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Rishe

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(54) **DATA EXTRACTOR**

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(52) U.S. Cl. **707/4; 707/10; 707/101**

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707/101, 10; 709/217, 250, 202; 345/357;
395/200.47, 200.8; 705/3, 39, 40

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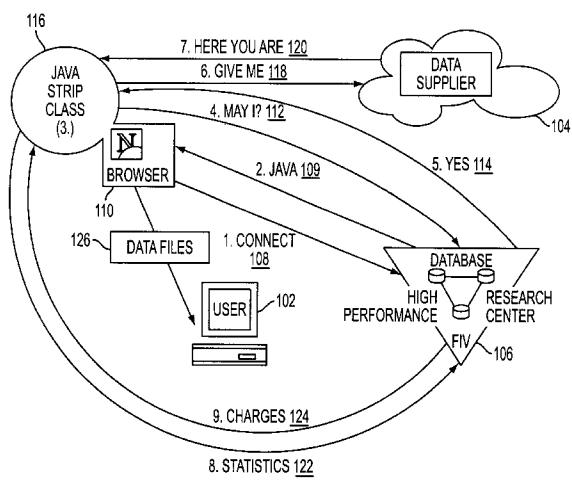
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(57)

ABSTRACT

A data extractor system for extraction, deformatting, and postformatting of data available on the WWW. A user, connected to the Internet/Web, contacts a fee-based intermediate data service which provides an interface to determine various aspects of the user's query, including output format. The intermediate data service generates a Java stripping agent which is sent to the user's browser to interface with a third party data provider. The Java stripping agent contains the knowledge to strip away the formatting of user interfaces. The system will allow buffering and streamlining between the user and web data providers; converting visual presentation of information into data for further processing, translating one data request into a cascade of data requests and pasting results together, filtering data output; allowing a variety of presentations of data different from the original presentation; optional dataflow between the user's applications and the third-party data providers bypassing interactive interfaces.

32 Claims, 9 Drawing Sheets



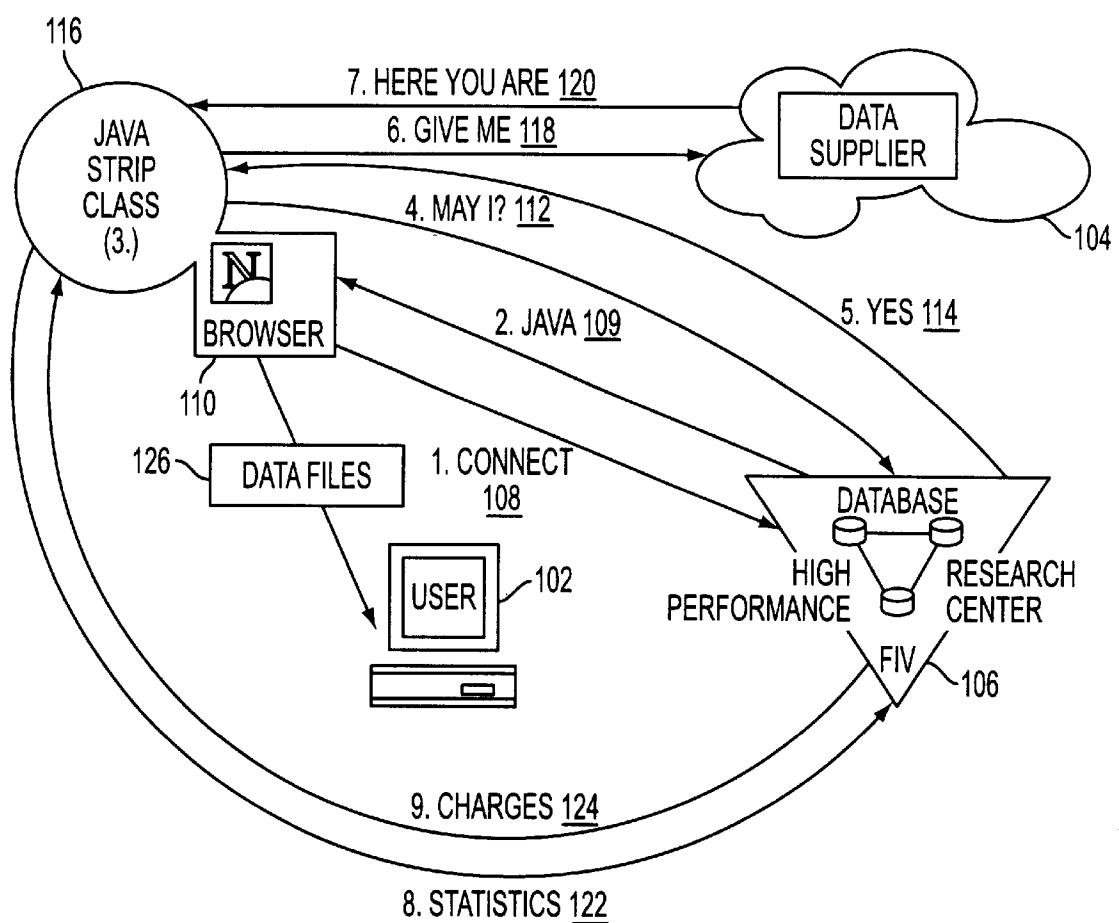
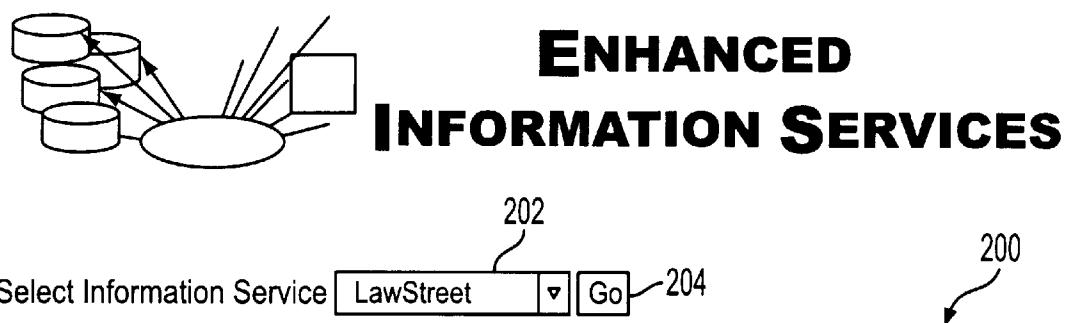


FIG. 1



- 206 • With this application you may get enhanced data from various Information Services Providers
- 208 • You can save results of your query as various data formats. *You can make advanced ad-hoc queries* 210
- 212 • As example, you can see the result of query to "Sears" via BellSouth:

- 214 Text(tab-delimited) format,
- 216 HTML format,
- 218 Excel format,
- 220 Microsoft Access format.

FIG. 2

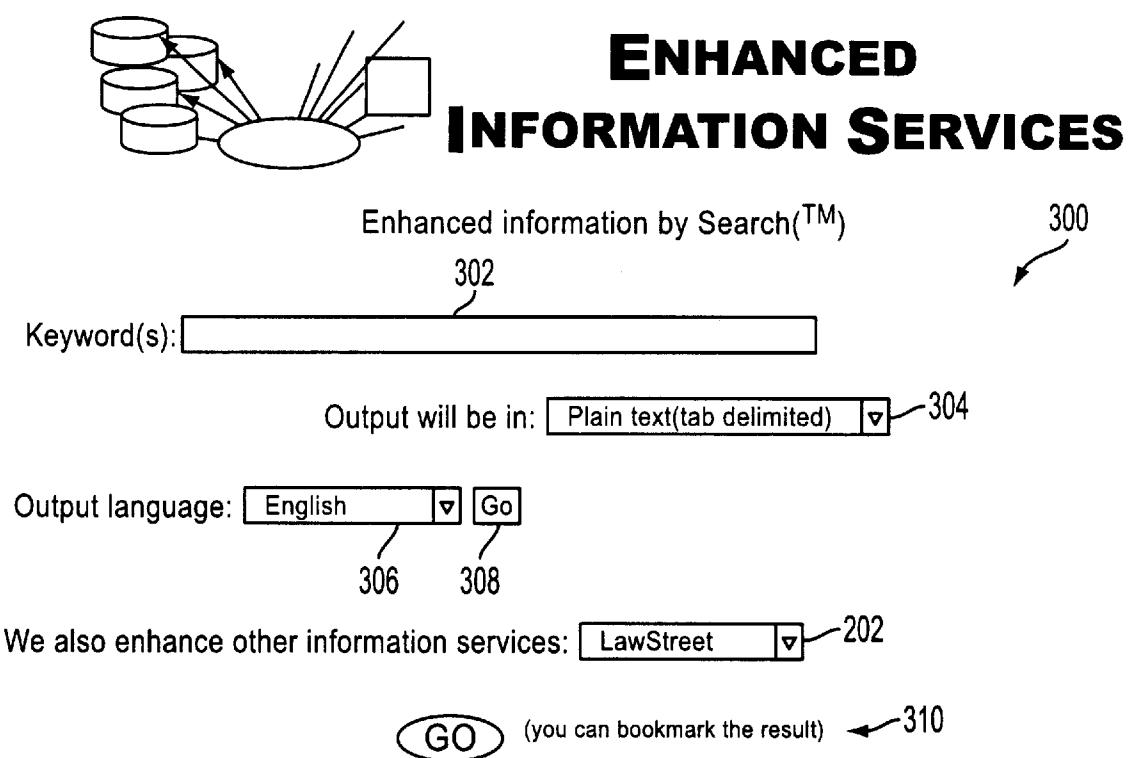


FIG. 3

ALLSTATE INSURANCE COMPANIES-SALES OFFICE-JASPER-SEARS BLDG		714	PARKLAND SHO
MIRACLE EAR AT SEARS 2550	GALLERIA CIR	HOOVER AL	(205) 989-72
SEARS A FRANK SEAT COVERS 2311	7TH AVE S	BIRMINGHAM	AL 3523
SEARS CARPET & UPHOLSTERY CLEANING		AL	(205)
SEARS CONTRACT SALES WAREHOUSE 907	ALTON PKWY	BIRMINGHAM	AL 3521
SEARS HEARING AID CENTER 2550	GALLERIA CIR	BIRMINGHAM	AL 3524
SEARS HEARING AID SYSTEMS 7580	CRESTWOOD BLVD	BIRMINGHAM	AL 3521
SEARS OPTICAL 3000	RIVERCHASE GALLERIA	HOOVER AL	35244 (205) 987-28
SEARS PLUMBING & DRAIN CLEANING		AL	(205) 942-03
SEARS PORTRAIT STUDIO 6550	AARON ARONOV DR	FAIRFIELD AL	35064 (205) 599-73
SEARS PORTRAIT STUDIO	BIRMINGHAM	AL	(205)
SEARS PORTRAIT STUDIO 2550	GALLERIA CIR	BIRMINGHAM	AL 35244 (205)
SEARS RENT A CAR 2301	3RD AVE S	BIRMINGHAM	AL 35233 (205)
SEARS ROEBUCK & CO 2500	RIVERCHASE GALLERIA	HOOVER AL	35244 (205)
SEARS ROEBUCK AND CO 2500	GALLERIA CIR	BIRMINGHAM AL	35244 (205)
SEARS ROEBUCK AND CO-APPAREL BOY'S 7500	CRESTWOOD BLVD	BIRMINGHAM	AL
SEARS ROEBUCK AND CO-AUTO CENTER 2500	RIVER CHASE RD	BIRMINGHAM	AL
SEARS ROEBUCK AND CO-GENERAL INFORMATION 715		PARKLAND SHOPPING CTR N	JASP
SEARS ROEBUCK AND CO-HOME APPLIANCES & ELECTRONICS 715		PARKLAND SHOPPING	CT
SEARS ROEBUCK AND CO-LAWN & GARDEN 715		PARKLAND SHOPPING CTR N	JASPER AL
SEARS ROEBUCK AND CO-PEST CONTROL		AL	(205)
SEARS ROEBUCK AND CO-RETAIL STORE 6550	AARON ARONOV DR	FAIRFIELD	AL
SEARS ROEBUCK AND CO-RETAIL STORE-CENTURY PLAZA		AL	AL
SEARS SIDING AND WINDOWS 2194	PARKWAY LAKE DR	HOOVER AL	35244 (205)
SEARS TERMITE & PEST CONTROL		AL	(205) 956-15
SEARS TERMITE & PEST CONTROL 2716	COMMERCE SQ E	BIRMINGHAM	AL 3521
SEARS, STEVEN R ATTY 655	MAIN ST	MONTEVALLO AL	35115 (205) 665-12
SEARS, WALTER J III ATTY 2001	PARK PL	BIRMINGHAM AL	35203 (205)
SEARS CAR & TRUCK RENTAL		DECATUR AL	(256) 534-64
SEARS CAR & TRUCK RENTAL-HUNTSVILLE AVIATION		AL	AL
SEARS CAR & TRUCK RENTAL-LOCAL RESERVATIONS & INFORMATION			DECA
SEARS CAR & TRUCK RENTAL-LOCAL RESERVATIONS & INFORMATION		2901	UNIVERSITY D
SEARS CAR & TRUCK RENTAL-LOCAL RESERVATIONS & INFORMATION		8721	HIGHWAY 20 W
SEARS CAR & TRUCK RENTAL-LOCAL RESERVATIONS & INFORMATION			HUNT
SEARS CARPET & UPHOLSTERY CLEANING 425	GRANT ST SE	DECATUR AL	3560
SEARS DEALER STORE	AL	MOULTON, AL	(256)
SEARS HEARING AID CENTER 5901	HIGHWAY 72 W	HUNTSVILLE	AL 3580
SEARS HEARING AID CENTER 1801	BELTLINE RD SW	DECATUR AL	35601 (256)
SEARS PORTRAIT STUDIO 1801	BELTLINE RD SW	DECATUR AL	351-52
SEARS PORTRAIT STUDIO 5901	UNIVERSITY DR NW	HUNTSVILLE AL	3580
SEARS ROEBUCK & CO-RETAIL STORE-LAWN & GARDEN EQUIPMENT 5901		UNIVERSITY DR NW	
SEARS ROEBUCK AND CO-RETAIL STORE-GENERAL INFORMATION 5901		UNIVERSITY DR NW	
SEARS ROEBUCK AND CO-RETAIL STORE-GENERAL INFORMATION 5901		UNIVERSITY DR NW	
SEARS ROEBUCK AND CO-RETAIL STORE-GENERAL INFORMATION 1801		BELTLINE RD SW	DECA
SEARS ROEBUCK AND CO-RETAIL STORE-GENERAL INFORMATION		AL	
SEARS, JAMES OFC		(256) 880-0659	
BLOCK H & R-SEARS LOCATION		(334)	470-66
BUDGET CAR & TRUCK RENTAL-SEARS RENT A CAR		AL	
SEARS 19588 S GREENO RD	FAIRHOPE	MOBILE AL	
SEARS AUTHORIZED CARPET CLEANING 852		(334) 990-0017	
SEARS AUTHORIZED CARPET CLEANING 852	HOLCOMBE AVE	MOBILE AL	3660
SEARS AUTHORIZED CARPET CLEANING 101	HOLCOMBE AVE	MOBILE AL	3669
SEARS AUTHORIZED RETAIL DEALER 19588	N FRANKLIN ST	MOBILE AL	3660
SEARS CAR & TRUCK RENTAL	S GREENO RD	FAIRHOPE AL	3653
SEARS CAR & TRUCK RENTAL-RESERVATIONS & INFORMATION		(334) 633-06	
SEARS HEARING AID SYSTEMS 3201	BEL AIR MALL	MOBILE AL	36606 (334)
SEARS PORTRAIT STUDIO 3201	BEL AIR MALL	MOBILE AL	36606 (334) 470-66
SEARS ROEBUCK AND CO-GENERAL INFORMATION 3201		BEL AIR MALL MOBILE AL	
SEARS TELECENTER 3412	DEMETROPOLIS RD	MOBILE AL	36693 (334) 661-60
SEARS, JAMES D ATTY 61	ST JOSEPH ST	MOBILE AL	(334) 433-52
SEARS, JAMES OFC 318	MAGNOLIA AVE	FAIRHOPE AL	36532 (334)

BLOCK H & R-SEARS LOCATION		ALBANY	GA	(912) 434-4300
SEARS CAR RENTAL	3905 NEWTON RD	ALBANY	GA31707(912) 434-7502	
SEARS PORTRAIT STUDIO		ALBANY	GA	(912) 434-4351
SEARS PRODUCTS & SERVICES	2815 GILLIONVILLE RD	ALBANY	GA31707(912) 483-9898	
SEARS ROEBUCK AND CO-GENERAL INFORMATION	2601 DAWSON RD	ALBANY	GA31707(912) 434-4300	
SEARS ROEBUCK AND CO-GENERAL INFORMATION	1408 E SHOTWELL ST	BAINBRIDGE	GA31717(912) 246-5877	
BLOCK H & R-SEARS LOCATION 3401 MASONIC DR ALEXANDRIA LA 71301(318) 484-7253				
SEARS	1339 N PINE ST	DERIDDER	LA 70634(318) 463-3257	
SEARS AUTHORIZED RETAIL DEALER	636 MOREAU ST	BUNKIE	LA 71322(318) 253-0550	
SEARS AUTHORIZED RETAIL DEALER	363 MOREAU ST	MARKSVILLE LA 71351(318)	253-0550	
SEARS OPTICAL	3401 MASONIC DR ALEXANDRIA LA 71301(318)		443-0013	
SEARS PORTRAIT STUDIO	3401 MASONIC DR ALEXANDRIA LA 71301(318)		484-7251	
SEARS ROEBUCK AND CO	3401 MASONIC DR ALEXANDRIA LA 71301(318)		484-7200	
SEARS ROEBUCK AND CO-GENERAL INFORMATION	900 N 5TH ST	LEESVILLE	LA 71446(318) 238-1371	
SEARS HEARING AID CENTER	3101 N MAIN ST	ANDERSON	SC 29621(864) 226-7742	
SEARS PORTRAIT STUDIO	3131 N MAIN ST	ANDERSON	SC 29621(864) 261-4205	
SEARS ROEBUCK & CO-CLEMSON-AUTHORIZED RETAIL DEALER STORE-GENERAL INFORMATION	1019 TIGER BLVD	CLEMSON	SC 29631(864) 654-1620	
SEARS STEVE GARAGE	186 CHEROKEE RD	WILLIAMSTON SC 29697(864)	847-4576	

FIG. 5

The SQL queries to BellSouth Yellow Pages Database

You can issue one or many SQL queries to BellSouth Yellow Pages. 602

- The name of the table, which consists Yellow Pages is AllBell. 604
- Each SQL query should have the semicolon (;) marker on the end. 606
- The results of the last query could be displayed on the screen. 608
- You should specify the list of field names for getting thes results. 610
- The number of output lines is limited to 500 lines. 612

600

Please, look into examples of SQL queries and feel free to modify them or put your own SQL query: 614

- Business, which are located in some zip-code 616
- Count all Business, which are located in some zip-code (Count example) 618
- Select phones like '348%' (results is not displayed - just for demonstration how to issue many SQL commands) then Show all distinct cities. 620

Output columns:

Businessname	HouseNumber	Street	City	State	ZIP	AreaCode	Phone
--------------	-------------	--------	------	-------	-----	----------	-------

624

Series of SQL statements (please, end with ; symbol each of these statements):

		▲	626
		▼	
◀	▶		
Tab-delimited text		▼	628

(GO) 630

FIG. 6

The SQL queries to BellSouth Yellow Pages Database:

Output columns:

Businessname	HouseNumber	Street	City	State	ZIP	AreaCode	Phone
--------------	-------------	--------	------	-------	-----	----------	-------

624

Series of SQL statements (please, end with ; symbol each of these statements):

```
Select * from AllBell where zip=33199;
```

701

716

626

Tab-delimited text

628

GO

630

FIG. 7A

The SQL queries to BellSouth Yellow Pages Database:

Output columns:

CountResults

624

Series of SQL statements (please, end with ; symbol each of these statements):

Select count (*) as CountResults from AllBell where zip=33174

702

718

626

Tab-delimited text

628

GO

630

FIG. 7B

The SQL queries to BellSouth Yellow Pages Database:

Output columns:

City

624

Series of SQL statements (please, end with ; symbol each of these statements):

```
Select * from AllBell where Phone Like '348%';  
Select distinct city from AllBell;
```

703

722

720

626

Tab-delimited text

628

GO

630

FIG. 7C

1

DATA EXTRACTOR

BACKGROUND OF THE INVENTION

1. Field of Invention

The present invention relates generally to the field of data retrieval. More specifically, the present invention is related to a business model which provides a fee-based, real-time, intermediary service including a method of extracting data from third party providers, removing existing formatting information and returning the data to the requester in a desired format.

2. Discussion of Prior Art

The proliferation of the Internet and World Wide Web (WWW) has produced a deluge of information often times in unmanageable formats to the average user. To assist the user, various search engines have been developed which work through the user's browser to keyword search various indexed data sources. While search results of text Web pages may be easy to manage, search results of structured type data prove not to be so easily managed. Typically database results are returned preformatted in HTML, text or spreadsheet forms. The user, however, has no means of selecting a format not envisioned by the data supplier. The user may want to select a data output only in spreadsheet format for direct integration into locally stored table structures. Most users cannot perform such a conversion because of software or hardware limitations, and certainly not in real-time. What is needed is an intermediate service provider through which a user can enhance their data retrieval by customizing the data output without having to create complex algorithms or mapping structures locally on their PC. The following prior art describes various attempts to extract data from database sources located on the Web.

The patent to Schofield (U.S. Pat. No. 5,860,072), assigned to Tandem Computers Incorporated, provides for a *Method and Apparatus for Transporting Interface Definition Language-Defined Data Structures Between Heterogenous Systems*. Data strings are stored locally in a receiving computer's buffer and thereafter, the data structure extracted, realigned and stored. Column 4, lines 37-39 suggest an Internet embodiment.

The patent to Horvitz et al. (U.S. Pat. No. 5,864,848), assigned to Microsoft Corporation, provides for a *Goal-Driven Information Interpretation and Extraction System*. Column 1, lines 47-52 suggest the extraction of data from Internet web pages.

The web page entitled, "Visual Design and Cross-Platform Execution", provides for a technical overview of the software product "Cambio." Cambio extracts the desired data fields (which can be spread across multiple lines in a text file) and assembles those fields into a flat record of data. These records are presented in the conventional row/column, tabular format (see http://www.datajunction.com/products/cambio_technical.html).

The web page entitled, "GlimpseGate", provides for context searching of html web documents with data strings (see <http://phones.cybercell.net/~hsf/sources/glimpsegate/>).

Additional data extractors can be found in the following patents, web pages and articles:

U.S. Pat. No. 5,761,656 to Ben-Shachar, U.S. Pat. No. 5,819,265 to Ravin et al.; U.S. Pat. No. 5,870,746 to Knutson et al.; U.S. Pat. No. 5,881,232 to Cheng et al., and U.S. Pat. No. 5,892,908 to Hughes et al.,

Web sites:

4.1 Overview -<http://skwww.enc.iis.sinica.edu.tw/user-manual/node/42.html>;

2

HelpOnCitibaseDataExtraction- <http://biscu.its.yale.edu/SSDA/helpfiles/citihelp.html>

HTML Presentation - <http://www.fortnet.org/FortNet/HTML/Presentation/stats/>

HTML2TEXT v1.51- <http://www.telekabel.nl/sprinter/wieger/html2txt.htm>

HTMLLess 2.0- http://elanor.sci.muni.cz/ar/ar407_Sections/news19.html

NeXtract - <http://www.nextract.com>

Article: SAC Software Agent Corporation Presents The Search Agent - <http://www.io.com/~sac/>, and article by Lawrence, Steve et al., *IEEE Internet Computing*, "Context and Page Analysis for Improved Web Search", July-August 1998, pp. 38-46.

Whatever the precise merits, features and advantages of the above cited references, none of them achieves or fulfills the purposes of the present invention, one of which specifically to provide an E-commerce business model and system including an intermediate service provider through which a user can enhance their WWW data retrieval by customizing the data output in realtime without creating and maintaining complex data mapping algorithms. The prior art shows that both stripping algorithms and Java agents are known, however, neither have been used to dispatch intermediary agents for real-time extraction of structured data from HTML pages accessed by the user and arbitrary post-processing of third party data.

These and other objectives are achieved by the detailed description that follows.

SUMMARY OF THE INVENTION

A data extractor system for the extraction, deformatting, and postformatting of data available on the WWW. The system enables buffering and streamlining between the user and web data providers; converting the visual presentation of information into data for further processing, translating one data request into a cascade of data requests and pasting results together, filtering data output; allowing a variety of presentations of data different from the original presentation; optional dataflow between the user's applications and the third-party data providers thereby bypassing interactive interfaces.

A user, connected to the Internet/Web, contacts an intermediate data service which provides an interface to determine various aspects of the user's query, including output format. The intermediate data service generates a stripping agent, such as a Java program, which is sent to the user's browser to interface with a third party data provider. The Java stripping agent contains the knowledge to strip away the formatting of user interfaces such as HTML, reformat, reorganize, filter and present the data in real-time in a user-selected format. The present invention:

1. Embeds all user input in a standardized way in a URL (CGI), hiding from the user various data entry protocols such as post-data, Java script data entry forms, etc. Thus, allowing the user to:
 - a. bookmark this URL with predefined input data
 - b. embed this URL in various user scripts
2. Converts the formatted data retrieved from third party data provider into an ASCII file, one line per result, tabs separating fields; eliminating all graphics and irrelevant text, leaving only data allowing:
 - a. convenient downloading of data into user applications
 - b. compact results
 - c. development of embedded applications

3

3. When a third-party site gives a few records at a time and a "next" button, the present invention recursively dispatches an agent to recursively call the third-party data provider to give the user in one operation a large volume of data.
4. In addition to plain ASCII output by default, the user will be able to parametrically specify additional forms of output:
formatted ASCII (72 characters per line, aligned spaces instead of tabs, one field can continue on several lines) 10
RTF
HTML tables
PDF
Postscript
And others 15
- The present invention delivers standardized extracted graphic files of spatial data: maps, remote-sensing images, etc.
5. The user can specie a parameter EGREP_SCREEN giving a regular expression to screen the output or a simplified parameter KEYWORDS_SCREEN. (Note: this is post-processing of results after they are received from third-party providers) 20
6. In an alternative embodiment, the intermediate data service subscribes to a variety of pay-per-use services and re-delivers information to paying customers. The end user's convenience, in addition to repackaging, will be that the user does not have to subscribe to many services, just to the intermediate data service (a charge includes a small mark-up, or no mark-up if wholesale rates are obtained). 25
7. In an alternative embodiment, the system performs merges and joins between data from more than one server.
8. In an alternative embodiment, certain joins will be allowed within same site, e.g., by traversing pointers to product detail from product list.
9. In an alternative embodiment, the system includes a virtual conceptual semantic schema of all WWW information accessible by the user via the service and allow the user to specify complex database query against same schema without knowing which third-party sites need to be accessed or joined to perform the query. 30
10. The program can employ Java-agent technology, which agent will perform all the activities at user site; reducing traffic on the intermediate data service and will also protect the intermediate service provider from possible claims of third-party data providers regarding reselling or storing of their data contrary to license or copyright provisions. 35
11. The program will allow a number of post-formatting options, including:
audio file produced after adding connecting words to properly delineate fields (it is impossible to produce a meaningful audio file without first stripping output and delimiting fields with connecting words)
smart translation into other languages; The present invention will decide which fields should be translated and which should not, exercising its knowledge of the semantics of the data source. 50
12. The program is written in such a way that definitions of the tird-party web site protocols are outside of the program, in a Knowledge Base, and easy to maintain and change by a low-skilled staff.
13. The intermediate data service maintains a large database or references to data providing sites whose input/output stripping instructions are known. 55

4

14. When no parameters are given, the present invention replies with a list of third party services it knows to query, the kind of information they provide, and list of field names.
15. Examples of services to be supported are:
various white and yellow phone directories
business directories and classification (SIC)-zip2.com
weather services
stock quotes (input: a list of ticker symbols)
public English dictionaries, bilingual dictionaries, and thesauri
web search engines (Dog Metafind; Yahoo!; Infoseek)
geographic text servers (zipcode<-->city, address<-->area code <-->airport code)
online translators
airline schedules and flight info (airline-specific sites)
professional directories: doctors, lawyers
Microsoft aerial photography
maps

BRIEF DESCRIPTION OF THE DRAWINGS

- FIG. 1 illustrates a flowchart of the present invention.
FIG. 2 illustrates an enhanced information services interface.
FIG. 3 illustrates an enhanced keyword search interface.
FIG. 4 illustrates an example output in text(tab-delimited) format.
FIG. 5 illustrates an example output in HTML format.
FIG. 6 illustrates an SQL interface.
FIGS. 7a-c collectively illustrate a SQL example.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

While this invention is illustrated and described in a preferred embodiment, the device may be produced in many different configurations, forms and materials. There is depicted in the drawings, and will herein be described in detail, a preferred embodiment of the invention, with the understanding that the present disclosure is to be considered as a exemplification of the principles of the invention and the associated functional specifications of the materials for its construction and is not intended to limit the invention to the embodiment illustrated. Those skilled in the art will envision many other possible variations within the scope of the present invention.

FIG. 1 illustrates a flow diagram of a user **102** connecting to a data supplier **104** to perform a search during a typical search session using known Internet/WWW search engines such as Lycos®, Excite®, Snap®, Infoseek®, Webcrawler®, etc. User **102** represents a PC owner with Internet access and a browser **110** (e.g., Netscape® or Microsoft Explorer®), WebTV□, or other Internet/WWW access methods.

The present invention provides for an intermediate data service enhancement **106** enabling the user to: strip **116** away the formatting of user interfaces such as HTML used by either the data provider **104** or browser **110**, reformat, reorganize, filter and present the data **126** in a user selected format. User **102** connects **108** to intermediate data service enhancement **106** through their browser **110**. Intermediate data service enhancement **106** provides a user with a search enhancement interface (FIGS. 2-7c) to determine a choice of data supplier **104**, return data format, and query. Intermediate data service enhancement **106** returns **109** ajava strip class algorithm **116** to the user's system to enable

realtime local enhancement. The strip algorithm 116 retrieves the requested data 118/ 120 strips the non-data. formatting, reformats, reorganizes, filters and presents the data 126 in a user selected format 126.

FIG. 2 illustrates a typical user interface 200 provided by the intermediate data service enhancement 106. User 102 first selects an Information Service 202 such as LawStreet® (shown), Bellsouth®, Excite®, Webcrawler®, Lycos®, Snap®, Goto®, Scrubtheweb®, MSN®, or a generic search engine—search and actuates this selection by selecting “Go”. Instructions provided include:

- a. With this application you may get enhanced data from various Information Service Provider—206
- b. You can save the results of your query as various formats—208. You can make advanced ad-hoc queries 210
- c. Working example(s)—212 in formats 214 (text (tab-delimited), HTML, Excel®, Microsoft Access®).

Upon actuation of the “Go” button 204, the user receives the next user interface 300 as shown in FIG. 3. Entry box 302 enables the user to enter typical keyword(s) normally used during a search. Drop-down menu 304 enables the user to select a desired output format such as “plain text (tab-delimited)” —shown, HTML, Excel®, Microsoft Access®, or other known data formats. Drop-down menu 306 enables a selection of language, e.g., English (shown), French, German, Italian, etc., for the returned data. Upon selecting keywords, output format and language, the user can start the creation of a java strip algorithm by selecting “Go” or change information service providers at 202. In addition, the user can bookmark 310 the result for future access. Intermediate data service enhancement 106 returns ajava strip class algorithm Oava strip agent which works locally with the user’s browser 110 to return a “data only” result in the format selected by the user selections registered in the steps outlined above. All Java® strip agents 116 created by the intermediate data service enhancement 106 system are retained therein for quick future access by a requesting user.

FIGS. 4 and 5 illustrate two possible outputs of the example 212. In this example, the user selected “BellSouth” 40 as the service provider 202, “Sears” as the keyword 302, “English” as the output language 306 and “plain text (tab-delimited)” as the output shown in FIG. 4 and HTML as shown in FIG. 5.

In addition to simple keyword searches, advanced ad-hoc queries 210 can be made with relative ease. FIG. 6 illustrates the SQL (structured query logic) query interface 600 with BellSouth Yellow Pages chosen as the service provider. The user is given guidance instructions 602–622 describing basic SQL procedures related to BellSouth databases as follows:

BASIC PARAMETERS OF THE DATABASE

The user can issue one or many SQL queries to BellSouth Yellow Pages. 602

The name of the table, which consists Yellow Pages is 55 “AllBell”—604

Each SQL query should have the semicolon(;) marker on the end—606

The results of the last query could be displayed on the screen—608

The user should specify the list of field names for getting these results—610

The number of output lines is limited to 500 lines.—612

EXAMPLES

Please look into examples of SQL queries and feel free to modify them or put your own SQL query:—614

Businesses which are located in some zip-code—616
Count all businesses, which are located in some zip-code
(count example)—618

Select phones like “348%” 620, then show all distinct cities—622

As each hypertext example 616–622 is selected, the interfaces shown in FIGS. 7a–7c reveal the actual SQL query entered into the series of SQL statements entry box 626. FIG. 7a illustrates the SQL entry 701 “Select * from AllBell where zip=33199”; 716 correlating to the text example 616. FIG. 7b illustrates the example 618 which produces the SQL entry 702 “Select count (*) CountResults from AllBell where zip=33174”;—718. FIG. 7c illustrates the examples 620/622 which produce the SQL entries 703 “Select* from AllBell where Phone Like 348%”;—720; Select distinct city from Allbell;—722”.

The remainder of SQL selections include Output columns 624 desired for data output and output format 628. “Go” 628 actuates the SQL process, creating the Java® Strip Class algorithm 116 equating to the SQL and enhanced data output selections which is then returned to the user 102.

The dispatched agent retrieves and reformats the data. Limited amounts of results are delivered to the user at no charge. Larger amounts are charged in correlation to the amount of data retrieved. The user has the option to order a preview and sampling of data before the full set is delivered and the charge is effected. In an alternative embodiment, the user purchases a license for unlimited utilization of the service. Additionally, the service can be provided free to the user and payments made by advertisers or other third parties. Furthermore, in some situations, no charges would be incurred at all.

Format of the default ASCII output follows:

row separator: newline (+ optionally carriage return if

parameter DOS=y is given)

field separator: tab or other user-specified delimiter

structure:

<document titles>

=

<lines of column headers>

==

<data>

==

<informational messages, including sites contacted queries performed, time stamps, statistics>

<error messages>

====

<optional promotional material and paid advertisements>

<links to third party services used>

The above enhancements for data extraction and its described functional elements are implemented in various computing environments. For example, the present invention may be implemented on a conventional IBM PC or equivalent, multi-nodal system (e.g. LAN) or networking system (e.g. Internet, WWW). All programming, Java strip agent algorithms, GUIs, display panels and dialog box templates, and data related thereto are stored in computer memory, static or dynamic, and may be retrieved by the user of the present invention in any of: conventional computer storage, display (i.e. CRT) and/or hardcopy (i.e. printed) formats. The programming of the present invention may be implemented by one of skill in the art of database, Internet related and E-commerce programming.

CONCLUSION

A system and method has been shown in the above embodiments for the effective implementation of a data

extractor. While various preferred embodiments have been shown and described, it will be understood that there is no intent to limit the invention by such disclosure, but rather, it is intended to cover all modifications and alternate constructions falling within the spirit and scope of the invention as defined in the appended claims. For example, the present invention should not be limited by computer operating system, database management system, database management model, directory structure, DBMS-file linking technology, the type of user interface, computer hardware platform, network operating system, programing language of the agents, archiving software, or archiving hardware. In addition, the present invention can be implemented locally on a single PC, connected workstations (i.e. networked-LAN), across extended networks such as the Internet or using portable equipment such as laptop computers or wireless equipment (RF, microwaves, infrared, photonic, etc.)

What is claimed is:

1. An E-commerce system generating revenues by providing a data extraction service for an end user comprising the method:

receiving at said data extraction service a request from said end user comprising a database query to a data supplier; said data extraction service providing a graphical user interface to said end user, said graphical user interface requesting at least data output formatting requirements; said data extraction service generating a java agent based on at least said database query and formatting requirements;

said data extraction service communicating said java agent to said end user;

said end user implementing locally said java agent to extract data from said data supplier, said data further comprising multiple first data sets that are joined into a second data set, said second data set returned to said end user in said format specified, and said data extraction service billing said end user for use of the created java agents.

2. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 1, wherein said data extraction includes stripping formatting information and reformatting in the requested format.

3. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 2, wherein said step of stripping formatting information includes stripping H sML formatting.

4. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 2, wherein said step of stripping formatting information includes tripping graphics from HTML data.

5. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 2, wherein said stripping and reformatting is performed locally at the end user's location.

6. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 5, wherein said stripping and reformatting is performed in realtime.

7. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 1, wherein said agents are retained by said data extraction service for future use.

8. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 1, wherein said user interface further includes a selection from known data suppliers.

9. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 1, wherein said user interface further includes SQL query capability.

5 10. An E-commerce system generating revenues by providing a data extraction service for an end user as per claim 1, wherein said user interface further requests a language formal. to return data to said end user.

11. A Web based system for data extraction comprising: a data requestor connected to the Web; a third party data provider; an intermediate service provider, said intermediate service provider receiving a request for data from said requester for data located at said third party data provider;

said intermediate service provider providing a graphical user interface to said requestor, said graphical user interface requesting at least data formatting requirements;

said intermediate service provider generating a java agent based on at least said request for data and formatting requirements;

said intermediate service provider communicating said java agent to said requestor;

said end user implementing said java agent to extract data from said data supplier, said data further comprising multiple first data sets that are joined into a second data set, and

said second data set returned to said end user in said format specified.

12. A Web based system for data extraction as per claim 1, wherein said requestor is billed for the services provided by said intermediate service provider.

13. A Web based system for data extraction as per claim 11, wherein said data extraction includes stripping formatting information and reformatting in the requested format.

14. A Web based system for data extraction as per claim 13, wherein said step of stripping formatting information includes stripping HTML formatting.

15. A Web based system for data extraction as per claim 13, wherein said step of stripping formatting information includes stripping a graphics from HTML data.

16. A Web based system for data extraction as per claim 13, wherein said stripping and reformatting is performed locally at the end user's location.

17. A Web based system for data extraction as per claim 11, wherein said stripping and reformatting is performed in real-time.

18. A Web based system for data extraction as per claim 11, wherein said agents are retained by said intermediate service provider for future use.

19. A Web based system for data extraction as per claim 11, wherein said graphical user interface further includes a selection from known data suppliers.

20. A Web based system for data extraction as per claim 11, wherein said graphical user interface further includes SQL Capability.

21. A Web based system for data extraction as per claim 11, wherein said graphical user interface further requests a language parameter to return data to said end user.

22. A computer-based method of extracting data in a selected format from third party data providers comprising: receiving from a request for data from a computer user connected to a computer network, contacting a data extraction service provider;

- said data extraction service provider requesting at least a source and output format of a data query, and
 said data extraction service provider requesting to said computer user a stripping agent to reformat said data from said source format to said output format and to enable said computer user to obtain said data from said data source in the requested output format,
 said data from said data source further comprising multiple first data sets and said reformatting of said data further comprising joining said multiple first data sets into a single, second data set.
23. A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said stripping agent strips formatting information including HTML.
24. A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said stripping agent strips formatting information including graphics from HTML data.
25. A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said stripping and formatting is performed locally at the computer user's location.
26. A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said stripping and formatting is performed in real-time.

- ⁵ **27.** A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said stripping agents are retained by said data extraction service provider for future use.
¹⁰ **28.** A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said step of said data extraction service provider requesting at least a source and output format of a data query is provided by a user interface.
¹⁵ **29.** A computer-based method of extracting data in a selected format from third party data providers as per claim **28**, wherein said user interface further includes SQL capability.
²⁰ **30.** A computer-based method of extracting data in a selected format from third party data providers as per claim **28**, wherein said graphical user interface further requests a language parameter to return data to said end user.
²⁵ **31.** A computer-based method of extracting data in a selected format from third party data providers as per claim **28**, wherein said graphical user interface further includes as selection from known data suppliers.
32. A computer-based method of extracting data in a selected format from third party data providers as per claim **22**, wherein said requestor is billed for the services provided by said data extraction service provider.

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