7,970,657 B2 6/2011 Morgenstern 705/26.1
8,005,919 B2 8/2011 Mehanna et al. 709/217
8,010,458 B2 8/2011 Galbreath et al. 15/320
8,539,024 B2 9/2013 Smit et al.
9,348,911 B2 5/2016 Egendorf et al.
2001/0018698 A1 8/2001 Uchino et al. 707/533
2002/0010639 A1 1/2002 Howey et al.
2002/0065671 A1 5/2002 Goerz, Jr. et al. 705/1
2002/0130895 A1 9/2002 Brandt et al.
2002/0152238 A1 10/2002 Hayes
2003/0034964 A1 * 2/2003 Yoshioka G06F 17/3089 345/204
2003/0041147 A1 2/2003 van den Oord et al. 709/227
2003/0061114 A1 3/2003 Schwartz et al. 705/26
2003/0115306 A1 6/2003 Hagarty et al. 709/223
2003/0145281 A1 * 7/2003 Thames G06F 8/73 715/205
2004/0098269 A1 * 5/2004 Wise G06F 17/30595 705/313
2004/0172405 A1 9/2004 Farran 707/100
2004/0254881 A1 12/2004 Kumar et al. 705/40
2005/0049939 A1 3/2005 Lai et al. 705/27
2005/0076110 A1 4/2005 Mathew et al.
2005/0267940 A1 12/2005 Galbreath et al. 709/206
2005/0278443 A1 12/2005 Winner et al. 709/224
2006/0015821 A1 1/2006 Parker et al.
2006/0021009 A1 1/2006 Lunt 726/4
2006/0064342 A1 3/2006 Frengut et al. 705/10
2006/0155809 A1 7/2006 Arav 709/204
2006/0174340 A1 8/2006 Santos et al. 726/21
2006/0206454 A1 9/2006 Forstall et al. 707/3
2006/0239546 A1 10/2006 Tedesco et al. 382/159
2006/0248160 A1 11/2006 Plummer 709/217
2007/0022021 A1 1/2007 Walker et al. 705/26
2007/0100779 A1 5/2007 Levy et al. 705/500
2007/0112835 A1 5/2007 McMullen et al. 707/102
2007/0113201 A1 5/2007 Bales et al. 715/810
2007/0143704 A1 6/2007 Laird-McConnell 715/781
2007/0192181 A1 * 8/2007 Asdourian G06Q 30/0277 705/14.73
2007/0192299 A1 8/2007 Zuckerberg et al. 707/3
2008/0040474 A1 2/2008 Zuckerbert et al. 709/224
2008/0040475 A1 2/2008 Bosworth et al. 709/224
2008/0046976 A1 2/2008 Zuckerberg 726/4
2008/0059607 A1 3/2008 Schneider 709/218
2008/0065604 A1 3/2008 Tiu et al. 707/3
2008/0065701 A1 3/2008 Lindstrom et al. 707/201
2008/0189292 A1 8/2008 Stremel et al. 707/10
2008/0189380 A1 8/2008 Bosworth et al. 709/207
2008/0189395 A1 8/2008 Stremel et al. 709/219
2008/0189768 A1 8/2008 Callahan et al. 726/4
2008/0281816 A1 11/2008 Kim 707/6
2008/0313714 A1 12/2008 Fetterman et al. 726/4
2009/0013413 A1 1/2009 Vera et al. 726/30
2009/0024548 A1 1/2009 Zhu et al. 706/21
2009/0031301 A1 1/2009 D'Angelo et al. 717/178
2009/0037277 A1 2/2009 Zuckerberg et al. 705/14
2009/0048922 A1 2/2009 Morgenstern et al. 705/14
2009/0049014 A1 2/2009 Steinberg 707/3
2009/0049036 A1 2/2009 Juan et al. 707/5
2009/0049070 A1 2/2009 Steinberg 707/101
2009/0049127 A1 2/2009 Juan et al. 709/204
2009/0049525 A1 2/2009 D'Angelo et al. 726/4
2009/0070219 A1 3/2009 D'Angelo et al. 705/14
2009/0070334 A1 3/2009 Callahan et al. 707/9
2009/0070412 A1 3/2009 D'Angelo et al. 709/203
2009/0119167 A1 5/2009 Kendall et al. 705/14
2009/0144392 A1 6/2009 Wang et al. 709/217
2009/0158143 A1 6/2009 Arav 715/261
2009/0158169 A1 6/2009 Arav 715/751
2009/0182589 A1 7/2009 Kendall et al. 705/5
2009/0193333 A1 7/2009 Arav 715/261
2009/0193349 A1 7/2009 Arav 715/764
2009/0198487 A1 8/2009 Wong et al. 704/4
2009/0199135 A1 8/2009 Arav 715/841
2009/0228342 A1 9/2009 Walker et al. 705/10
2009/0228780 A1 9/2009 McGeehan 715/234
2009/0287786 A1 11/2009 Arav 709/206
2009/0327237 A1 * 12/2009 Zhang G06F 17/30864
2010/0049534 A1 2/2010 Whitnah et al. 705/1
2010/0049852 A1 2/2010 Whitnah et al. 709/226
2010/0132049 A1 5/2010 Vernal et al. 726/27
2010/0162375 A1 6/2010 Tiu, Jr. et al. 726/7
2010/0164957 A1 7/2010 Lindsay et al. 345/440
2010/0169327 A1 7/2010 Lindsay et al. 707/750
2010/0180032 A1 7/2010 Lunt 709/225
2010/0185580 A1 7/2010 Zhu et al. 706/52
2010/0198581 A1 8/2010 Ellis 704/4
2010/0211996 A1 8/2010 McGeehan et al. 726/4

(56) **References Cited**

U.S. PATENT DOCUMENTS

2010/0211997	A1	8/2010	McGeehan et al.	726/4
2010/0217645	A1	8/2010	Jin et al.	705/9
2010/0229223	A1	9/2010	Shepard et al.	726/5
2010/0257023	A1	10/2010	Kendall et al.	705/10
2010/0257459	A1	10/2010	Galbreath et al.	715/753
2010/0306043	A1	12/2010	Lindsay et al.	705/14.41
2010/0318571	A1	12/2010	Pearlman et al.	707/784
2011/0004692	A1	1/2011	Occhino et al.	709/228
2011/0004831	A1	1/2011	Steinberg et al.	715/753
2011/0016169	A1	1/2011	Cahill et al.	709/203
2011/0016381	A1	1/2011	Cahill et al.	715/234
2011/0016382	A1	1/2011	Cahill et al.	715/234
2011/0018342	A1	1/2011	Park et al.	307/23
2011/0022657	A1	1/2011	Zhu et al.	709/204
2011/0023101	A1	1/2011	Vernal et al.	726/7
2011/0023129	A1	1/2011	Vernal et al.	726/28
2011/0044354	A1	2/2011	Wei	370/468
2011/0055314	A1	3/2011	Rosenstein et al.	709/203
2011/0055332	A1	3/2011	Stein	709/206
2011/0055683	A1	3/2011	Jiang	715/234
2011/0083101	A1	4/2011	Sharon et al.	715/800
2011/0087526	A1	4/2011	Morgenstern et al.	705/14.1
2011/0106630	A1	5/2011	Hegeman et al.	705/14.71
2011/0125599	A1	5/2011	Morin et al.	705/26.1
2011/0128699	A1	6/2011	Heydari et al.	361/679.48
2011/0137902	A1	6/2011	Wable et al.	707/737
2011/0137932	A1	6/2011	Wable	707/769
2011/0145287	A1	6/2011	Jiang et al.	707/780
2011/0145321	A1	6/2011	Jiang	709/203
2011/0153377	A1	6/2011	Novikov et al.	705/71.1
2011/0153412	A1	6/2011	Novikov et al.	705/14.42
2011/0153416	A1	6/2011	Walker et al.	705/14.49
2011/0153421	A1	6/2011	Novikov et al.	705/14.52
2011/0154223	A1	6/2011	Whitnah et al.	715/753
2011/0154842	A1	6/2011	Heydari et al.	62/259.2
2011/0156480	A1	6/2011	Park	307/23
2011/0161602	A1	6/2011	Adams et al.	711/148
2011/0161980	A1	6/2011	English et al.	718/105
2011/0161987	A1	6/2011	Huang et al.	719/318
2011/0179347	A1	7/2011	Proctor et al.	715/234
2011/0196855	A1	8/2011	Wable et al.	707/711

FOREIGN PATENT DOCUMENTS

WO	WO 2004/029780 A2	8/2004	
WO	WO 2007/109264 A3	9/2007	G06F 15/16

OTHER PUBLICATIONS

StockHouse Website (Feb. 15, 2006).
ClearStation Website (Feb. 15, 2006).
FreeRealTime Message Boards Website (Feb. 15, 2006).
MarketWatch Message Boards Website (Feb. 15, 2006).
The Motley Fool Discussion Boards Website (Feb. 15, 2006).
MSN Money Message Boards Website (Feb. 15, 2006).
Yahoo! Message Boards Website (Feb. 15, 2006).
StockSelector.com Message Boards Website (Feb. 15, 2006).
SmallCapCenter.com Message Boards Website (Feb. 15, 2006).
Silicon Investor Message Boards Website (Feb. 15, 2006).
RagingBull Website (Feb. 15, 2006).
WallStreetTape.com Website (Feb. 15, 2006).
InvestorVillage Website (Feb. 15, 2006).
Forex Trading Website (Feb. 15, 2006).
Elite Trader.com as viewed on Mar. 21, 2007.
AllStocks.com as viewed on Mar. 21, 2007.
InvestorsHub.com as viewed on Mar. 21, 2007.
TheLion.com as viewed on Mar. 21, 2007.
Finance.Google.com as viewed on Mar. 21, 2007.
ADVFN.com as viewed on Mar. 21, 2007.
EquityGroups.com as viewed on Mar. 21, 2007.
StockPickr.com as viewed on Mar. 21, 2007.
StockTickr.com as viewed on Mar. 21, 2007.
SocialPicks.com as viewed on Mar. 21, 2007.
FreedTheBull.com as viewed on Mar. 21, 2007.
Bullpoo.com as viewed on Mar. 21, 2007.
Wallstrip.com as viewed on Mar. 21, 2007.
Monitor1 10.com as viewed on Mar. 21, 2007.
CollectiveIntellect.com as viewed on Mar. 21, 2007.
Office Action Summary from U.S. Appl. No. 11/384,957 dated May 13, 2008.
Notice of Allowance from U.S. Appl. No. 11/384,957 dated Feb. 25, 2009.
Moneycentral.msn.com/investor/common/find.asp?NextPage=/detail/stock_quote (Mar. 15, 2010).
finance.yahoo.com (Mar. 15, 2010).
money.cnn.com/quote/lookup/index.html (Mar. 15, 2010).
Marketwatch.com (Mar. 15, 2010).
clearstation.etrade.com/cgi-bin/symbol_search (Mar. 15, 2010).
quote.com/std/search.action (Mar. 15, 2010).
quote.com/help/resources/toolbox.jsp (Mar. 15, 2010).
quote.com/search.action (Mar. 15, 2010).
online.wsj.com/home-page (Mar. 15, 2010)).
online.barrons.com/home-page (Mar. 15, 2010).
bigcharts.marketwatch.com/ (Mar. 15, 2010).
csignal.com/support/default.aspx (Mar. 15, 2010).
hoovers.com (Mar. 15, 2010).
bloomberg.com/apps/tkrlookup (Mar. 15, 2010).
2.barchart.corn/lookup.asp (Mar. 15, 2010).
stockeharts.com/index.html (Mar. 15, 2010).
thestreet.com/quote/%5EDJI.html?pg-qcn& (Mar. 15, 2010).
earningswhispers.corn/tickerlookup.asp (Mar. 15, 2010).
whispernumber.com/index.jsp (Mar. 15, 2010).
Google.com (Mar. 15, 2010).
quote.morningstar.com/tickerlookup.html (Mar. 15, 2010).
fool.com/ (Mar. 15, 2010).
siliconinvestor.advfn.com/ (Mar. 15, 2010).
investorshub.advfn.com/ (Mar. 15, 2010).
ragingbull.quote.com/cgi-bin/static.cgi/a=index.txt&d=mainpages (Mar. 15, 2010).
boardcentral.com/ (Mar. 15, 2010).
briefing.com/ (Mar. 15, 2010).
nytimes.corn/ (Mar. 15, 2010).
washingtonpost.com/ (Mar. 15, 2010).
boston.com/ (Mar. 15, 2010).
ft.com/home/uk (Mar. 15, 2010).
news.bbc.co.uk/ (Mar. 15, 2010).
inc.com/ (Mar. 15, 2010).
Forbes.com (Mar. 15, 2010).
money.cnn.com/magazines/fortune/ (Mar. 15, 2010).
businessweek.com/ (Mar. 15, 2010).
us.etrade.com/e/t/home (Mar. 15, 2010).
tdameritrade.com/welcome4.html (Mar. 15, 2010).
schwab.com/public/schwab/home/welcomep.html (Mar. 15, 2010).
scottrade.com/ (Mar. 15, 2010).
sharebuilder.com/ (Mar. 15, 2010).
vanguard.com/ (Mar. 15, 2010).
seekingalpha.com/ (Mar. 15, 2010).
abcnews.go.com/business (Mar. 15, 2010).
investorvillage.com/home.asp (Mar. 15, 2010).
tickertech.com/cgi/?a=lookup (Mar. 15, 2010).
investors.com/symbol.asp (Mar. 15, 2010).
cboe.com/DelayedQuote/Symbol.aspx (Mar. 15, 2010).
personal.fidelity.com/research/stocks/content/stocksindex.shtml?bar=c (Mar. 15, 2010).
investing.quicken.com/public/symbolLookup.asp (Mar. 15, 2010).
globcinvcstor.com/static/hubs/lookup.html (Mar. 15, 2010).
usatoday.com/money/2007-05-15-search-tips_N.htm (Mar. 15, 2010).
stockhouse.com/ (Mar. 15, 2010).
thelion.com/ (Mar. 15, 2010).
zacks.com/ (Mar. 15, 2010).
individual.troweprice.com/public/Retail/Products-&-Services/Brokerage (Mar. 15, 2010).
nyse.com/attachment/amex_landing.htm (Mar. 15, 2010).
nasdaq.com/ (Mar. 15, 2010).

(56) **References Cited**

OTHER PUBLICATIONS

nyse.com/ (Mar. 15, 2010).
londonstockexchange.com/home/homepage.htm (Mar. 15, 2010).
euronext.com/landing/indexMarket-18812-EN.html (Mar. 15, 2010).
tmx.com/ (Mar. 15, 2010).
asx.com.au/ (Mar. 15, 2010).
advfn.com/ (Mar. 15, 2010).
mldirect.ml.com/ (Mar. 15, 2010).
foxbusiness.com/index.html (Mar. 15, 2010).
economist.com/index.html (Mar. 15, 2010).
kiplinger.com/ (Mar. 15, 2010).
pennystock.com/ (Mar. 15, 2010).
wallstreetselect.com/ (Mar. 15, 2010).
sec.gov/edgar.shtml (Mar. 15, 2010).
edgar-online.com/ (Mar. 15, 2010).
freeedgar.com/ (Mar. 15, 2010).
thedeal.com/ (Mar. 15, 2010).
investools.com/ (Mar. 15, 2010).
activetradermag.com/ (Mar. 15, 2010).
traders.com/ (Mar. 15, 2010).
renaissancecapital.com/RenCap/Default.aspx (Mar. 15, 2010).
ant.com/tags/finance/?page=1 (Mar. 15, 2010).
FeedTheBull.com as viewed on Mar. 21, 2007.
Forex Trading Website (Feb. 17, 2006).
InvestorVillage Website (Feb. 17, 2006).
StockHouse Bullboards Website (Feb. 15, 2006).
Notice of Allowance from U.S. Appl. No. 12/334,024 dated Mar. 22, 2011.
Notice of Allowance from U.S. Appl. No. 12/334,037 dated Oct. 1, 2010.
Notice of Allowance from U.S. Appl. No. 12/334,063 dated Sep. 20, 2010.
Office Action from U.S. Appl. No. 12/334,024 dated Aug. 5, 2010.
Office Action from U.S. Appl. No. 12/334,037 dated Mar. 9, 2010.
Office Action from U.S. Appl. No. 12/334,063 dated Mar. 9, 2010.
Office Action from U.S. Appl. No. 12/334,093 dated May 12, 2011.
Office Action from U.S. Appl. No. 12/334,093 dated Aug. 18, 2010.
Office Action from U.S. Appl. No. 12/435,296 dated Feb. 3, 2011.
Office Action from U.S. Appl. No. 12/435,296 dated Aug. 20, 2010.
Office Action from U.S. Appl. No. 13/099,342 dated Sep. 6, 2011.
Chein, Andrew A., "Concurrent Aggregates: Using Multiple-Access Data Abstractions to Manage Complexity in Concurrent Programs," ACM, 1990, pp. 31-36.
Nicholas C. Zakas, *Professional JavaScript for Web Development*, WROX (2005), pp. 362-364.
Michael Glass, *Beginning PHP, Apache, MySQL Web Development*, Wiley Publishing (2004), p. 361.
James Keogh, *JavaScript Demystified*, McGraw-Hill Osborne Media (2005), pp. 294-305.
google.com screenshot captured by web.archive.org (Dec. 15, 2004).
Bitflux Blog Wiki screenshot captured by web.archive.org (Feb. 6, 2005).
Jon Udell, *The Browser Reloaded*, InfoWorld.com (Feb. 21, 2005).
J. Keith, *DOM Scripting*, Keith (2005), p. 303.
F. Schneider, *How to Do Everything with Google*, McGraw-Hill (2004), p. 51-52.
C/net home page captured by web.archive.org (Mar. 1, 2005), Figs 1-4.
Office Action Summary from U.S. Appl. No. 13/099,345 dated Dec. 22, 2011.
Sharma, Niraj, "Adding 'Google Suggest' functionality to an asp.net application," Dec. 1, 2005.
Narra, Gavi, "Google Suggest like Dictionary," Dec. 27, 2004.
Notice of Allowance for U.S. Appl. No. 12/334,024 dated Dec. 29, 2011.
Notice of Allowance for U.S. Appl. No. 12/334,024 dated Jan. 27, 2012.
Notice of Allowance for U.S. Appl. No. 12/435,296 dated Mar. 22, 2011.
Notice of Allowance for U.S. Appl. No. 12/435,296 dated Dec. 29, 2011.
Notice of Allowance for U.S. Appl. No. 12/435,296 dated Jan. 27, 2012.
Notice of Allowance for U.S. Appl. No. 12/435,296 dated Feb. 27, 2012.
Ex. Interview Summary for U.S. Appl. No. 13/099,342 dated Mar. 2, 2012.
Notice of Allowance for U.S. Appl. No. 12/334,068 dated Aug. 8, 2013.
Notice of Allowance for U.S. Appl. No. 12/334,093 dated Apr. 29, 2013.
Notice of Allowance for U.S. Appl. No. 13/099,342 dated May 25, 2012.
Notice of Allowance for U.S. Appl. No. 13/099,345 dated Jun. 1, 2012.
WayBackMachine, homepage for Arkitrave, http://www.arkitrave.com:80/, captured Mar. 28, 2004, available at https://web.archive.org/web/20040328084551/http://www.arkitrave.com:80/.
WayBackMachine, homepage for Chevrolet, http://www.chevrolet.com:80/, captured Jan. 1, 2005, available at https://web.archive.org/web/20050101085416/http://www.chevrolet.com:80/.
WayBackMachine, homepage for Marriott, http://shopmarriott.com:80/index.aspx/, captured Nov. 25, 2005, available at https://web.archive.org/web/20051125000055/http://shopmarriott.com:80/index.aspx.
WayBackMachine, homepage for Walmart, http://www.walmart.com:80/, captured Mar. 21, 2004, available at https://web.archive.org/web/20040321210247/http://www.walmart.com:80/.
https://web.archive.org/web/20041231004608/www.pga.com/pgachampionship/2004/, last accessed Nov. 13, 2017.
https://web.archive.org/web/20050319030241/http:/www.radioshack.com:80/, last accessed Nov. 13, 2017.
https://web.archive.org/web/20050209030435/http://www.macromedia.com:80/sofware/dreamweaver, last accessed Nov. 13, 2017.
https://web.archive.org/web/20030424131635/http://www.mediatemple.net:80/, last accessed Nov. 13, 2017.
Tony Arguelles, "Building a DHTML Drop Down Menu with Dreamweaver," http://www.informit.com/articles/article.aspx?p=29835, last accessed Nov. 13, 2017.
Tony Arguelles, "Essential Dreamweaver 4 for Web Professionals Paperback—2002," Prentice Hall.
Lisa Wollin, "Creating a drop-down list that links to other pages," Aug. 19, 2004, https://blogs.msdn.microsoft.com/lisawoll/2004/08/19/creating-a-drop-down-list-that-links-to-other-pages/, last accessed Nov. 13, 2017.
Lisa Wollin, "Creating a JavaScript Drop-Down Menu in FrontPage," Dec. 2004, https://msdn.microsoft.com/en-us/library/aa218659(v=office.11).aspx, last accessed Nov. 13, 2017.
Nick Rigby, "Drop-Down Menus, Horizontal Style," Jun. 29, 2004, https://alistapart.com/article/horizdropdowns, last accessed Nov. 13, 2017.
Schmitt et al., "Professional CSS—Cascading Style Sheets for Web Design," Jul. 2005, http://uap.unnes.ac.id/ebook/ebook2006/Wrox.Professional.CSS.Cascading.Style.Sheets.for.Web.Design.Jul.2005.eBook-DDU/Wrox.Professional.CSS.Cascading.Style.Sheets.for.Web.Design.Jul.2005.eBook-DDU.pdf, last accessed Nov. 13, 2017.
Aaron Boodman, "TransMenus," http://aboodman.github.io/transmenus/, Mar. 2003, last accessed Nov. 13, 2017.
Dan Livingston, "Advanced Javascript: Insights and Innovative Techniques," Jul. 2002, relevant excerpts available at: http://www.informit.com/articles/article.aspx?p=28789&seqNum=3 http://www.informit.com/articles/article.aspx?p=28789&seqnum=2 last accessed Nov. 13, 2017.
PaperMountain.org (Posted Jul. 27, 2004) https://web.archive.org/web/20050323073452/http://www.papermountain.org/demos/live/.
Creatimation.net (Posted Jul. 10, 2004) https://web.archive.org/web/20041019013459/http://www.creatimation.net:80/journal/live-request.

(56) **References Cited**

OTHER PUBLICATIONS

Meyerweb.com (Apr. 11, 2003) https://web.archive.org/web/20030411094446/http://www.meyerweb.com:80/eric/css/edge/menus/demo.html.
BrotherCake.com (Apr. 10, 2003) https://web.archive.org/web/20030410141237/http://www.brothercake.com:80/scripts/navmeister/page.php.
toro.com (Apr. 21, 2003) https://web.archive.org/web/20030421102649/http://toro.com:80/.
Glen Doss, "Designing Effective Web Navigation," Towson University, Center for Applied Information Technology, Apr. 2002.
http://www.target.com (Feb. 2, 2006), available at https://web.archive.org/web/20060202022200/http://www.target.com:80/gp/browse.html?_encoding=UTF8&node=1041790, last accessed Jun. 19, 2018.
http://www.bestbuy.com (Mar. 18, 2006), available at http://web.archive.org/web/20060318230400/https://www.bestbuy.com/, last accessed Jun. 19, 2018.
http://www.crateandbarrel.com (Mar. 17, 2006), available at http://web.archive.org/web/20060317031155/https://www.crateandbarrel.com/, last accessed Jun. 19, 2018.
Fowler & Stanwick, Web Application Design Handbook: Best Practices for Web-Based Software 72 (Card et al., Morgan Kaufmann)(2004).
Tidwell, Designing Interfaces: Patterns for Effective Interaction Design (O'Reilly, Nov. 2005).

* cited by examiner

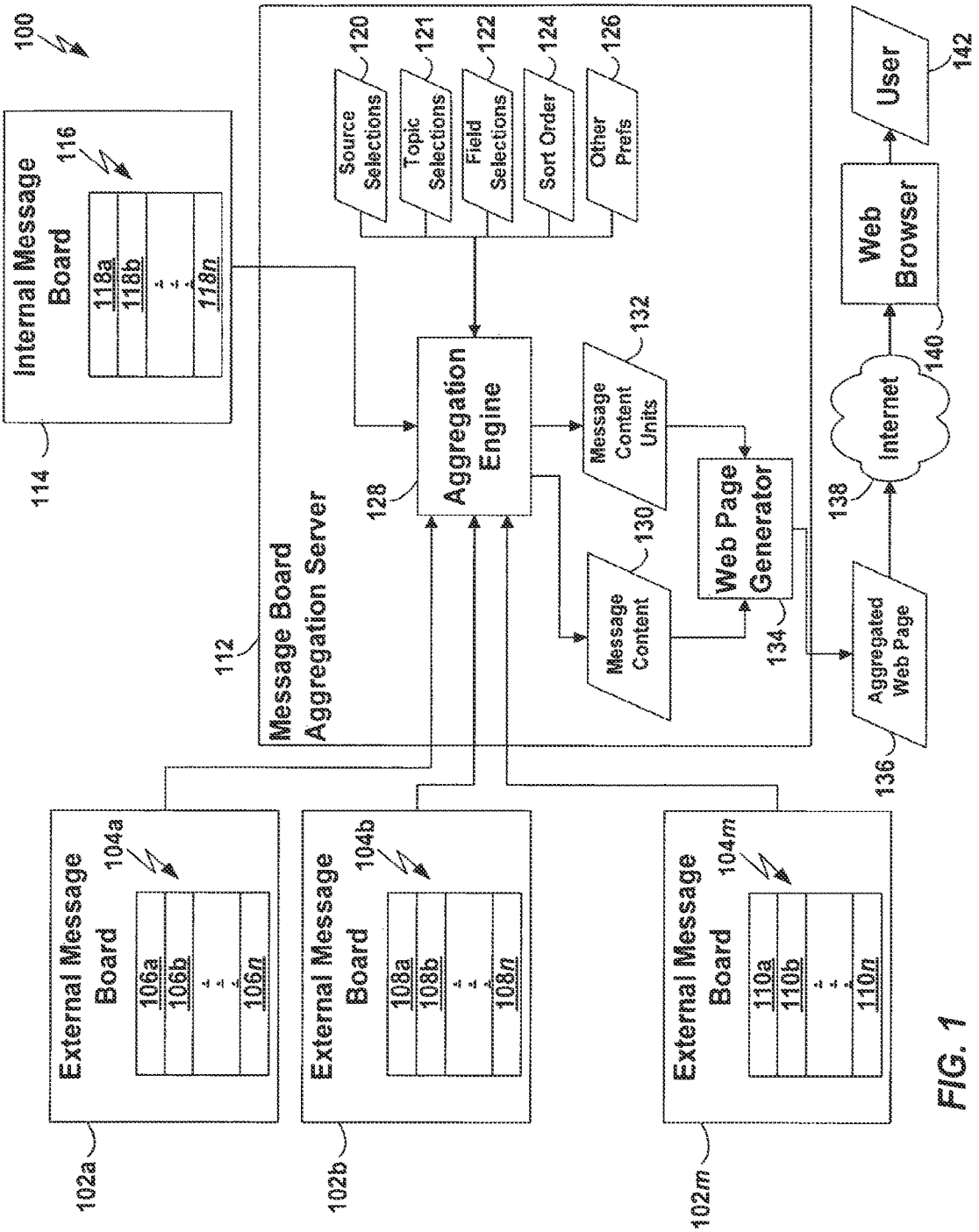

100
Internal Message Board
116
118a
118b
118n
114
Source Selections
120
Topic Selections
121
Field Selections
122
Sort Order
124
Other Prefs
126
User
142
Web Browser
140
Internet
138
Message Board Aggregation Server
112
Aggregation Engine
128
Message Content Units
132
Message Contant
130
Web Page Generator
134
Aggregated Web Page
136
External Message Board
104a
106a
106b
106n
102a
External Message Board
104b
108a
108b
108n
102b
External Message Board
104m
110a
110b
110n
102m

FIG. 1

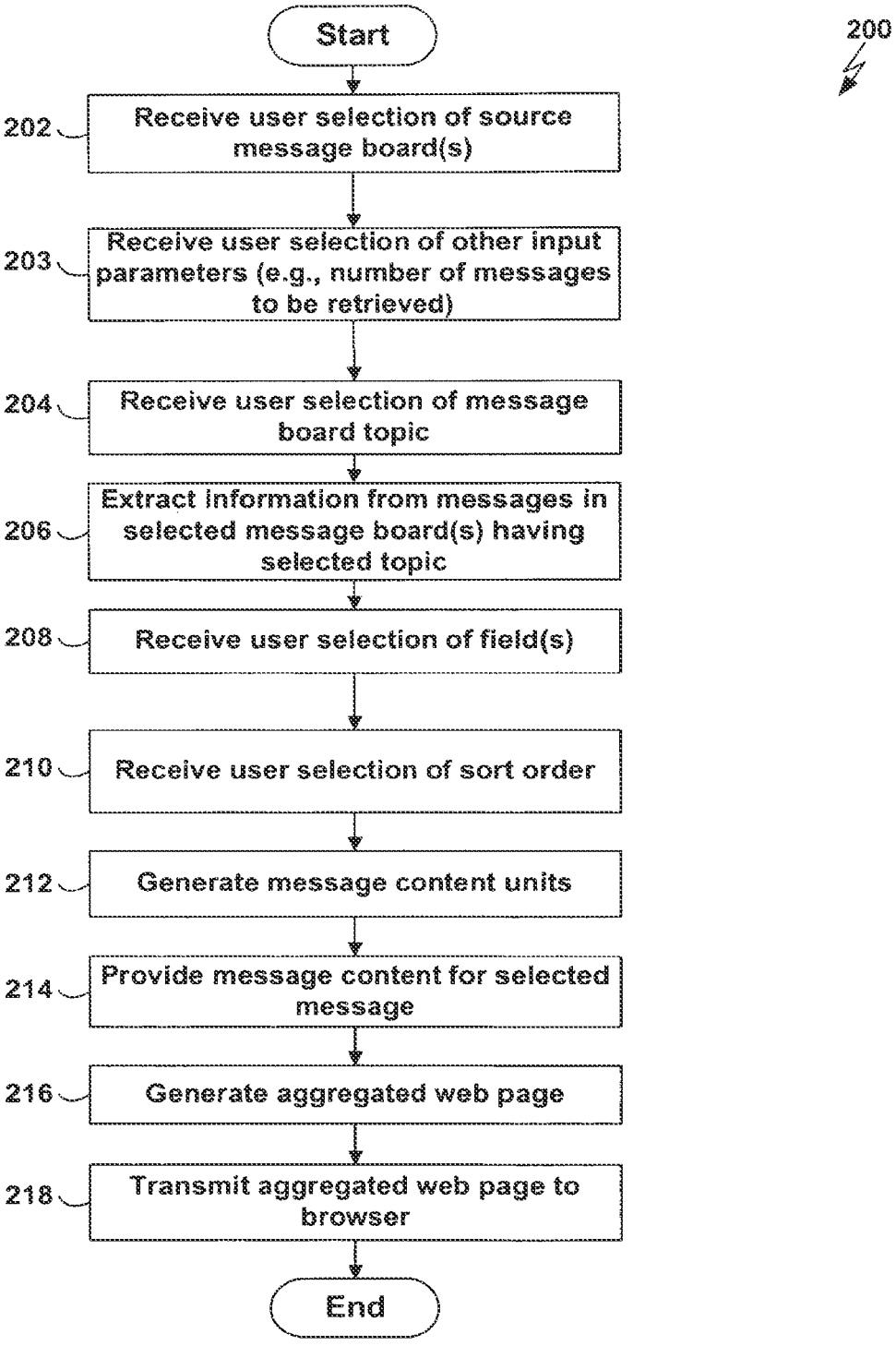

200
Start
202
Receive user selection of source message board(s)
203
Receive user selection of other input parameters (e.g., number of messages to be retrieved)
204
Receive user selection of message board topic
206
Extract information from messages in selected message board(s) having selected topic
208
Receive user selection of field(s)
210
Receive user selection of sort order
212
Generate message content units
214
Provide message content for selected message
216
Generate aggregated web page
218
Transmit aggregated web page to browser
End

FIG. 2

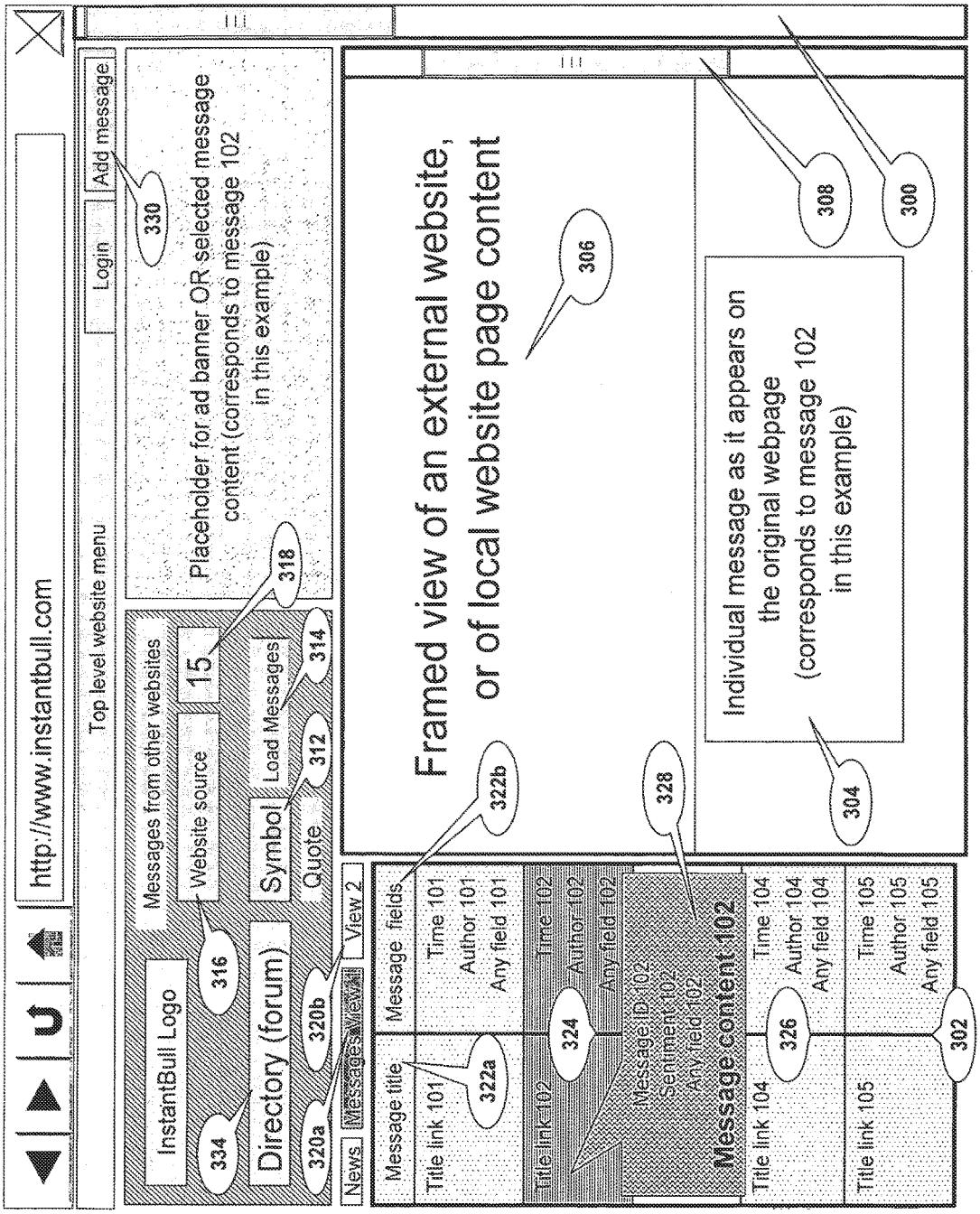

http://www.instantbull.com
Top level website menu
Login
Add message
InstantBull Logo
Messages from other websites
Website source
15
Placeholder for ad banner OR selected message content (corresponds to message 102 in this example)
Directory (forum)
Symbol
Load Messages
Quote
News
Messages
View 2
Message title
Message fields
Framed view of an external website, or of local website page content
Individual message as it appears on the original webpage (corresponds to message 102 in this example)
Title link 101
Time 101
Author 101
Any field 101
Title link 102
Time 102
Author 102
Any field 102
Message ID 102
Sentiment 102
Any field 102
Message content 102
Title link 104
Time 104
Author 104
Any field 104
Title link 105
Time 105
Author 105
Any field 105
316
318
330
334
320a
320b
312
314
322a
322b
324
326
328
306
308
300
304
302

FIG 3

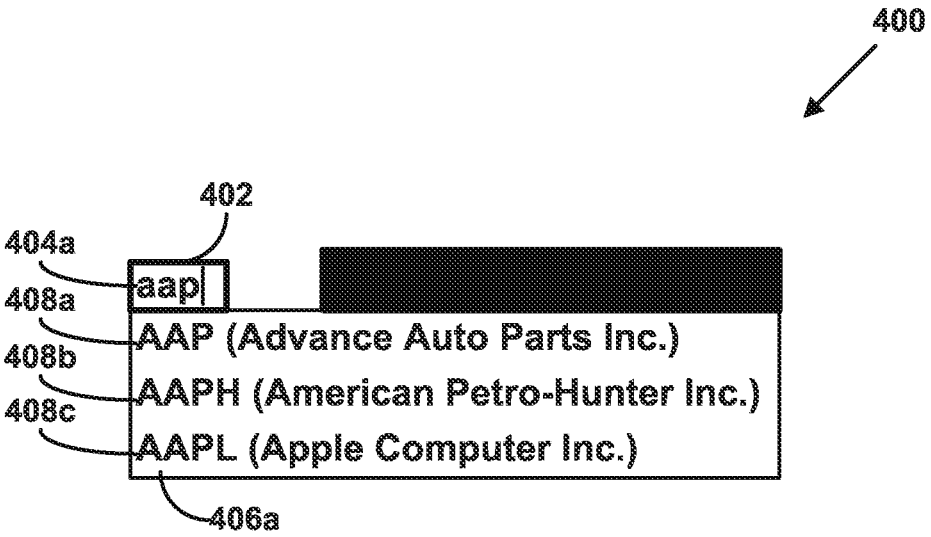

400
402
404a
aap
408a
AAP (Advance Auto Parts Inc.)
408b
AAPH (American Petro-Hunter Inc.)
408c
AAPL (Apple Computer Inc.)
406a

FIG. 4A

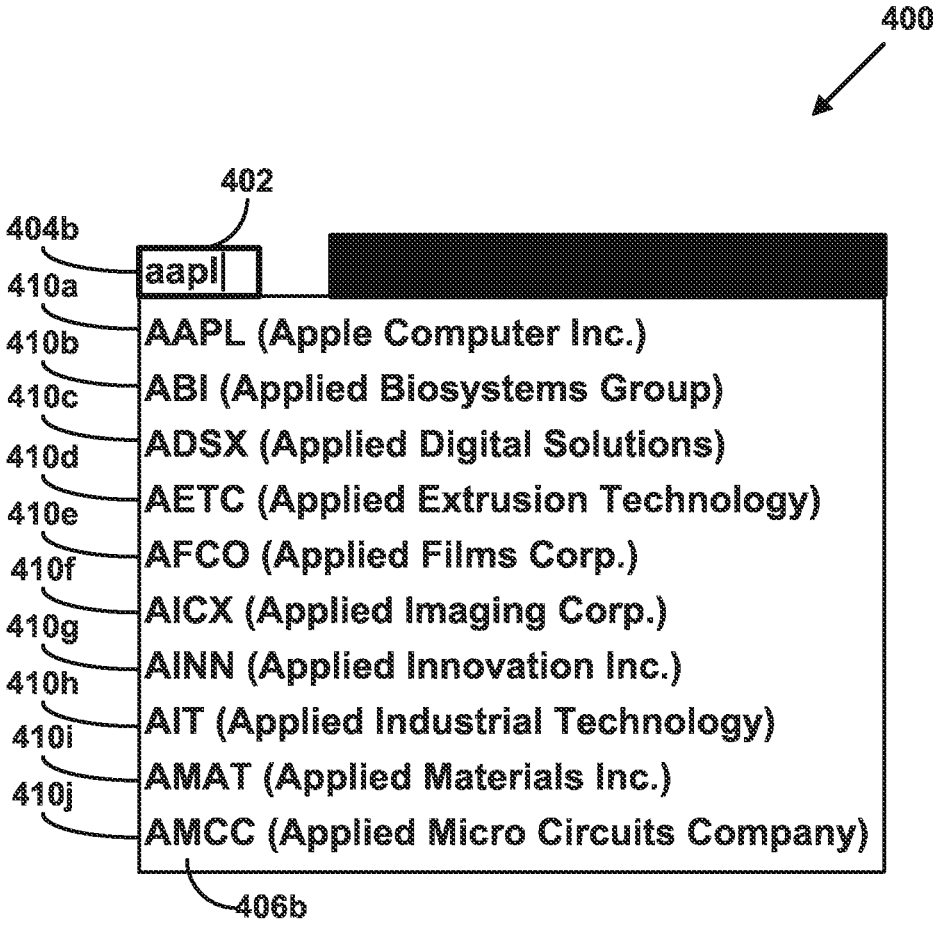

400
402
404b
aapl
410a
AAPL (Apple Computer Inc.)
410b
ABI (Applied Biosystems Group)
410c
ADSX (Applied Digital Solutions)
410d
AETC (Applied Extrusion Technology)
410e
AFCO (Applied Films Corp.)
410f
AICX (Applied Imaging Corp.)
410g
AINN (Applied Innovation Inc.)
410h
AIT (Applied Industrial Technology)
410i
AMAT (Applied Materials Inc.)
410j
AMCC (Applied Micro Circuits Company)
406b

FIG. 4B

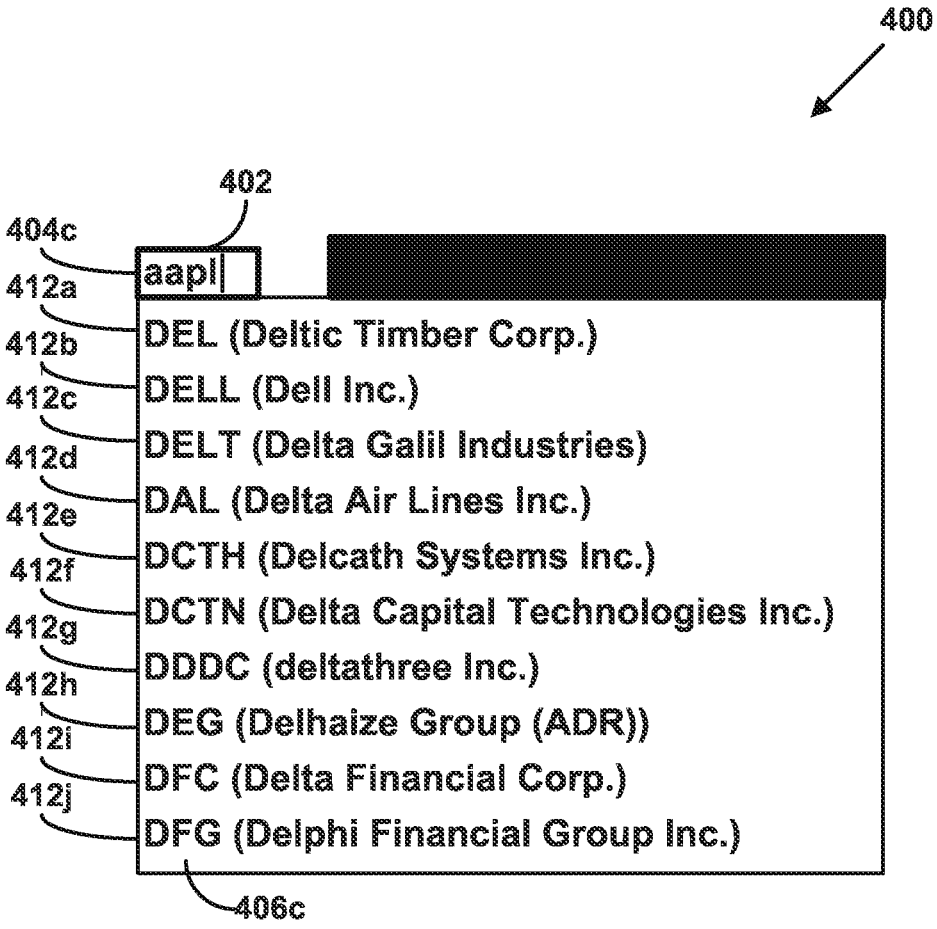

400
402
404c
aapl
412a
DEL (Deltic Timber Corp.)
412b
DELL (Dell Inc.)
412c
DELT (Delta Galil Industries)
412d
DAL (Delta Air Lines Inc.)
412e
DCTH (Delcath Systems Inc.)
412f
DCTN (Delta Capital Technologies Inc.)
412g
DDDC (deltathree Inc.)
412h
DEG (Delhaize Group (ADR))
412i
DFC (Delta Financial Corp.)
412j
DFG (Delphi Financial Group Inc.)
406c

FIG. 4C

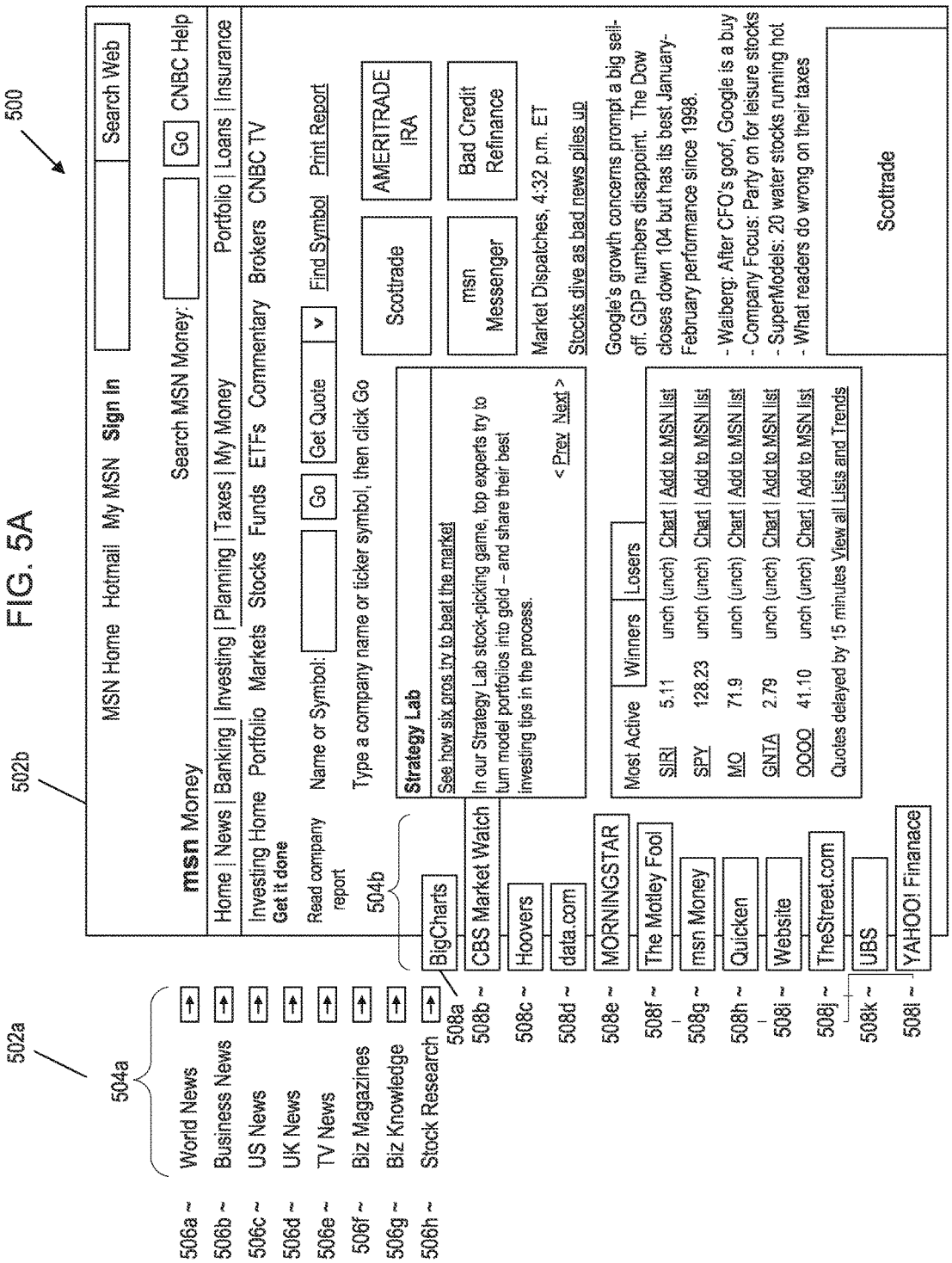

500
502a
502b
504a
504b
MSN Home Hotmail My MSN Sign In
Search Web
msn Money
Search MSN Money:
Go
CNBC Help
Home | News | Banking | Investing | Planning | Taxes | My Money
Portfolio | Loans | Insurance
Investing Home Portfolio Markets Stocks Funds ETFs Commentary Brokers CNBC TV
Get it done
Read company report
Name or Symbol:
Go
Get Quote
Find Symbol
Print Report
Type a company name or ticker symbol, then click Go
Strategy Lab
See how six pros try to beat the market
In our Strategy Lab stock-picking game, top experts try to turn model portfolios into gold – and share their best investing tips in the process.
< Prev Next >
Scottrade
msn Messenger
AMERITRADE IRA
Bad Credit Refinance
Market Dispatches, 4:32 p.m. ET
Stocks dive as bad news piles up
Google's growth concerns prompt a big sell-off. GDP numbers disappoint. The Dow closes down 104 but has its best January-February performance since 1998.
- Wallberg: After CFO's goof, Google is a buy
- Company Focus: Party on for leisure stocks
- SuperModels: 20 water stocks running hot
- What readers do wrong on their taxes
Most Active | Winners | Losers
SIRI 5.11 unch (unch) Chart | Add to MSN list
SPY 128.23 unch (unch) Chart | Add to MSN list
MO 71.9 unch (unch) Chart | Add to MSN list
GNTA 2.79 unch (unch) Chart | Add to MSN list
QQQQ 41.10 unch (unch) Chart | Add to MSN list
Quotes delayed by 15 minutes View all Lists and Trends
Scottrade
World News
Business News
US News
UK News
TV News
Biz Magazines
Biz Knowledge
Stock Research
506a ~
506b ~
506c ~
506d ~
506e ~
506f ~
506g ~
506h ~
BigCharts
CBS Market Watch
Hoovers
data.com
MORNINGSTAR
The Motley Fool
msn Money
Quicken
Website
TheStreet.com
UBS
YAHOO! Finanace
508a ~
508b ~
508c ~
508d ~
508e ~
508f ~
508g ~
508h ~
508i ~
508j ~
508k ~
508l ~

FIG. 5A

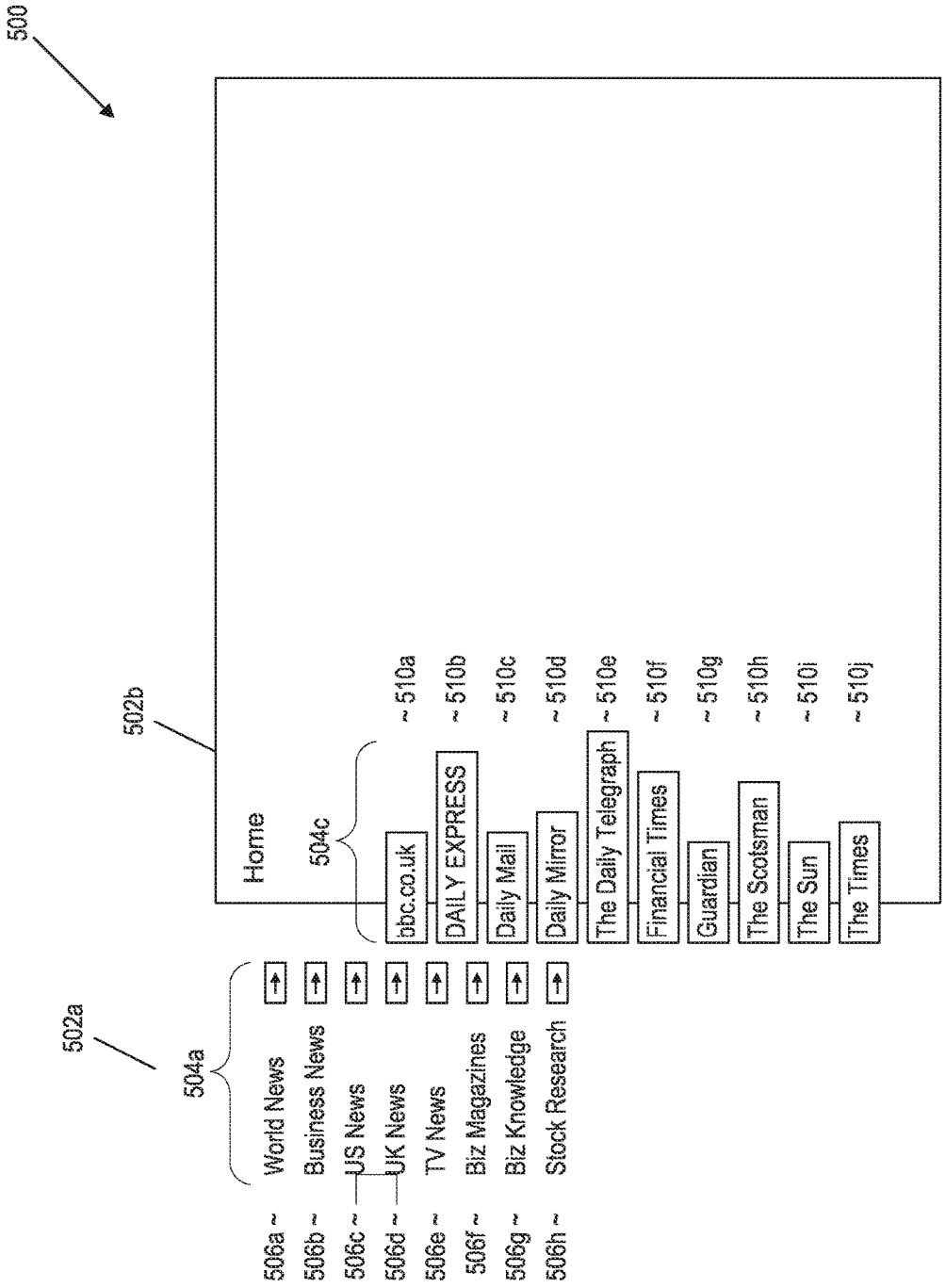

500
502a
504a
World News
Business News
US News
UK News
TV News
Biz Magazines
Biz Knowledge
Stock Research
506a ~
506b ~
506c ~
506d ~
506e ~
506f ~
506g ~
506h ~
502b
Home
504c
bbc.co.uk
DAILY EXPRESS
Daily Mail
Daily Mirror
The Daily Telegraph
Financial Times
Guardian
The Scotsman
The Sun
The Times
~ 510a
~ 510b
~ 510c
~ 510d
~ 510e
~ 510f
~ 510g
~ 510h
~ 510i
~ 510j

FIG. 5B

HYPERLINK WITH GRAPHICAL CUE

RELATED APPLICATIONS

The present application is a continuation of U.S. application Ser. No. 12/334,068 filed Dec. 12, 2008, which is a continuation of U.S. application Ser. No. 11/384,957 filed Mar. 20, 2006, now issued under U.S. Pat. No. 7,529,795, both of which are incorporated herein by reference and which, in turn, incorporate by reference U.S. Provisional Application Ser. No. 60/784,141 filed Mar. 20, 2006 and U.S. Provisional Application Ser. No. 60/784,140 filed Mar. 20, 2006, all of which are incorporated herein by reference.

BACKGROUND

1. Field of the Invention

The present invention relates to computer-implemented techniques for improving the usefulness of hyperlinks in web pages.

2. Related Art

Web pages, and other kinds of hypertext documents, use textual representations of hyperlinks to indicate to the user which hyperlinks the user may follow. For example, if a web page includes the text, "Click here for more information," the word "here" may be underlined to indicate to the user that selecting (e.g., clicking on) the word "here" will cause the web browser to navigate via a hyperlink to another web page (referred to as the "anchor" of the hyperlink).

Textual hyperlinks have proven to be extremely useful and powerful tools. In fact, in the first incarnation of the World Wide Web, web pages could only contain text. In such web pages, all hyperlinks were visually represented using text displayed with a special characteristic (e.g., underlining or a special color) indicating that the text represented a hyperlink. Textual representations of hyperlinks have the benefit, for example, of allowing hyperlinks to be visually embedded within otherwise normal prose text, such as news articles and email messages, without visually interrupting the flow of such text.

Textual representations of hyperlinks, however, have certain drawbacks. For example, the textual representation of a hyperlink may not make the destination (anchor) of the hyperlink clear to the user. In the case of the text "Click here for more information," where the word "here" represents a hyperlink, the text does not convey the destination of the hyperlink to the user. Instead, the user only knows that clicking on the word "here" will cause the web browser to leave the current web page and navigate to another one. To identify the destination of the web page, the user may be required to navigate to that web page (by selecting the hyperlinked text) and view it, or to perform a cumbersome operation such as cutting and pasting the URL of the hyperlink into a document. In either case, it is tedious and time-consuming for the user to identify the destination of the hyperlink and therefore to decide whether to navigate to that destination.

Some have attempted to address these problems with textual representations of hyperlinks by using graphical representations of hyperlinks. For example, a picture of a person on a web page may represent a hyperlink to that person's home page. Clicking on the picture will cause the web browser to navigate to the hyperlinked home page. Graphical hyperlinks have the benefit, in comparison to purely textual hyperlinks, of providing the user with a clearer indication of the hyperlink's destination. On the other hand, graphic images must typically occupy a significant area on the web page (so-called visual "real estate") before they can provide enough visual information to be useful to the user as an indication of the hyperlink's destination. Graphical hyperlinks, therefore, are of limited value in web pages and other situations in which visual real estate is at a premium and must be used as efficiently as possible.

What is needed, therefore, are improved techniques for providing visual representations of hyperlinks.

SUMMARY

A computer program provides a first set of representations (e.g., textual representations) of a first set of hyperlinks. In response to selection by a user of one of the first set of hyperlink representations (such as by clicking on or hovering a cursor over the representation), the program displays a second set of representations (e.g., graphical representations) of a second set of hyperlinks. The user may select one of the second set of representations, in response to which the program navigates to the destination of the hyperlink. The second set of representations may, for example, be logos of companies, and the second set of hyperlinks may be hyperlinks to the companies' web sites.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a dataflow diagram of a message board aggregation system according to one embodiment of the present invention;

FIG. **2** is a flowchart of a method performed by the system of FIG. **1** according to one embodiment of the present invention; and

FIG. **3** is a window displayed by the message board aggregation system of FIG. **1** according to one embodiment of the present invention.

FIGS. **4**A-**4**C are illustrations of a graphical user interface text input control for use in assisting in the completion of text input by a user according to embodiments of the present invention.

FIGS. **5**A-**5**B are illustrations of web page hyperlinks displayed by embodiments of the present invention.

DETAILED DESCIPTION

Referring to FIG. **1**, a dataflow diagram is shown of a message board aggregation system **100** according to one embodiment of the present invention. Referring to FIG. **2**, a flowchart is shown of a method **200** performed by the system **100** of FIG. **1** according to one embodiment of the present invention. Referring to FIG. **3**, a window **300** displayed by the message board aggregation system **100** of FIG. **1** is illustrated according to one embodiment of the present invention.

In general, the window **300** shown in FIG. **3** contemporaneously displays a table **302** containing message table content (e.g., message title, message author, message ID, message sentiment, message time of writing, message web page source, person being replied to) and message content **304** corresponding to a message represented by one of the entries in the message table **302**. In the embodiment illustrated in FIG. **3**, the message content **304** is displayed in a web page **306** from a message board web site to which the message content **304** was originally posted. In the embodiment illustrated in FIG. **3**, the source web page **306** (con-

taining the message content **304**) is displayed in a first frame **308** of the web page **300**, and the message table **302** is displayed in a second frame **310** of the web page **300**.

The web page **306** is an example of a "source" web page as that term is used herein. The message table **302** may include summaries of messages originally posted to more than one source web page. The web page **300**, therefore, provides an aggregation service which aggregates messages from a plurality of web-based message boards. The web page **300**, therefore, is referred to herein as an "aggregation" web page.

Having described certain general features of particular embodiments of the present invention, techniques that may be used to implement embodiments of the present invention will now be disclosed. Referring to FIG. **1**, multiple external message boards **102***a-m* are illustrated. For ease of illustration and explanation, each of the message boards **102***a-m* is illustrated simply as a set of messages. More specifically, message board **102***a* includes a set of messages **104***a*, including messages **106***a-n*; message board **102***b* includes a set of messages **104***b*, including messages **108***a-n*; and message board **102***m* includes a set of messages **104***m*, including messages **110***a-n*. In practice, the message boards **102***a-m* may be implemented using web servers or any other appropriate kind of technology.

Furthermore, although only three external message boards **102***a*, **102***b*, and **102***m* are shown in FIG. **1** for purposes of example, the system **100** may include and/or access any number of external message boards, as indicated by the variable m. Furthermore, the term "message board" is not limited to any-particular kind of communications mechanism, and includes not only web-based message boards, but also newsgroups and email. Although each of the message boards **102***a-m* is shown in FIG. **1** as including the same number of messages n, the number of messages may vary among the message boards **102***a-m*.

A single message board, such as a web-based financial message board, may include a plurality of topics, each of which may include a plurality of threads or sub-topics. For ease of illustration and explanation, each of the message boards **102***a-m* is illustrated in FIG. **1** as containing only a single thread of messages. This does not represent a limitation of the present invention. Rather, the techniques disclosed herein may be applied to message boards including any number of topics, threads, or other groupings of messages.

The aggregation system **100** also includes a message board aggregation server **112** and a corresponding message board **114** (which includes set **116** of messages **118***a-n*). The message board **114** is managed by the aggregation server **112** or by the same entity that manages the aggregation server. Therefore, the message board **114** will be referred to herein as an "internal" message board, while the message boards **102***a-m* will be referred to herein as "external" message boards in relation to the aggregation server **112**. As will be described in more detail below, the aggregation server **112** aggregates messages from two or more of the message boards **102***a-m* and **114**, and displays content from the aggregated messages in the web page **300**.

Referring again to FIG. **2**, the system **100** of FIG. **1** may perform the method **200** to aggregate content from the message boards **102***a-m* and **114** to display aggregated message content in the window **300**. A user **142** uses a web browser **140** to browse over the Internet **138** to a web site served by the aggregation server **112**. The web page **300** is an example of a web page that may be part of such a web site. Upon visiting the web site, the user **142** selects one or more source message boards from which to view message content and summaries (step **202**). The user **142** may, for example, make this selection by selecting the name of an external message board (such as one of the external message boards **102***a-m*) from a selection of sources accessible in any of a variety of formats, one example of which is a drop-down list **316**. Note, however, that the user **142** may select more than one source message board.

In the particular example illustrated in FIG. **3**, the web page **300** combines content extracted from the single external message board indicated by the selection in the drop-down list **316** with content extracted from the internal message board **114** associated with the aggregation server **112**. Furthermore, in the example illustrated in FIG. **3**, the user **142** may use drop-down list **318** to select the number of message summaries to be displayed in message table **302**.

The user **142** selects other input parameters (such as the number of messages to be retrieved) (step **203**). As described in more detail below, the aggregation server **112** may store the other input parameters in a set of other preferences **126**.

The user **142** selects a particular message board topic to view (step **204**). The user **142** may, for example, make this selection by identifying a particular company, such as by typing the company's name or stock ticker symbol in text field **312** and clicking button **314**. This is only one of many ways in which the user may select a message board topic to view.

Furthermore, in the embodiment illustrated in FIG. **3**, the web page **300** also includes a directory (forum) **334** user interface control which may, for example, take the form of a drop-down list. For example, the directory control **334** may allow the user to select either a "stock" forum or a "sports" forum. If the user **142** selects the "stock" forum, then the web page **300** may enable selection of stock symbols in text field **312**, while if the user **142** selects the "sports" forum, then the web page **300** may enable selection of sports symbols in text field **312**. More generally, the user's selection in the directory control **334** dictates which group of symbols is available for selection in the text input field **312**. The use of the directory control **334** is provided merely for purposes of example and does not constitute a limitation of the present invention.

The user's message board selection is transmitted by the web browser **140** over the Internet **138** to the message board aggregation server **112**. In response to receiving the user's selection, the aggregation server **112** retrieves information derived from messages in the selected source message board(s) having the selected topic (step **206**). In the embodiment illustrated in FIG. **3**, the aggregation server **112** also retrieves message content from the internal message board **114**. This is not, however, a requirement of the present invention. The internal message board **114** may, for example, be selectable or de-selectable as a source by the user **142** in the same manner as the external message boards **102***a-m*.

Note further that any subset of the external message boards **102***a-m* may be selectable as a source by the user **142**. Such a subset may, for example, consist of all of the external message boards **102***a-m*, any one of the message boards **102***a-m*, or any combination of fewer than all of the message boards **102***a-m*.

The information extracted from the selected source message board(s) by the aggregation server may include any of a variety of information that may be of interest to the user **142**. Examples of information that may be extracted from each on-topic message in the selected message board(s) includes, but is not limited to the message title, author, ID,

sentiment, time of writing, web page source, person being replied to, and message statistics (e.g., the number of times others have recommended the message, or a rating of the popularity of the message).

At any time during performance of the method **200** illustrated in FIG. **2**, the user **142** may select one or more fields to be displayed in the message table **302** (step **208**). For example, in the embodiment illustrated in FIG. **3**, the message table includes a column **322***a* labeled "Message Titles," which always displays the titles of the messages summarized in the table **302**. The table **302** also includes, however, a second column **322***b* having content that may-be varied by the user **142**. More specifically, the user **142** may select link **320***a* to cause the column **322***b* to display the authors of the messages being summarized in the table **302** (as illustrated in FIG. **3**). Similarly, the user **142** may select link **320***b* to cause the column **322***b* to display the times at which the messages being summarized in the table **302** were posted.

The particular selection of fields allowed in the embodiment illustrated in FIG. **3** is merely an example and does not constitute a limitation of the present invention. Rather, the user **142** may be allowed to select any combination of message fields for display in the table **302**. Other examples of two fields from which the user **142** may select include, but are not limited to: message Title and Author fields; message Title and Time Submitted fields; and message Author and Author Attribute fields. Furthermore, a single column in the table **302** may display content from more than one field. For example, a single "time and author" column may simultaneously display both message time and author.

At any time during performance of the method **200** illustrated in FIG. **2**, the user **142** may select an order in which message summaries are to be sorted in the message table **302** (step **210**). For example, in the embodiment illustrated in FIG. **3**, the user **142** may select the heading of column **322***a* to cause the contents of the table **302** to be sorted by message title, or select the heading of column **322***b* to cause the contents of the table **302** to be sorted by the contents of column **322***b* (e.g., message author or posting time). Alternatively, for example, the contents of the table **302** may be sorted automatically by posting time. Once again, these particular sorting options are merely examples and do not constitute limitations of the present invention.

The aggregation server **112** keeps track of: (1) the source message board(s) selected by the user **142** in source selections 1-20; (2) the topic (e.g., company) selected by the user **142** in topic selection **121**; (3) the field(s) selected by the user **142** in field selections **122**; (4) the sort order **124** selected by the user **142** in sort order **124**; and (5) any other preferences **126** specified by the user **142**.

The aggregation server **112** includes an aggregation engine **128**, which generates message content units **132** based on the information extracted in step **206** and the user preferences described above (step **212**). For example, the message content units **132** may include a content unit for each message that matches the topic selection **121** (e.g., company) in any of the source message board(s) indicated by the source selection(s) **120**. Each of the message content units **132** may include information only for the fields specified by the field selections **122**, but this is not required. The message content units **132** may, for example, include extracted information for fields other than those specified by the field selections. The message content units **132** may include all of the information that was extracted in step **206**.

As will be described in more detail below, the information in the message content units **132** forms the basis for the information displayed in the message table **302** on the web page **300** (FIG. **3**). In the embodiment illustrated in FIG. **3**, the frame **308** displays a web page **308** corresponding to one of the message summaries displayed in the message table **302**. When the web page **300** is first displayed, the message content corresponding to the first message summary in the table **302** may be displayed by default in the frame **308**. Thereafter, the user **142** may select any of the message summaries in the table **302**, such as by clicking on the title of the message in column **322***a*, to cause message content for a different message to be displayed-in the frame **308**.

The aggregation engine **128**, therefore, provides message content **130** corresponding to the currently-selected message summary in the message table **302** (step **214**). The aggregation engine **128** may, for example, provide the content **130** in the form of HTML and/or other web content by copying the content **130** from its source message board (e.g., one of the external message boards **102***a-m* or the internal message board **114**). The content **130** may either be copied to a storage medium local to the aggregation server **112**, or merely passed as a reference to the client web browser **140**, which may retrieve the message content **130** directly from its source and display it in the frame **308**, without using the aggregation server **112** to serve the content **130** to the user **142**.

The aggregation server **112** includes a web page generator **134**, which produces an aggregated web page **136** (including HTML and/or other web content) that includes both the message content units **132** and the message content **130** (or a link to the message content **130**) (step **216**). The aggregated web page **136** may, for example, include a first frame for displaying a table including information from the message content units **132**, and a second frame for displaying the message content **130**.

The aggregation server **112** transmits the aggregated web page **136** to the web browser **140** over the Internet (step **218**). The web browser **140** displays a window (such as the window **300** shown in FIG. **3**) including: (1) web content (such as the web page **306**) representing a first message posted to a first online forum, such as the external message board **102***a*; and (2) a plurality of message summaries (such as are displayed in the table **302**) including information derived from the first message (such as the message summary **324** of the message **304**) and second information derived from a second message in the plurality of messages (such as the message summary **326** of another message not displayed in the window **300**). The web content and the message summaries may be displayed in different frames in the same window.

As described above, the message content units **132** that are downloaded by the web browser **140** to the local machine of the user **142** may include more information than is displayed in the table **302**. The table **302** may, for example, be designed to display only the information that is considered most important to the user **142**, such as the title, author, and/or timestamp of the aggregated messages. The user **142** may, however, read a particular one of the message summaries in the table **302** and desire to obtain additional information about the corresponding message. Although the user **142** could obtain such additional information by clicking on the message summary, thereby causing the corresponding message web content to be displayed in the frame **308**, this requires the web browser **140** to download and render additional web content. Acquiring additional information about many messages in this way may therefore be tedious and time-consuming.

Alternatively, the web page **300** allows the user **142** to quickly obtain additional summary information about any message listed in the table **302** by, for example, moving and holding ("hovering") the mouse cursor over the message's summary. For example, in the case illustrated in FIG. **3**, the user **142** has hovered the mouse cursor over message summary **324**, thereby causing the web page **300** to display a tooltip **328** containing additional summary information about the source message **304**. In the example illustrated in FIG. **3**, the tooltip **328** includes additional information such as the message ID, author, sentiment, date and time, and the beginning of the message text.

Because the additional summary information has been preloaded by the web browser **140** in the process of downloading the message content units **132** from the aggregation server **112**, the web browser **140** may generate and display the tooltip essentially instantaneously, and without again accessing the server **112**. This allows the user **142** to quickly browse such additional information for many messages listed in the table **302** quickly and easily, simply by moving the mouse cursor over the corresponding message summaries.

The aggregation of messages from multiple message boards at multiple URLs into a single rich web page, including content initially is hidden and that may be displayed essentially instantaneously by the web browser client **140** without the need to make an additional access to the server **112**, is made convenient by the increasing availability of broadband connectivity to users. Such broadband connectivity increasingly is available not only through wired networks at home and in the workplace but also through wireless networks accessible using mobile computing devices. By making it feasible for the client web browser **140** to download content-rich web pages without causing the user **142** to incur a significant delay before the web page is displayed, broadband connections allow the web browser **140** to provide a degree of interactivity in web pages that approaches or even matches that previously available only in client-side applications.

Note that the use of a tooltip is provided merely as an example and does not constitute a limitation of the present invention. Rather, the additional summary information may be provided in other forms, such as in a static object (e.g., a text box) on the web page **300**. Furthermore, the user **142** may cause the additional summary information to be displayed using actions other than hovering, such as clicking or pressing a hotkey.

The tooltip, or other graphical user interface element that is used to display additional summary information, may be variable in size. For example, the web page **300** may allow the user **142** to select from among three sizes: small, large, and very large. The very large size may be particularly useful for users who are visually impaired. Such a feature may make it possible for visually impaired users to benefit from the features of the web page **300**, without requiring the design of the web page (e.g., the font size of text in the table) to change.

Furthermore, the web page **300** may be implemented such that selecting (e.g., hovering or clicking) one of the message summaries in the table **302** always causes the corresponding message to be displayed in the frame **308**, while the additional summary information (e.g., tooltip) is displayed. Although there may be some delay in loading and displaying the full message in the frame **308**, the user **142** may view the additional summary information essentially immediately, thereby enabling the user **142** to decide quickly whether to wait for the remainder of the message to load or to move on to the next message summary.

The web page **300** may allow the user **142** to post additional messages to any-of the source message boards. For example, in the embodiment illustrated in FIG. **3**, the web page **300** includes an "Add Message" button **330** that the user **142** may click to add a new message. When the user **142** clicks the button **330**, a web page may be displayed which allows the user **142** to type a new message and submit it either to the internal message board **114** or to one of the external message boards **102***a-m*. In either case, once the user **142** has posted a new message, the message may be displayed in the frame **308**, and a summary of the message may be displayed in the table **302**.

Similarly, the web page **300** may include a "Reply Message" button (not shown in FIG. **3**) that the user **142** may click to reply to the message currently being shown in the frame **308**. When the user **142** submits a reply, the reply may be posted to the same message board as the message to which the user **142** has replied, whether that message board is external or internal to the aggregation server **112**. Alternatively, the user **142** may be allowed to choose whether to reply from the internal message board **114** maintained by the aggregation server **112** or from the external message board currently displayed in the frame **308**.

Message summaries in the message table **302** may be sorted in any manner. For example, the summaries may be sorted by time of posting by default. The user **142** may, however, sort these messages in other ways (e.g., by message title, message author, message ID, message sentiment, message web page source, person being replied to). If the message table **302** includes message summaries derived from multiple source message boards, the message table **302** may nonetheless display the summaries in an aggregated sorted list. For example, the summaries may be sorted by time of posting, in which case message summaries corresponding to messages from different source message boards may be interwoven with each other according to the times at which they were posted. This feature provides the user **142** with a unified view of messages across multiple message boards.

Among the advantages of the invention are one or more of the following. The features of the web page **300** illustrated in FIG. **3** provide an improvement in speed and ease of use when accessing message table content and corresponding message content, in comparison to conventional systems for performing such functions. In particular, the web page **300** both allows the user **142** to view a message summary and corresponding message content contemporaneously, and to quickly scan additional message summary information not contained in the table **302**.

Furthermore, the techniques disclosed herein make it possible to read and write messages from and to multiple message board sources. Writing messages can be performed either from the web page **300**, or at the original message board source in the frame **308**. This saves the user **142** time in comparison to reading and writing multiple message boards using distinct web browser windows for each message board.

By providing features that are attractive and useful to frequent users of financial message boards, the techniques disclosed herein provide an opportunity to generate significant revenue from advertising. An example of a banner advertisement **332** for a financial services firm is shown on the web page **300** in FIG. **3**. Note, however, that the web

page **300** (and the web site of which it is a part) may generate revenue using any mechanism, not merely banner advertisements.

Furthermore, note that content other than an advertisement may occupy the space occupied by the advertisement **332** in FIG. **3**. For example, the aggregation server **112** may display an advertisement for basic (i.e., non-paid) users, but display additional summary information (such as the information displayed by the tooltip **328** in FIG. **3**) in a static object (such as a text box) in the same location as but instead of the advertisement **332** for premium (i.e., paid) users. The web page **300**, in other words, may be designed to make efficient use of available screen "real estate" to tailor the content that is displayed in an attempt to maximize revenue.

It is to be understood that although the invention has been described above in terms of particular embodiments, the foregoing embodiments are provided as illustrative only, and do not limit or define the scope of the invention. Various other embodiments, including but not limited to the following, are also within the scope of the claims. For example, elements and components described herein may be further divided into additional components or joined together to form fewer components for performing the same functions. In particular, the functions performed by the aggregation server **112** shown in FIG. **1** may be further subdivided into additional components for performing the same functions.

Although certain examples disclosed herein relate to financial message boards, the present invention is not limited to such examples. More generally, the techniques disclosed herein may be applied to any kind of messaging system, such as email and newsgroups, and to messaging systems containing messages whose content does not relate to finance. Furthermore, the techniques disclosed herein may be applied to aggregate content from web sites and other communications systems that are not designed as message boards. For example, the techniques disclosed herein may be used to aggregate news articles posted to news web sites, such as the web site for the New York Times (www.nytimes.com) or the Business Week (www.businessweek.com), even though such web sites are not designed as message boards to which members of the public may post messages. The term "message, as used herein, therefore, includes not only messages posted to message boards, but more generally to any unit of communication, such as an email message, a newsgroup posting, or a news article posted by an administrator to a news web site.

As described above, the aggregation server **112** extracts certain information from source message boards to produce the message content units **132**. Examples of categories from which information may be derived include, but are not limited to: message title, message author, message identifier, message sentiment, message timestamp, message web address, message thread, message attribute (e.g., size), message link (links contained in the message), message keyword (keywords contained in the message), message recipient, and message statistics (e.g., the number of times others have recommended the message, or a rating of the popularity of the message). The user **142** may be allowed to sort the aggregated message summaries displayed in the message table **302** by, for example, any of the categories mentioned above.

Ease of visual cognition is key to a successful user interface. Various techniques may be combined with those described above to improve such ease of visual cognition. For example, message summaries in the table **302** may be color-coded or otherwise coded (such as by the use of distinct icons or words) according to their source or to any other attribute, such as according to any of the categories mentioned above. The table **302** may include any number of rows and columns. Columns may be assigned to message categories (attributes) in any way. For example, a single column may correspond to a single attribute or to multiple attributes. For example, in one embodiment, there are two columns: (1) title and (2) time and author.

The web browser **140** is not limited to any particular web browser application. The web browser **140** may, for example, be of any kind and operate on any kind of device (e.g., desktop computer, laptop computer, personal-digital assistant, or smart phone). Furthermore, although the network **138** in FIG. **1** is labeled as the "Internet," the web browser **140** and aggregation server **112** may communicate over any kind of network, such as a private intranet.

The techniques described above may be implemented, for example, in hardware, software, firmware, or any combination thereof. The techniques described above may be implemented in one or more computer programs executing on a programmable computer including a processor, a storage medium readable by the processor (including, for example, volatile and non-volatile memory and/or storage elements), at least one input device, and at least one output device. Program code may be applied to input entered using the input device to perform the functions described and to generate output. The output may be provided to one or more output devices.

Each computer program within the scope of the claims below may be implemented in any programming language, such as assembly language, machine language, a high-level procedural programming language, or an object-oriented programming language. The programming language may, for example, be a compiled or interpreted programming language.

Each such computer program may be implemented in a computer program product tangibly embodied in a machine-readable storage device for execution by a computer processor. Method steps of the invention may be performed by a computer processor executing a program tangibly embodied on a computer-readable medium to perform functions of the invention by operating on input and generating output. Suitable processors include, by way of example, both general and special purpose microprocessors. Generally, the processor receives instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions include, for example, all forms of non-volatile memory, such as semiconductor memory devices, including EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROMs. Any of the foregoing may be supplemented by, or incorporated in, specially-designed ASICs (application-specific integrated circuits) or FPGAs (Field-Programmable Gate Arrays). A computer can generally also receive programs and data from a storage medium such as an internal disk (not shown) or a removable disk. These elements will also be found in a conventional desktop or workstation computer as well as other computers suitable for executing computer programs implementing the methods described herein, which may be used in conjunction with any digital print engine or marking engine, display monitor, or other raster output device capable of producing color or gray scale pixels on paper, film, display screen, or other output medium.

Referring to FIG. **4**A, an illustration is shown of a graphical user interface text input control **400** for use in assisting in the completion of text input by a user according

to one embodiment of the present invention. The control **400** includes a text input field **402** into which the user may type text.

In the particular embodiment illustrated in FIG. **4**A, the text input field **402** is used for entering either the name of a company or the stock ticker symbol of the company. The text input field **402** may, for example, be implemented in a financial message board aggregation web site of the kind described in the above-referenced patent application entitled "Message Aggregator", now issued under U.S. Pat. No. 7,529,795. The text input field **402**, however, may be used for entering text of any kind, and is not limited to use in any particular kind of computer program (such as a web browser).

For purposes of the following discussion, however, assume that the text input field **402** is used to enter either the name of a company or the stock ticker symbol of the company. The program that provides the text input field **402** may maintain a list of ticker-name tuples. For example, one tuple may include the stock ticker symbol "AAP" and the name of the company having that stock ticker symbol, namely "Advance Auto Parts Inc." Another tuple may, for example, include the stock ticker symbol "AAPH" and the name of the company having that stock ticker symbol, namely "American Petro-Hunter Inc." Yet another tuple may, for example, include the stock ticker symbol "AAPL" and the name of the company having that stock ticker symbol, namely "Apple Computer Inc."

In the particular example illustrated in FIG. **4**A, the user has begun to type the text "aap". As the user types, the program that provides the text input field **402** may attempt to match the text that the user has typed so far against any of the text in the tuples maintained by the program. For example, the program may attempt to match the text typed by the user so far against both the stored list of stock ticker symbols and the list of corresponding company names.

If the program determines that the text typed by the user so far matches any of the text in a particular tuple, the program may indicate such a match to the user. For example, if the program determines that the text typed by the user so far matches either the stock ticker symbol or the company name of a particular tuple, the program may indicate to the user that a match has been found. If matches are found with text in multiple tuples, the program may indicate to the user that multiple matches have been found.

In the particular embodiment illustrated in FIG. **4**A, any matches are indicated to the user by displaying a list of matching tuples, consisting of the stock ticker name followed by the company name (in parenthesis) of each matching tuple. For example, in FIG. **4**A, the text typed so far by the user ("aap") matches three stock ticker symbols ("AAP", "AAPH", and "AAPL"). The program therefore displays the text **408***a-c* of the three matching tuples in the list **406***a*. It should be appreciated that the contents of the list may change as the user continues to type additional characters in the text input field **402** or as the user deletes previously-typed characters in the text input field **402**.

Furthermore, the subset of each text item in the list that matches the input text may be visually emphasized. For example, in FIG. **4**A, the text "AAP" may be highlighted (such as by color coding) in each of the matching text strings **408***a*, **408***b*, and **408***c*. Highlighting the matching text in this way enables the user to quickly recognize the basis of each match, thereby enabling the user to quickly determine whether any of the displayed text strings **408***a-c* corresponds to the company for which the user was searching.

In the particular example illustrated in FIG. **4**A, the text **404***a* typed by the user in the text input field **402** only matches stock ticker symbols in the set of stored tuples. Referring to FIG. **4**B, an example is illustrated in which the text **404***b* ("appl") typed by the user matches company names (e.g., "Apple Computer Inc.", "Applied Biosystems Group", and "Applied Digital Solutions") instead of stock ticker symbols. The list **406***b* displayed in FIG. **4**B, therefore, includes text **410***a-j* corresponding to tuples having company names that match the typed text **404***b*. Although the list **406***b* is sorted by stock ticker symbol, the list **406***b* may be organized in any manner. For example, the list **406***b* may be sorted by company name. Note that the list **406***b* displayed in FIG. **4**B may be generated dynamically while the user types the text **404***b* in the same manner as described above with respect to the list **406***a* of FIG. **4**A, namely by attempting to match the text **404***b* against both stock ticker symbols and company names.

Referring to FIG. **4**C, an example is illustrated in which the text **404***c* ("del") typed by the user matches both ticker symbols (i.e., "DEL", "DELL", and "DELT") and company names (i.e., "Delcath Systems Inc.", "Delta Capital Technologies Inc.", "deltathree Inc.", "Delhaize Group (ADR)", "Delta Financial Corp.", and "Delphi Financial Group Inc."). The list **406***c* displayed in FIG. **4**C, therefore, includes both text **412***a-c* corresponding to tuples having ticker symbols that match the typed text **404***c* and text **412***d-j* having company names that match the typed text **404***c*. Although the list **406***c* includes two sections—one for matching ticker symbols and one for matching company names—the list may be organized in any manner. For example, the list **406***c* may be a single list sorted by company name or ticker symbol.

Once a list of matching tuples has been displayed (such as any of the lists **406***a-c* illustrated in FIGS. **4**A-**4**C), the program may allow the user to select a tuple from the list to complete the text being typed in the text input field **402**. For example, if the user clicks on an item in the list, the program may fill in the text field **402** with the stock ticker symbol of the tuple selected by the user. Note, however, that when the user selects a tuple from the list, the program may fill in the text field **402** with a stock ticker symbol even though the user had begun to type a company name, or vice versa. The user may also select more than one of the output strings by using the shift or control key while selecting a subset of the desired output strings.

The techniques disclosed herein may be used to reduce the number of keystrokes required to be input by the user. This may save the user effort and enable the user to use the corresponding computer program more quickly. For example, in comparison, conventional financial portal web sites typically provide a "symbol lookup" feature that allows a user to find the stock ticker symbol for a company by typing the company's name, and then clicking on a "find" button. Examples of existing financial portal web sites, some of which provide some form of "symbol lookup" feature, but which do not include the kind of lookup features disclosed herein, include: http://moneycentral.msn.com/investor/common/find.asp?NextPage=/detail/sto-ck quote, http://finance.yahoo.com/lookup, http://money.cnn.com/quote/lookup/index.html, http://www.marketwatch.com/tools/quotes/lookup.asp, http://clearstation.etrade.com/cgi-bin/symbol search, http://www.marketcenter.com/std/search.action, http://www.marketcenter.com/std/toolbox.jsp, http://www-.quote.com/qc/lookup/symbol search.aspx, http://www-.wallstreettape.com/charts/custom/symbol-lookup.asp, http://online.wsj.com/public/us, http://online.barrons.com/

public/main, http://bigcharts.marketwatch.com/symbol-lookup/symbollookup.asp, http://www.esignalcentral.com/support/symbol/default.asp, http://www.hoovers.com/free/, http://www.bloomberg.com/apps/tkrlookup, http://www2.barchart.com/lookup.asp, http://stockcharts.com/index.html, http://tools.thestreet.com/tsc/quotes.html?pg=qcn&, http://www.earningswhispers.com/tickerlookup.asp, http://www.whispernumber.com/indexjsp, http://www.google.com, http://quote.morningstar.com/TickerLookup.html, http://www.fool.com, http://www.siliconinvestor.com, http://www.investorshub.com, http://www.ragingbull.com, http://www.boardcentral.com, http://www.briefing.com/, http://www.newyorktimes.com, http://www.washingtonpost.com, http://www.boston.com, http://www.ft.com, http://news.bbc.co.uk/, http://www.inc.com, http://www.forbes.com, http://www.fortune.com, http://research.businessweek.com/ticker/createticker.asp, http://www.etrade.com, http://www.ameritrade.com, http://www.schwab.com, http://www.scottrade.com, http://www.sharebuilder.com, and http://www.vanguard.com, http://seekingalpha.com/, http://portfolios.abcnews.go.com/guotes/getQuote, http://www.investorvillage.com/home.asp, http://www.tickertech.com/cgi/?a=lookup, http://www.investors.com/symbol.asp, http://www.cboe.com/DelayedQuote/Symbol.aspx, http://personal.fidelity.com/research/stocks/content/stocksind ex.shtml?bar=c, http://www.quicken.com/investments/tsl/, http://www.globeinvestor.com/static/hubs/lookup.html, http://www.usatoday.com/money/search-tips.htm, http://stockhouse.com/, http://www.thelion.com/, http://www.island.com/, http://www.zacks.com/, http://www.troweprice.com/common/indexHtml3/0,0,htmlid=38,00.html, http://www.amex.com/?href=/quickquote/SymbolLookupjsp, http://www.nasdaq.com, http://www.nyse.com/, http://www.londonstockexchange.com/en-gb/, http://www.euronext.com, http://www.tsx.com/, http://www.asx.com.au/, http://www.advfn.com, http://www.mldirect.ml.com, http://www.foxnews.com/business/index.html, http://www.quickandreilly.com/, http://www.economist.com/index.html, http://www.kiplinger.com/, http://www.pennystock.com/, http://www.wallstreetselect.com/, http://www.sec.gov/edgar.shtml, http://www.edgar-online.com/, http://freeedgar.com/, http://www.thedeal.com, http://www.investools.com, http://www.activetradermag.com/, http://www.traders.com/, and http://www.ipohome.com.

The techniques disclosed herein may also provide the user with a beneficial degree of flexibility. For example, the techniques disclosed herein provide the user with the flexibility to type either a stock ticker symbol or a company name, depending on the user's preference, or depending on which of the two the user remembers most easily. The user, therefore, is not limited to a particular mode of input dictated by the program. This may make the program easily usable by different classes of users, such as both those users who are sophisticated stock traders (and therefore likely to remember stock ticker symbols) and less sophisticated users (who are likely to remember company names rather than symbols). More generally, the techniques disclosed herein reduce the need for the user to rely on his memory to provide necessary textual input.

It is to be understood that although the invention has been described above in terms of particular embodiments, the foregoing embodiments are provided as illustrative only, and do not limit or define the scope of the invention. Various other embodiments, including but not limited to the following, are also within the scope of the claims. For example, elements and components described herein may be further divided into additional components or joined together to form fewer components for performing the same functions.

Although certain examples described herein use stock ticker symbol and company name as the categories of text strings stored in n-tuples, the techniques disclosed herein may be applied to text strings representing any categories of content. For example, company sector (or other means of categorizing a company) is another example of a category of content to which the techniques disclosed herein may be applied.

Although particular examples disclosed herein involve the use of pairs of text strings, such pairs are merely special cases of n-tuples, in which n=2. The techniques disclosed herein may be applied more generally, to n-tuples where n>1. Furthermore, the text in the tuples may be of any kind and have any relationship to each other. For example, although stock ticker symbols typically have some textual similarity to the corresponding company names, this is not required. For example, an n-tuple may include a person's name and the person's street address, in which case there may be no textual similarity between the various text strings in the n-tuple.

In certain examples disclosed herein, the text typed by the user is matched against the beginning (leading characters) of text in the n-tuples. This is not, however, a requirement of the present invention. Rather, matching may be performed by comparing any subset of the text typed by the user against any subset of the n-tuple text. Furthermore, matching need not be performed against all elements in an n-tuple, or in the same manner against all elements in an n-tuple. For example, if n=3, matching may be performed against two rather than three of the text strings in the n-tuple.

Although certain examples disclosed herein provide the user with an indication of matches by displaying a list of all text in matching n-tuples, this is not a requirement of the present invention. Rather, matches may be displayed in a form other than a list. Furthermore, displayed matches need not display all of the text in matching tuples. The user may be allowed to select a matching tuple using any kind of input mechanism.

Any kind of computer program may implement the techniques disclosed herein. For example, the techniques disclosed herein may be implemented in a web site displayed by a web browser.

Although the concept of an n-tuple is used herein, the techniques disclosed herein may be implemented without storing data in structures organized as n-tuples. Rather, the techniques disclosed herein may be implemented using any kind of data structure, such as linked lists. The data against which the user input is matched may be pre-stored, downloaded over a network connection, generated on-the-fly, or produced, stored, and processed in any suitable manner.

The techniques described above may be implemented, for example, in hardware, software, firmware, or any combination thereof. The techniques described above may be implemented in one or more computer programs executing on a programmable computer including a processor, a storage medium readable by the processor (including, for example, volatile and non-volatile memory and/or storage elements), at least one input device, and at least one output device. Program code may be applied to input entered using the input device to perform the functions described and to generate output. The output may be provided to one or more output devices.

Each computer program within the scope of the claims below may be implemented in any programming language,

such as assembly language, machine language, a high-level procedural programming language, or an object-oriented programming language. The programming language may, for example, be a compiled or interpreted programming language.

Each such computer program may be implemented in a computer program product tangibly embodied in a machine-readable storage device for execution by a computer processor. Method steps of the invention may be performed by a computer processor executing a program tangibly embodied on a computer-readable medium to perform functions of the invention by operating on input and generating output. Suitable processors include, by way of example, both general and special purpose microprocessors. Generally, the processor receives instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions include, for example, all forms of non-volatile memory, such as semiconductor memory devices, including EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROMs. Any of the foregoing may be supplemented by, or incorporated in, specially-designed ASICs (application-specific integrated circuits) or FPGAs (Field-Programmable Gate Arrays). A computer can generally also receive programs and data from a storage medium such as an internal disk (not shown) or a removable disk. These elements will also be found in a conventional desktop or workstation computer as well as other computers suitable for executing computer programs implementing the methods described herein, which may be used in conjunction with any digital print engine or marking engine, display monitor, or other raster output device capable of producing color or gray scale pixels on paper, film, display screen, or other output medium.

A computer program provides a first set of representations (e.g., textual representations) of a first set of hyperlinks. In response to selection by a user of one of the first set of hyperlink representations (such as by clicking on or hovering a cursor over the representation), the program displays a second set of representations (e.g., graphical representations) of a second set of hyperlinks. The user may select one of the second set of representations, in response to which the program navigates to the destination of the hyperlink. The second set of representations may, for example, be logos of companies, and the second set of hyperlinks may be hyperlinks to the companies' web sites.

For example, referring to FIG. **5**A, a web page **500** is shown according to one embodiment of the present invention. The web page **500** includes a first frame **502***a* displaying a first set of textual hyperlink representations **504***a*, and a second frame **502***b* displaying the contents of another web page.

In the embodiment illustrated in FIG. **5**A, the first set of hyperlink representations **504***a* includes hypertext **506***a-h*. In this example, the hypertext **506***a-h* includes text representing categories of news web sites. For example, hypertext **506***a* ("World News") represents the category of world news web sites, hypertext **506***b* ("Business News") represents the category of business news web sites, and so on. The particular number, selection, and categorization of hypertext **506***a-h* shown in FIG. **5**A is provided merely as an example and does not constitute a limitation of the present invention.

The hyperlink representations **504***a* enable the user to access the underlying hyperlinks to external websites by hovering over selecting any of the hypertext **506***a-h*. The user may, for example, select a particular link either by clicking on one of the hypertext links **506***a-h* or by hovering a mouse cursor over one of the hypertext links **506***a-h*.

In response to receiving a selection of one of the hypertext links **506***a-h* from the user, the web page **500** displays a second set of hyperlink representations **504***b*. In the particular example illustrated in FIG. **5**A, the user has clicked on or hovered the mouse cursor over hypertext **506***h* ("Stock Research"). In response, the web page **500** has displayed the second set of hyperlink representations **504***b*, which represent hyperlinks within the selected category. In other words, each of the hyperlink representations **508***a***-1** represents a hyperlink to a stock research web site.

More specifically, in the embodiment illustrated in FIG. **5**A, each of the hyperlink representations **508***a***-1** is a graphic image of the logo of the web site that is the destination of the hyperlink. For example, hyperlink representation **508***a* is the logo of www.bigcharts.com, and the hyperlink representation **508***a* acts as a link to www.bigcharts.com.

Therefore, when the user selects (e.g., clicks on or hovers over) one of the second set of hyperlink representations **508***a***-1**, the web browser displays the destination of the selected hyperlink in the frame **502***b*. For example, if the user selects hyperlink representation **508***a* (i.e., the logo of www.bigcharts.com), the web browser will navigate to and display the home page of www.bigcharts.com in frame **502***b*.

Different sets of hyperlinks are displayed as the user selects (e.g., clicks on or hovers over) different ones of the first set of hyperlinks **506***a-h*. For example, as shown in FIG. **5**B, when the user selects hyperlink **506***d* ("UK News"), the web page **500** displays a set **504***c* of hyperlink representations **510***a-j* depicting logos of UK news web sites. If hovering is enabled to activate the first set **504***a* of links **506***a-j*, the user may quickly view the links in different categories by moving the mouse cursor over different ones of the first set **504***a* of links **506***a-h*. In a web browser, such a feature may be enabled using AJAX technology, through which all of the logos may be pre-downloaded with the web page **500**, and then quickly displayed to the user without requiring additional accesses to the server.

The techniques just described may, for example, be implemented in conjunction with a message board aggregation web site of the kind disclosed in the patent application entitled, "Message Board Aggregator", now issued under U.S. Pat. No. 7,529,795.

One advantage of the techniques disclosed herein is that hyperlink representations (e.g., the hyperlinks **504***b* and **504***c*) may be displayed to the user essentially instantaneously. Such techniques, therefore, provide the user with a method of scanning through links that is more intuitive and thus quicker for users than traditional techniques. Furthermore, the use of company logos or other graphical representations of hyperlinks facilitates the users experience, because it is likely that the user will already associate the company logo with the corresponding company name (attached to the hyperlink). The method is also visually more appealing than commonly used plain text methods.

It is to be understood that although the invention has been described above in terms of particular embodiments, the foregoing embodiments are provided as illustrative only, and do not limit or define the scope of the invention. Various other embodiments, including but not limited to the following, are also within the scope of the claims. For example, elements and components described herein may be further divided into additional components or joined together to form fewer components for performing the same functions. In particular, the functions performed by the aggregation

server **112** shown in FIG. **1** may be further subdivided into additional components for performing the same functions.

The first set of hyperlinks **504***a* may be sorted into categories, sub-categories, and so on, in any manner. Alternatively, they may be unsorted. The hyperlinks that are displayed may be predetermined by the web page designer, determined by the user, or any combination thereof. The user may, for example, be provided with the ability to set up categories (and subcategories) comprising favorite website hyperlinks.

Any kind of computer program may implement the techniques disclosed herein. For example, the techniques disclosed herein may be implemented in a web site displayed by a web browser.

The techniques described above may be implemented, for example, in hardware, software, firmware, or any combination thereof. The techniques described above may be implemented in one or more computer programs executing on a programmable computer including a processor, a storage medium readable by the processor (including, for example, volatile and non-volatile memory and/or storage elements), at least one input device, and at least one output device. Program code may be applied to input entered using the input device to perform the functions described and to generate output. The output may be provided to one or more output devices.

Each computer program within the scope of the claims below may be implemented in any programming language, such as assembly language, machine language, a high-level procedural programming language, or an object-oriented programming language. The programming language may, for example, be a compiled or interpreted programming language.

Each such computer program may be implemented in a computer program product tangibly embodied in a machine-readable storage device for execution by a computer processor. Method steps of the invention may be performed by a computer processor executing a program tangibly embodied on a computer-readable medium to perform functions of the invention by operating on input and generating output. Suitable processors include, by way of example, both general and special purpose microprocessors. Generally, the processor receives instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions include, for example, all forms of non-volatile memory, such as semiconductor memory devices, including EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROMs. Any of the foregoing may be supplemented by, or incorporated in, specially-designed ASICs (application-specific integrated circuits) or FPGAs (Field-Programmable Gate Arrays). A computer can generally also receive programs and data from a storage medium such as an internal disk (not shown) or a removable disk. These elements will also be found in a conventional desktop or workstation computer as well as other computers suitable for executing computer programs implementing the methods described herein, which may be used in conjunction with any digital print engine or marking engine, display monitor, or other raster output device capable of producing color or gray scale pixels on paper, film, display screen, or other output medium.

What is claimed is:

1. An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

cause, after an access to a server, display of a first set of one or more representations of a first set of one or more hyperlinks without any first-set-related images used in the display of the first set of one or more representations in connection with a webpage that includes a second set of one or more representations of a second set of one or more hyperlinks that are pre-downloaded with the webpage, wherein the second set of one or more representations are initially hidden, and the second set of one or more representations take the form of hypertext including one or more textual representations of one or more hyperlinks;

allow receipt of a first input from a user that indicates a selection of one of the first set of representations of the first set of one or more hyperlinks, the receipt of the first input being implemented without Java;

cause, in response to receiving the first input from the user indicating the selection of one of the first set of representations of the first set of one or more hyperlinks, a substantially immediate display of the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage such that the second set of one or more representations of the second set of one or more hyperlinks are displayed in a menu in a same window as a corresponding one of the first set of one or more representations of the first set of one or more hyperlinks, and at least partially below the corresponding one of the first set of one or more representations of the first set of one or more hyperlinks;

allow receipt of a second input from the user indicating a selection of one of the second set of representations of the second set of one or more hyperlinks;

cause, in response to receiving the second input from the user indicating the selection of one of the second set of one or more representations of the second set of one or more hyperlinks, navigation to a destination corresponding to the selected one of the second set of one or more representations of the second set of one or more hyperlinks; and

in response to the navigation to the destination corresponding to the selected one of the second set of one or more representations of the second set of one or more hyperlinks, display at least a portion of content associated with the destination simultaneously with the first set of one or more representations of the first set of one or more hyperlinks, so as to allow continued review of the first set of one or more representations of the first set of one or more hyperlinks and continued review of the second set of one or more representations of the second set of one or more hyperlinks while the at least portion of the content is simultaneously displayed, for additional navigation to at least one additional destination and display of at least a portion of additional content which is also simultaneously displayed with the first set of one or more representations of the first set of one or more hyperlinks;

wherein the apparatus is configured such that both the display of the first set of one or more representations of the first set of one or more hyperlinks and the display of the second set of one or more representations of the second set of one or more hyperlinks

that are pre-downloaded with the webpage, are performed without requiring an additional access to the server;

wherein the apparatus is further configured such that the webpage allows receipt of user input from the user in a form of hovering.

2. The apparatus of claim **1**, wherein the apparatus is configured such that the absence of any first-set-related images in the display of the first set of one or more representations reduces a download time associated with the pre-downloading of the first set of one or more representations.

3. The apparatus of claim **1**, wherein the apparatus is configured such that the second set of one or more representations of the second set of one or more hyperlinks is displayed so as to overlap at least a portion of a content section of the webpage.

4. The apparatus of claim **1**, wherein the apparatus is configured such that use of the one or more textual representations minimizes an amount of data required to pre-download the second set of one or more representations of the second set of one or more hyperlinks.

5. The apparatus of claim **1**, wherein the apparatus is operable such that the first set of one or more representations of the first set of one or more hyperlinks and the second set of one or more representations of the second set of one or more hyperlinks are displayed in a first portion of the webpage, and the at least portion of the content associated with the destination is displayed in a second portion of the webpage.

6. The apparatus of claim **5**, wherein the apparatus is configured such that at least part of the first portion including at least a portion of the second set of one or more representations of the second set of one or more hyperlinks overlaps at least part of the second portion.

7. The apparatus of claim **6**, wherein the apparatus is configured such that a distance between multiple of the one or more representations of the first set of one or more hyperlinks remains constant before and after the display of the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage.

8. The apparatus of claim **1**, wherein the apparatus is configured such that each instance of the receipt and the display is performed without invoking Java.

9. The apparatus of claim **1**, wherein the apparatus is configured such that the receipt of the first input is implemented without Java for improving a speed of the receipt of the first input and the display of the second set of one or more representations of the second set of one or more hyperlinks.

10. The apparatus of claim **1**, wherein the apparatus is configured such that each instance of the receipt and the display is performed without invoking Java for improving a speed of each instance of the receipt and the display.

11. The apparatus of claim **1**, wherein the apparatus is configured such that the first set of one or more representations of the first set of one or more hyperlinks and the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage are displayed utilizing a static object.

12. The apparatus of claim **1**, wherein the apparatus is configured such that the first set of one or more representations of the first set of one or more hyperlinks and the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage each include a static object.

13. The apparatus of claim **1**, wherein the apparatus is configured such that the display of the second set of one or more representations is immediate in response to receiving the first input.

14. The apparatus of claim **1**, wherein the apparatus is configured so as to allow receipt of a third input from the user after the first input and before the second input for causing a visual emphasis of at least a portion of the webpage.

15. The apparatus of claim **14**, wherein the apparatus is configured such that the visual emphasis is accomplished via highlighting and without replacing an object being emphasized.

16. The apparatus of claim **1**, wherein the apparatus is configured such that letters of the one or more textual representations do not change in response to particular user input.

17. The apparatus of claim **1**, wherein the apparatus is configured such that the first input is capable of including the hovering.

18. The apparatus of claim **17**, wherein the apparatus is configured such that the hovering permits the user to more quickly view the second set of one or more representations of the second set of one or more hyperlinks, as compared to clicking, by permitting the user to move a cursor over the corresponding one of the first set of one or more representations of the first set of one or more hyperlinks.

19. The apparatus of claim **17**, wherein the apparatus is configured such that the hovering permits the user to more quickly view different sets of one or more representations of different sets of one or more hyperlinks, as compared to clicking, by permitting the user to move a cursor over different ones of the first set of one or more representations of the first set of one or more hyperlinks.

20. The apparatus of claim **17**, wherein the apparatus is configured such that the hovering permits the user to more quickly view and hide the second set of one or more representations of the second set of one or more hyperlinks, as compared to clicking, by permitting the user to move a cursor over the corresponding one of the first set of one or more representations of the first set of one or more hyperlinks and subsequently move the cursor off of the corresponding one of the first set of one or more representations of the first set of one or more hyperlinks.

21. The apparatus of claim **17**, wherein the apparatus is configured such that the hovering permits the user to view and hide different sets of one or more representations of different sets of one or more hyperlinks by permitting the user to move a cursor over different ones of the first set of one or more representations of the first set of one or more hyperlinks and subsequently move the cursor off.

22. The apparatus of claim **1**, wherein at least one of:

the first set of one or more representations of the first set of one or more hyperlinks includes a set including a single representation of a single hyperlink;

the second set of one or more hyperlinks are displayed below and to a side the corresponding one of the first set of one or more representations;

the second set of one or more hyperlinks are displayed immediately below the corresponding one of the first set of one or more representations;

other portions of the webpage other than the first set of representations include images;

images other than any first-set-related images are pre-downloaded with the webpage;

second-set-related images are pre-downloaded with the webpage for use in the display of the second set of representations;

the first input includes the hovering;

the second input includes the hovering;

additional input other than the first input and the second input, includes the hovering;

the hovering results in a visual emphasis;

the hovering results in content display;

the hovering results in display of at least a portion of content that was previously hidden;

the first set of one or more representations of the one or more menu items and the at least portion of the content is simultaneously displayed in separate frames;

the second set of one or more representations of the second set of one or more hyperlinks are pre-downloaded with the webpage by being downloaded prior to the first input; or

the at least a portion of the webpage includes a text item.

23. An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

cause, after an access to a server, display of a first set of one or more representations of one or more menu items without any first-set-related images used in the display of the first set of one or more representations in connection with a webpage that includes a second set of one or more representations of one or more hyperlinks that are pre-downloaded with the webpage, wherein the second set of one or more representations are initially hidden, and the second set of one or more representations take the form of non-AJAX elements including one or more textual representations of one or more hyperlinks;

allow, without using AJAX, receipt of a first input from a user indicating a selection of one of the first set of representations of the one or more menu items;

cause, in response to receiving the first input from the user indicating the selection of one of the first set of representations of the one or more menu items, an immediate display of the second set of one or more representations of the one or more hyperlinks that are pre-downloaded with the webpage such that the second set of one or more representations of the one or more hyperlinks are displayed in a menu in a same window as a corresponding one of the first set of one or more representations of the one or more menu items, and at least partially adjacent to the corresponding one of the first set of one or more representations of the one or more menu items;

allow receipt of a second input from the user indicating a selection of one of the second set of representations of the one or more hyperlinks;

cause, in response to receiving the second input from the user indicating the selection of one of the second set of one or more representations of the one or more hyperlinks, navigation to a destination corresponding to the selected one of the second set of one or more representations of the one or more hyperlinks; and

in response to the navigation to the destination corresponding to the selected one of the second set of one or more representations of the one or more hyperlinks, display at least a portion of content of the destination simultaneously with the first set of one or more representations of one or more menu items, so as to allow continued review of the first set of one or more representations of the one or more menu items and continued review of the second set of one or more representations of the one or more hyperlinks while the at least portion of the content is simultaneously displayed, for additional navigation to at least one additional destination and display of at least a portion of additional content which is also simultaneously displayed with the first set of one or more representations of one or more menu items;

wherein both the display of the first set of one or more representations of the one or more menu items and the display of the second set of one or more representations of the one or more hyperlinks that are pre-downloaded with the webpage, are performed without requiring an additional access to the server;

wherein the webpage receives user input from the user including hovering.

24. The apparatus of claim **23**, wherein the apparatus is configured such that the absence of any first-set-related images in the display of the first set of one or more representations minimizes a download time associated with the pre-downloading of the first set of one or more representations.

25. The apparatus of claim **23**, wherein the apparatus is configured such that the first input includes the hovering, where the hovering permits the user to more quickly view and hide the second set of one or more representations of the one or more hyperlinks, as compared to clicking, by permitting the user to move a cursor over the corresponding one of the first set of one or more representations.

26. The apparatus of claim **23**, wherein the apparatus is configured such that the first input includes the hovering, where the hovering permits the user to view and hide different sets of one or more representations of different sets of one or more hyperlinks, by permitting the user to move a cursor over different ones of the first set of one or more representations.

27. The apparatus of claim **23**, wherein the apparatus is configured such that a distance between multiple of the representations of multiple of the menu items remains constant before and after the display of the second set of one or more representations of the one or more hyperlinks.

28. The apparatus of claim **27**, wherein the apparatus is operable such that the multiple of the representations of the multiple of the menu items and the second set of one or more representations of the one or more hyperlinks are displayed in a first portion of the webpage, and the at least portion of the content associated with the destination is displayed in a second portion of the webpage.

29. The apparatus of claim **27**, wherein the apparatus is configured such that at least part of the first portion including at least a portion of the second set of one or more representations of the second set of one or more hyperlinks overlaps at least part of the second portion.

30. A method comprising:

generating content for use in populating a webpage that, when downloaded, performs the following:

displaying, in response to an access to a server, a first set of one or more representations of a first set of one or more hyperlinks without any first-set-related images used in the display of the first set of one or more representations in connection with a webpage that includes a second set of one or more representations of a second set of one or more hyperlinks that are pre-downloaded with the webpage, wherein the

second set of one or more representations are hidden when the displaying of the first set of one or more representations occurs, and the second set of one or more representations take the form of hypertext including one or more textual representations of one or more hyperlinks;

receiving, without Java, a first input from a user indicating a selection of one of the first set of representations of the first set of one or more hyperlinks;

in response to receiving the first input from the user indicating the selection of one of the first set of representations of the first set of one or more hyperlinks, displaying, immediately and without Java, the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage such that the second set of one or more representations of the second set of one or more hyperlinks are displayed in a menu in a same window as a corresponding one of the first set of one or more representations of the first set of one or more hyperlinks, and at least partially below the corresponding one of the first set of one or more representations of the first set of one or more hyperlinks;

receiving a second input from the user indicating a selection of one of the second set of representations of the second set of one or more hyperlinks;

in response to receiving the second input from the user indicating the selection of one of the second set of one or more representations of the second set of one or more hyperlinks, navigating to a destination corresponding to the selected one of the second set of one or more representations of the second set of one or more hyperlinks; and

in response to the navigation to the destination corresponding to the selected one of the second set of one or more representations of the second set of one or more hyperlinks, displaying at least a portion of content associated with the destination simultaneously with the first set of one or more representations of the first set of one or more hyperlinks, so as to allow continued review of the first set of one or more representations of the first set of one or more hyperlinks and continued review of the second set of one or more representations of the second set of one or more hyperlinks while the at least portion of the content is simultaneously displayed, for additional navigation to at least one additional destination and display of at least a portion of additional content which is also simultaneously displayed with the first set of one or more representations of the first set of one or more hyperlinks;

wherein both the display of the first set of one or more representations of the first set of one or more hyperlinks and the display of the second set of one or more representations of the second set of one or more hyperlinks that are pre-downloaded with the webpage, are performed without requiring an additional access to the server;

wherein receipt of user input from the user including hovering, is allowed.

31. A method comprising:

generating content for use in populating a webpage that, when downloaded, performs the following:

displaying, after a first access to a server and without using Java, a first set of one or more representations of one or more menu items without any first-set-related images used in the display of the first set of one or more representations in connection with a webpage that includes a second set of one or more representations of one or more hyperlinks that are pre-downloaded with the webpage, wherein the second set of one or more representations are hidden without particular user input in connection therewith;

receiving, without using Java, a first input from a user indicating a selection of one of the first set of representations of the one or more menu items;

in response to receiving the first input from the user indicating the selection of one of the first set of representations of the one or more menu items, displaying, immediately and without using Java, the second set of one or more representations of the one or more hyperlinks that are pre-downloaded with the webpage such that the second set of one or more representations of the one or more hyperlinks are displayed in a menu in a same window as a corresponding one of the first set of one or more representations of the one or more menu items, and at least partially adjacent to the corresponding one of the first set of one or more representations of the one or more menu items;

detecting, without using Java, a second input from the user indicating a selection of one of the second set of representations of the one or more hyperlinks;

in response to detecting the second input from the user indicating the selection of one of the second set of one or more representations of the one or more hyperlinks, navigating, without using Java, to a destination corresponding to the selected one of the second set of one or more representations of the one or more hyperlinks; and

in response to the navigation to the destination corresponding to the selected one of the second set of one or more representations of the one or more hyperlinks, displaying at least a portion of content of the destination simultaneously with the first set of one or more representations of one or more menu items, so as to allow continued review of the first set of one or more representations of the one or more menu items and continued review of the second set of one or more representations of the one or more hyperlinks while the at least portion of the content is simultaneously displayed, for additional navigation to at least one additional destination and display of at least a portion of additional content which is also simultaneously displayed with the first set of one or more representations of one or more menu items;

wherein both the display of the first set of one or more representations of the one or more menu items and the display of the second set of one or more representations of the one or more hyperlinks that are pre-downloaded with the webpage, are performed without using Java and without requiring a second access to the server after the first access to the server;

wherein user input from the user including hovering is permitted to be received.

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