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(54) **METHOD AND APPARATUS FOR OBTAINING AND PRESENTING WEB SUMMARIES TO USERS**

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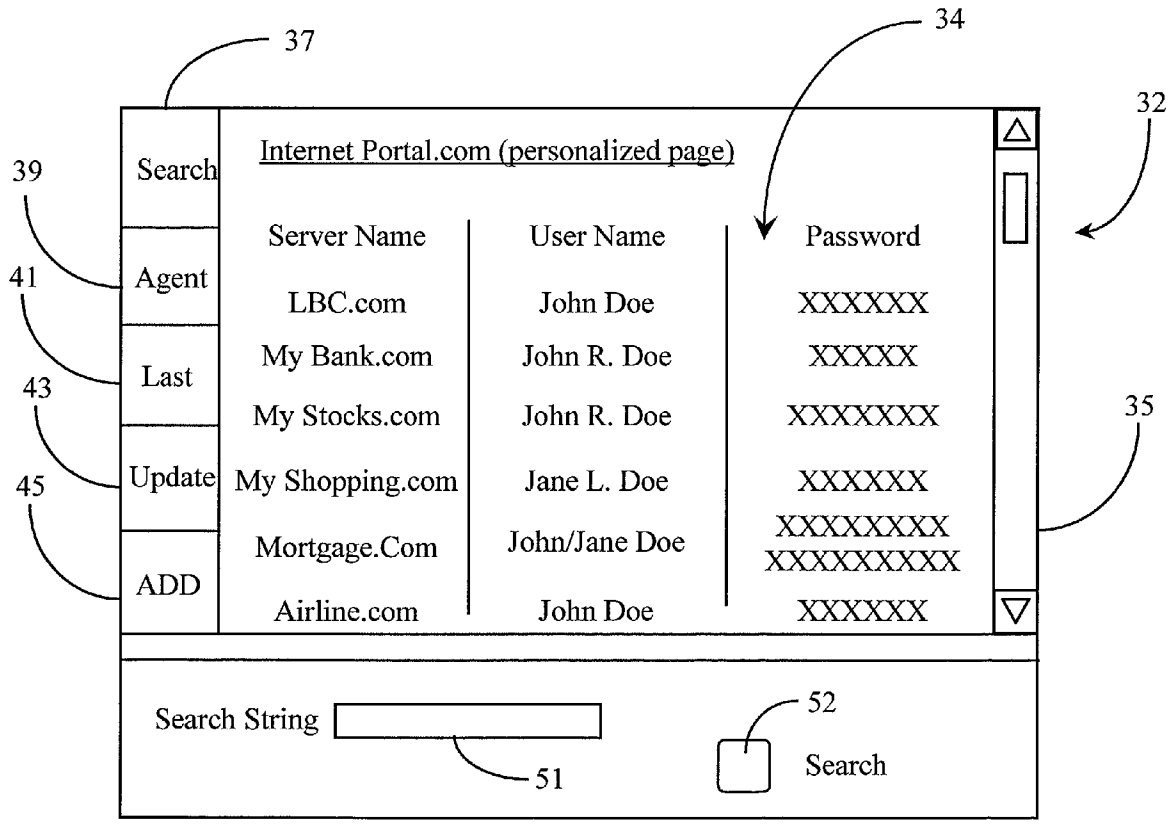
(57) **ABSTRACT**

A portal server includes a software agent configured to do summary searches for subscribers based on Internet destinations provided by the subscribers, to retrieve information from such destinations based on pre-programmed site information, and to download the summary information to the subscriber. The destinations and the nature of the information to be retrieved is pre-programmed. There is further a configuration and intitiation interface for a subscriber to set up and start a summary search. In some cases the summary searches are configured for individual clients as templates stored and retrieved at the Internet-connected server. Also in some cases retrieved information is immediately sent to the subscriber, and in other situations such information is saved at the portal to be retrieved by a subscriber at a later time. In preferred embodiments of the invention autologins are accomplished for a subscriber at Internet destinations by use of pre-stored configuration information.



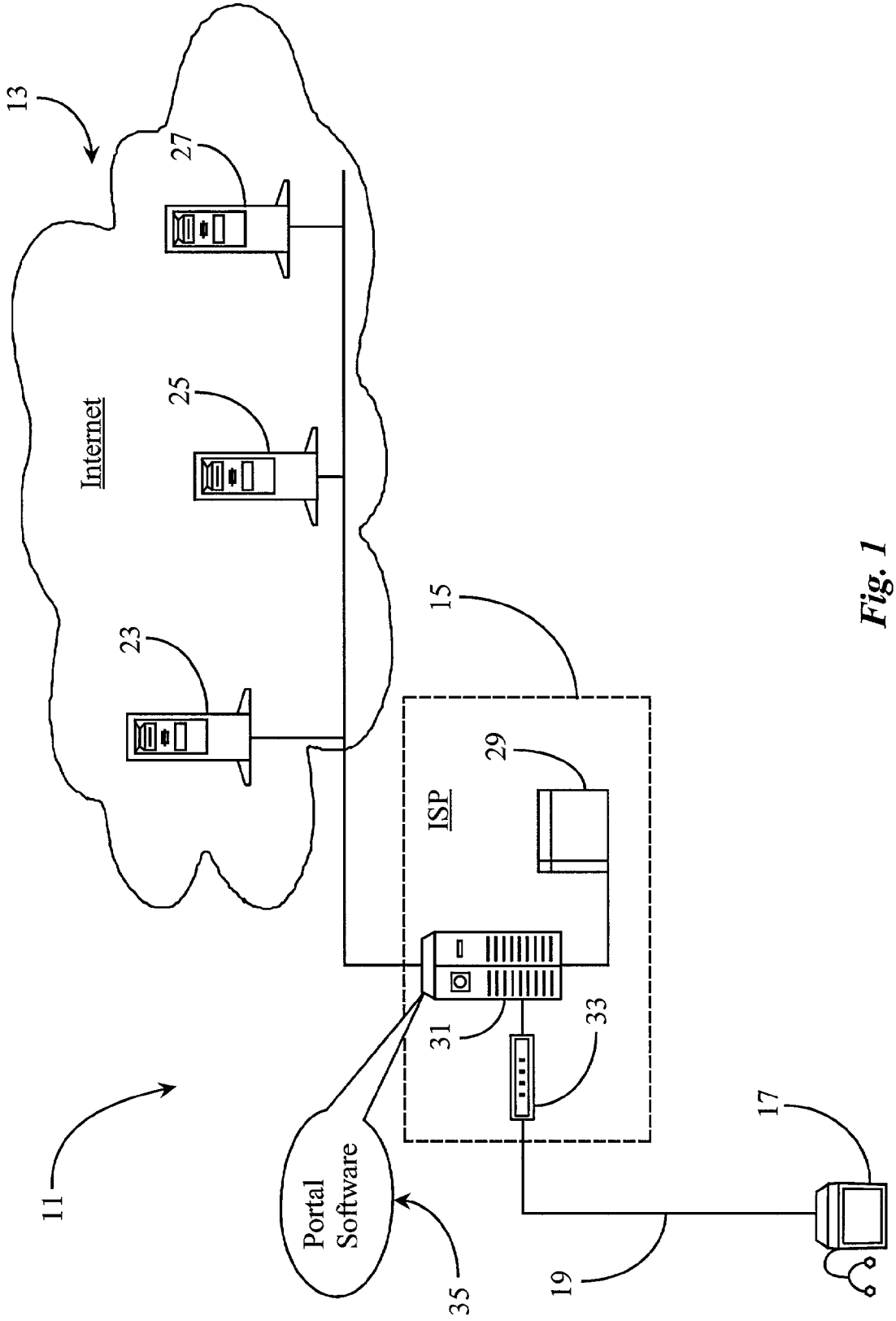


Fig. 1

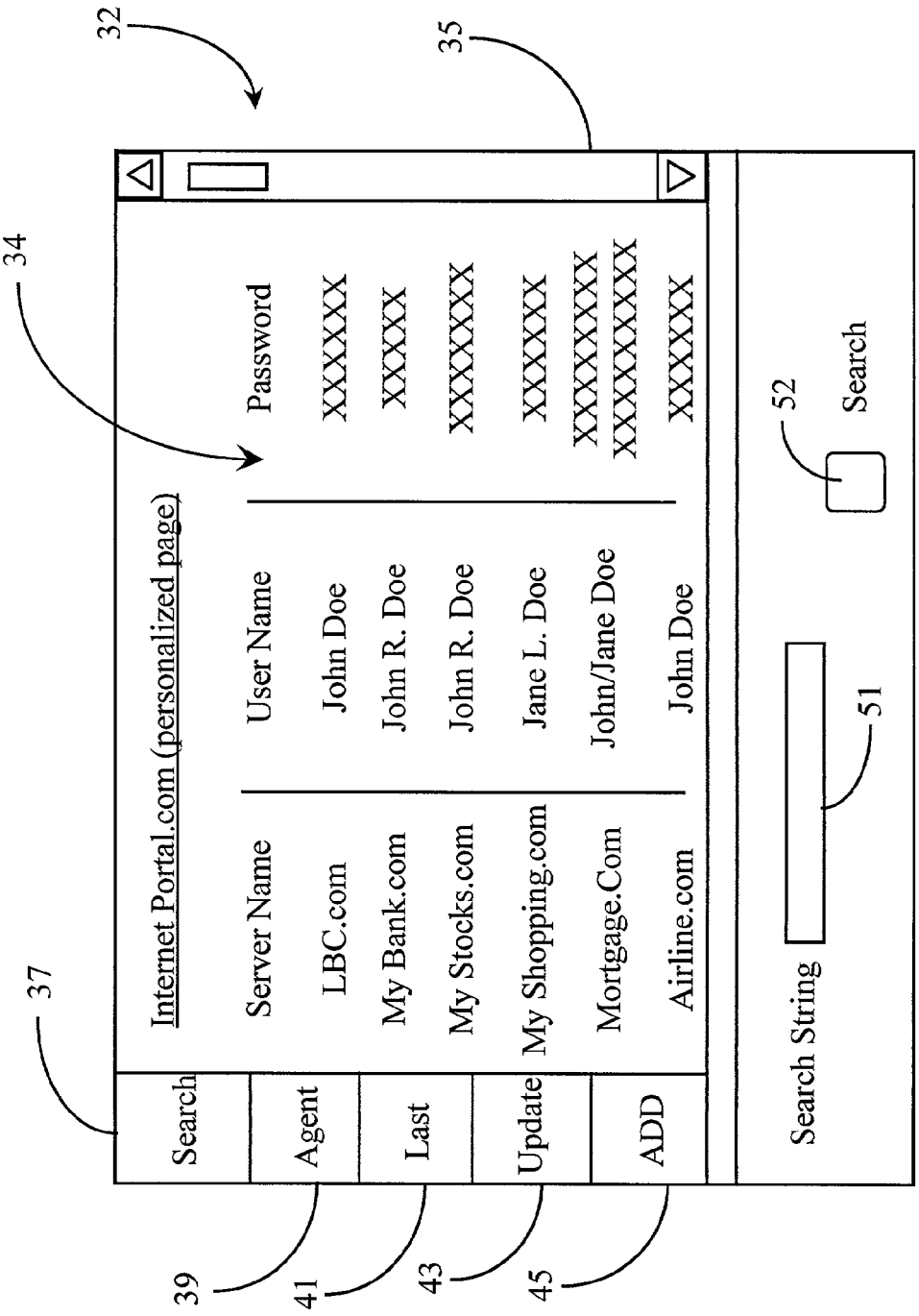

32
35
34
37
Internet Portal.com (personalized page)
Server Name
User Name
Password
LBC.com
John Doe
XXXXXX
My Bank.com
John R. Doe
XXXXX
My Stocks.com
John R. Doe
XXXXXXX
My Shopping.com
Jane L. Doe
XXXXXX
Mortgage.Com
John/Jane Doe
XXXXXXXX
Airline.com
John Doe
XXXXXXXXX
XXXXXX
Search
Agent
Last
Update
ADD
39
41
43
45
Search String
51
52
Search

Fig. 2

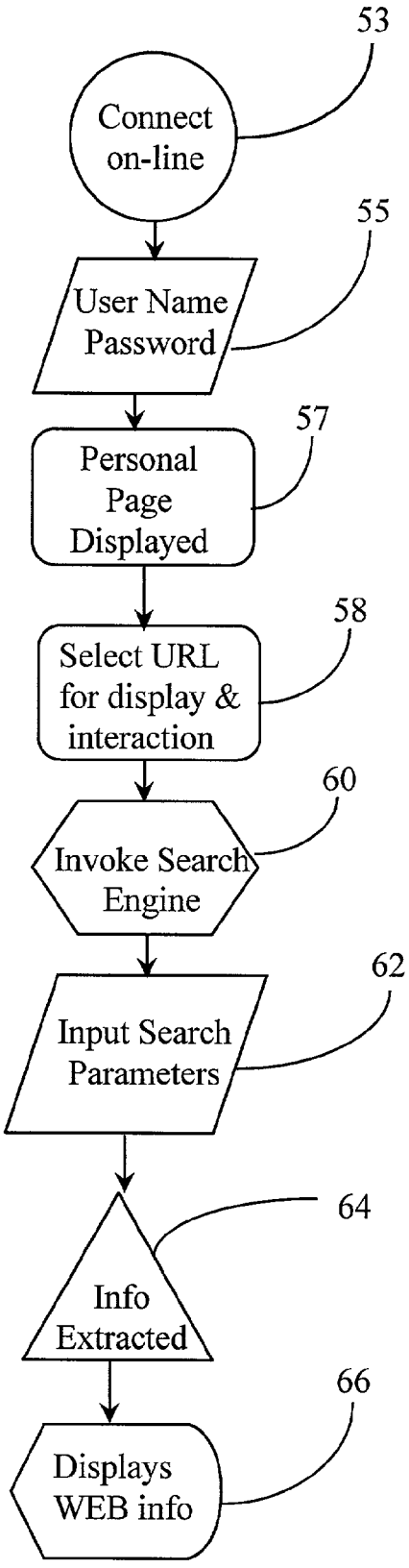

53
Connect on-line
55
User Name Password
57
Personal Page Displayed
58
Select URL for display & interaction
60
Invoke Search Engine
62
Input Search Parameters
64
Info Extracted
66
Displays WEB info

Fig. 3

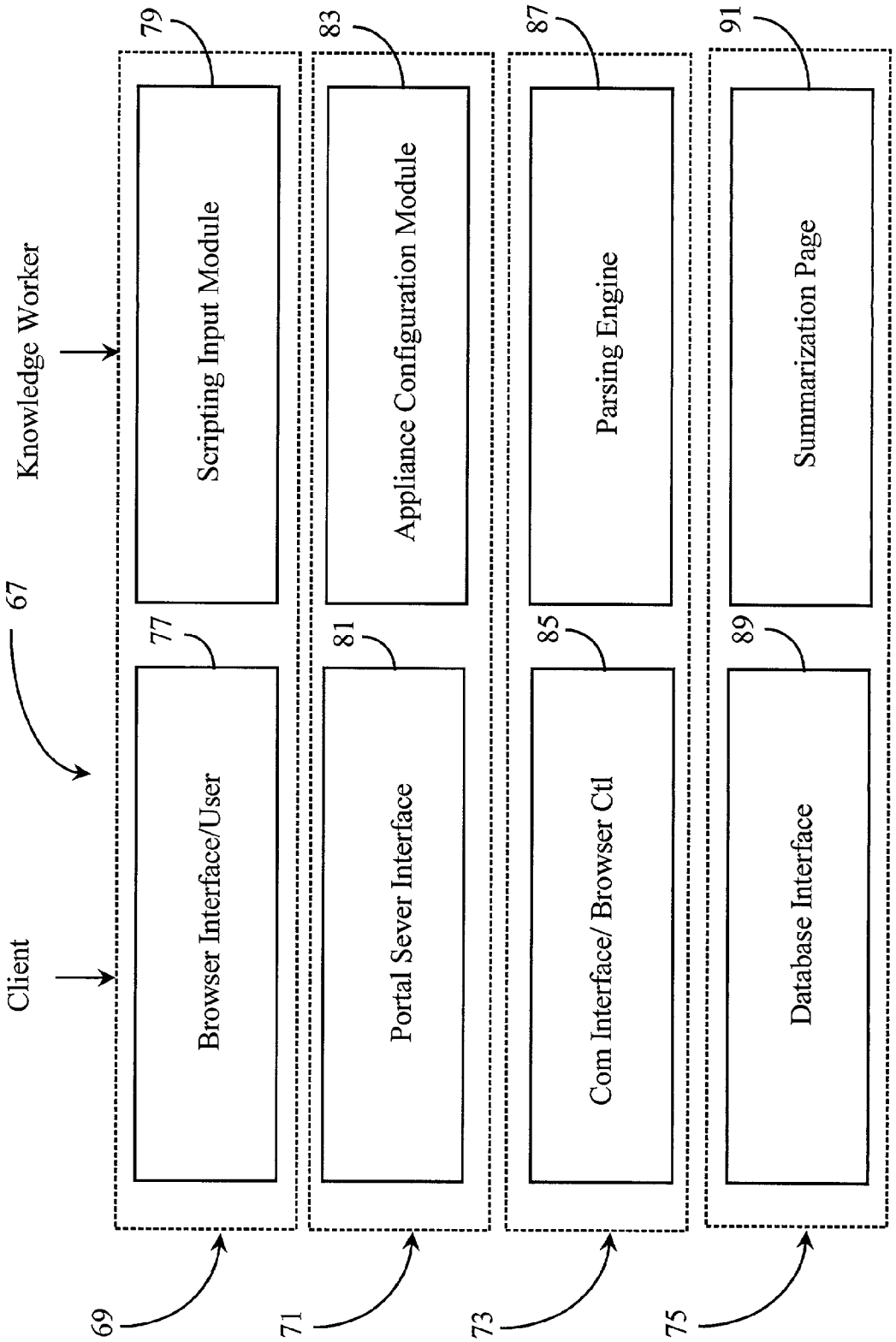

Client
Knowledge Worker
67
Browser Interface/User
77
Scripting Input Module
79
Portal Sever Interface
81
Appliance Configuration Module
83
Com Interface/ Browser Ctl
85
Parsing Engine
87
Database Interface
89
Summarization Page
91
69
71
73
75

Fig. 4

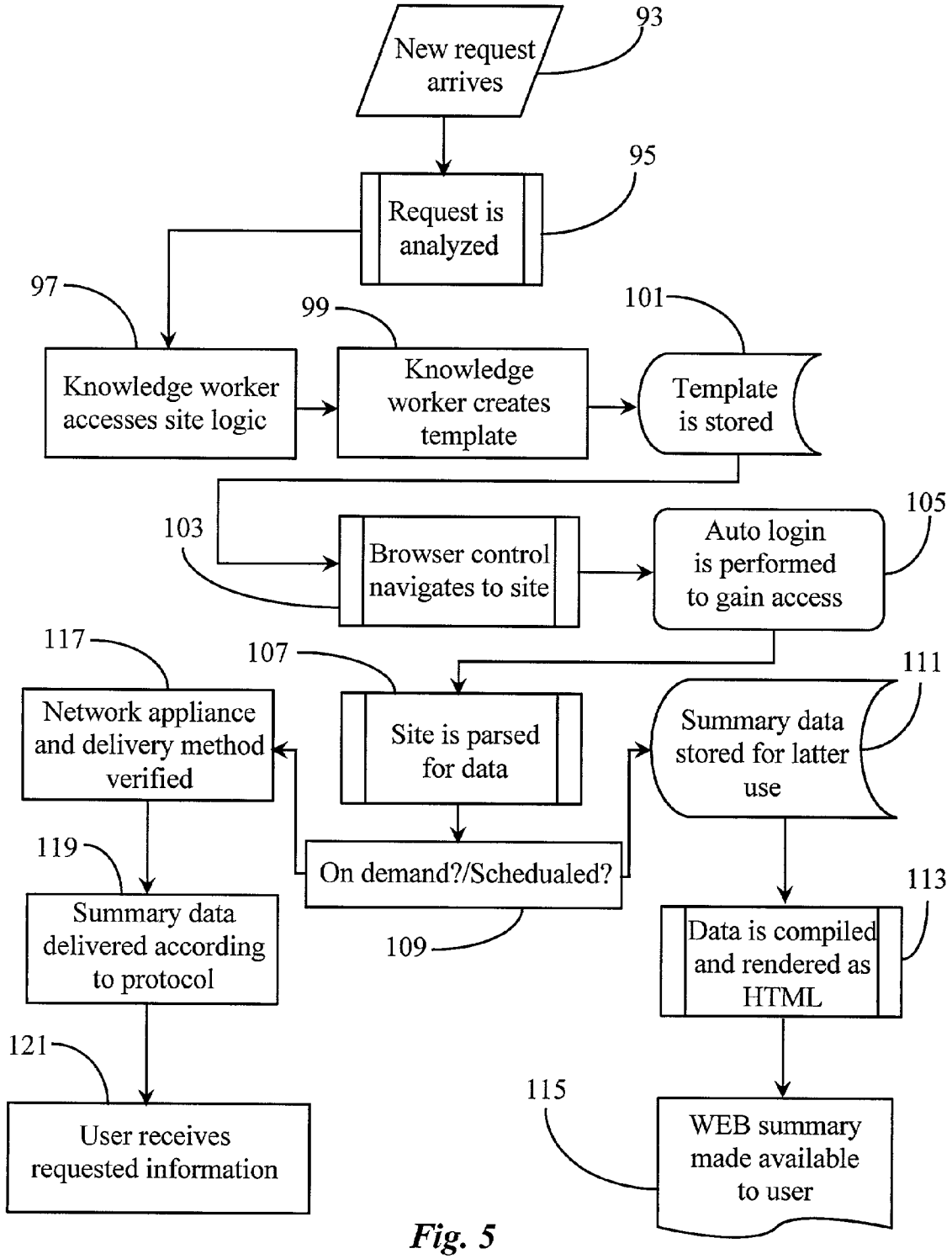

New request arrives
93
Request is analyzed
95
97
Knowledge worker accesses site logic
99
Knowledge worker creates template
101
Template is stored
103
Browser control navigates to site
Auto login is performed to gain access
105
117
Network appliance and delivery method verified
107
Site is parsed for data
111
Summary data stored for latter use
119
Summary data delivered according to protocol
On demand?/Schedualed?
109
113
Data is compiled and rendered as HTML
121
User receives requested information
115
WEB summary made available to user

Fig. 5

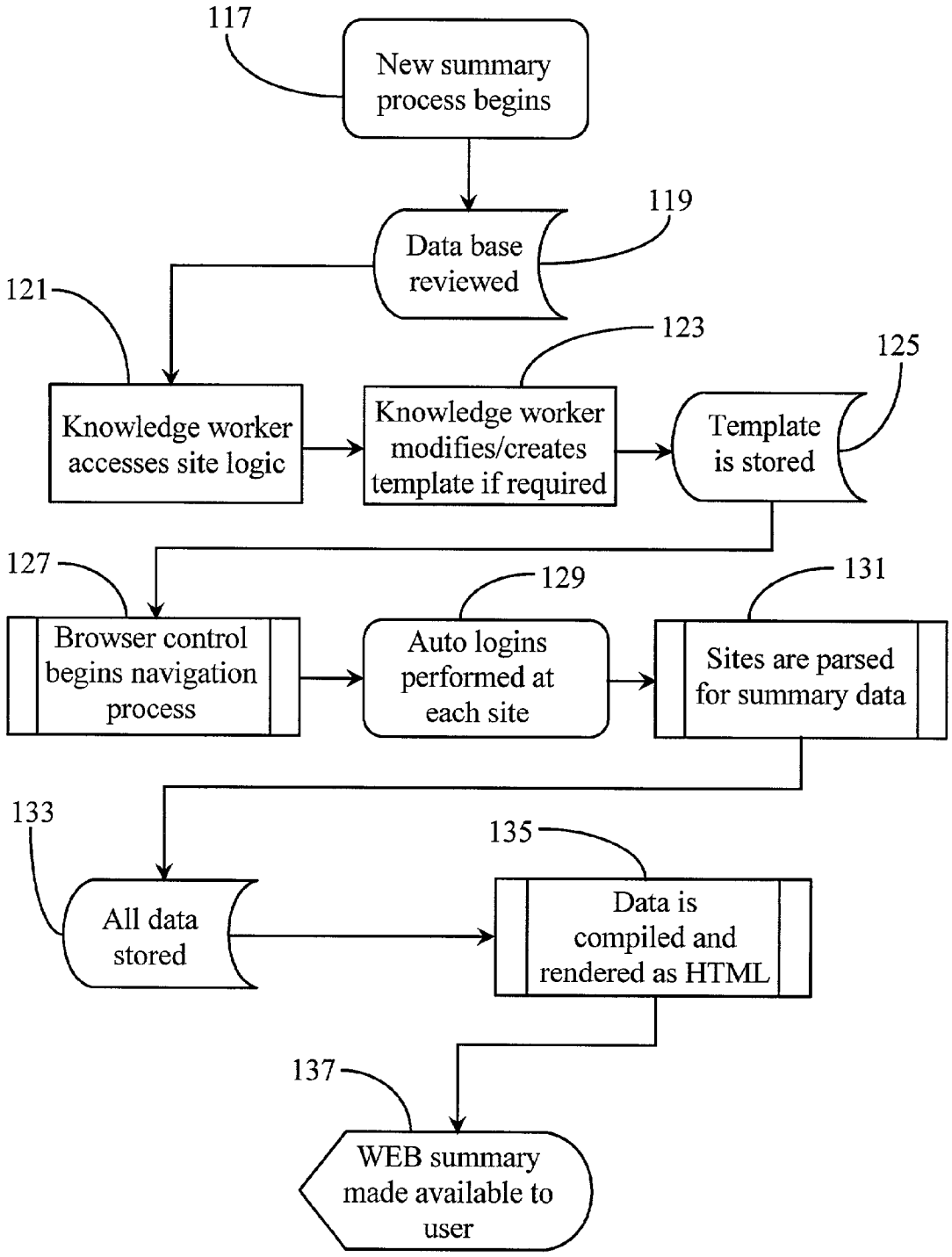

117
New summary process begins
119
Data base reviewed
121
Knowledge worker accesses site logic
123
Knowledge worker modifies/creates template if required
125
Template is stored
127
Browser control begins navigation process
129
Auto logins performed at each site
131
Sites are parsed for summary data
133
All data stored
135
Data is compiled and rendered as HTML
137
WEB summary made available to user

Fig. 6

METHOD AND APPARATUS FOR OBTAINING AND PRESENTING WEB SUMMARIES TO USERS

CROSS-REFERENCE TO RELATED DOCUMENTS

[0001] The present invention is a Divisional application from patent application Ser. No. 09/323,598 entitled "Method and Apparatus for Obtaining and Presenting WEB Summaries to Users" filed on Jun. 1, 1999 which is a continuation in part (CIP) to patent application Ser. No. 09/208,740 filed on Dec. 8, 1998, disclosure of which is incorporated herein in its entirety herein by reference.

FIELD OF THE INVENTION

[0002] The present invention is in the field of Internet navigation including various communication means and connection technologies and pertains more particularly to methods and apparatus, including software, for gathering summary information from users or enterprise-selected WEB sites and presenting the information as HTML to the user using either a push or pull technology.

BACKGROUND OF THE INVENTION

[0003] The information network known as the World Wide Web (WWW), which is a subset of the well-known Internet, is arguably the most complete source of publicly accessible information available. Anyone with a suitable Internet appliance such as a personal computer with a standard Internet connection may access (go on-line) and navigate to information pages (termed web pages) stored on Internet-connected servers for the purpose of garnering information and initiating transactions with hosts of such servers and pages.

[0004] Many companies offer various subscription services accessible via the Internet. For example, many people now do their banking, stock trading, shopping, and so forth from the comfort of their own homes via Internet access. Typically, a user, through subscription, has access to personalized and secure WEB pages for such functions. By typing in a user name and a password or other personal identification code, a user may obtain information, initiate transactions, buy stock, and accomplish a myriad of other tasks.

[0005] One problem that is encountered by an individual who has several or many such subscriptions to Internet-brokered services is that there are invariably many passwords and/or log-in codes to be used. Often a same password or code cannot be used for every service, as the password or code may already be taken by another user. A user may not wish to supply a code unique to the user such as perhaps a social security number because of security issues, including quality of security, that may vary from service to service. Additionally, many users at their own volition may choose different passwords for different sites so as to have increased security, which in fact also increases the number of passwords a user may have.

[0006] Another issue that can plague a user who has many passworded subscriptions is the fact that they must book-mark many WEB pages in a computer cache so that they may quickly find and access the various services. For example, in order to reserve and pay for airline travel, a user must connect to the Internet, go to his/her book-marks file and select an airline page. The user then has to enter a user name and password, and follow on-screen instructions once the page is delivered. If the user wishes to purchase tickets from the WEB site, and wishes to transfer finds from an on-line banking service, the user must also look for and select the personal bank or account page to initiate a funds transfer for the tickets. Different user names and passwords may be required to access these other pages, and things get quite complicated.

[0007] Although this preceding example is merely exemplary, it is generally known that much work related to finding WEB pages, logging in with passwords, and the like is required to successfully do business on the WEB.

[0008] A service known to the inventor and described in the related case listed under the cross-reference to related documents section provides a WEB service that allows a user to store all of his password protected pages in one location such that browsing and garnering information from them is much simplified. A feature of the above service allows a user to program certain tasks into the system such that requested tasks are executed by an agent (software) based on user instruction. The service stores user password and log-in information and uses the information to log-in to the user's sites, thus enabling the user to navigate without having to manually input log-in or password codes to gain access to the links.

[0009] The above-described service uses a server to present a user-personalized application that may be displayed as an interactive home page that contains all of his listed sites (hyperlinks) for easy navigation. The application lists the user's URL's in the form of hyperlinks such that a user may click on a hyperlink and navigate to the page wherein login, if required, is automatic, and transparent to the user.

[0010] The application described above also includes a software agent that may be programmed to perform scheduled tasks for the user including returning specific summaries and updates about user-account pages. A search function is provided and adapted to cooperate with the software agent to search user-entered URL's for specific content if such pages are cached somewhere in their presentable form such as at the portal server, or on the client's machine.

[0011] In addition to the features described above, it is desirable that the software agent in conjunction with the search function be enabled to navigate to any URL or group of URL's, provided as input by a user or otherwise deemed appropriate by the service provider, for the purpose of providing summary information regarding updated content for each URL, which may be presented as an HTML information-page to the user.

[0012] What is clearly needed is a method and apparatus that can independently navigate to user-supplied or known URL's, login with the appropriate password information at each URL (if required), and return requested summary information to a user in the form of a human and machine-readable HTML document. Such a system would provide an effective summarization service wherein important information may be presented to a user without requiring that the user invoke hyperlinks at his personal portal home page.

SUMMARY OF THE INVENTION

[0013] In a preferred embodiment of the present invention an Internet Portal is provided, comprising an Internet-con-

nected server; and a portal software executing on the server, including a summary software agent. The Portal maintains a list of Internet destinations specific for a subscriber, and the summary software agent accesses the Internet destinations, retrieves information according to pre-programmed criteria, and summarizes the retrieved information for delivery to the subscriber.

[0014] In one embodiment the Portal further comprises a configuration and intitiation interface for a subscriber to set up and start a summary search, and summary searches may be configured for individual clients as templates stored and retrieved at the Internet-connected server. In some cases summary information is stored to be later downloaded at request of the subscriber, and in others the information is immediately pushed to the client. Also in some embodiments autologins are performed for the subscriber at each Internet site according to a data stored for the subscriber at the Portal.

[0015] Methods for practicing the invention in several embodiments are provided as well in the descriptions that follow, and for the first time a system is enabled allowing subscribers to quickly access multiple WEB sites without lengthy log-in procedures, and to also summarize and download the data resulting from a summary search.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0016] **FIG. 1** is an overview of an Internet portal system and network according to an embodiment of the present invention.

[0017] **FIG. 2** is an exemplary plan view of a personalized Portal home page application as it may be seen on a display monitor according to an embodiment of the present invention.

[0018] **FIG. 3** is a flow diagram illustrating user interaction with the Internet portal of **FIG. 1**.

[0019] **FIG. 4** is a block diagram illustrating a summarization software agent and capabilities thereof according to an embodiment of the present invention.

[0020] **FIG. 5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of **FIG. 4** operating in a user-defined mode.

[0021] **FIG. 6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of **FIG. 4** in a User-independent smart mode with minimum user input.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] According to a preferred embodiment of the present invention, a unique Internet portal is provided and adapted to provide unique services to users who have obtained access via an Internet or other network connection from an Internet-capable appliance. Such an interface provides users with a method for storing many personal WEB pages and further provides search function and certain task-performing functions. The methods and apparatus of the present invention are taught in enabling detail below.

[0023] **FIG. 1** is an overview of an Internet portal system **11** and Internet network **13** according to an embodiment of the present invention. Portal system **11**, in this embodiment, operates as an ISP in addition to a unique network portal, but may, in other embodiments be implemented as a stand-alone Internet server. In yet other embodiments the service and apparatus described herein may also be provided by such as a search and listing service (AltaVista™, Yahoo™) or by any other enterprise hosting a WEB-connected server.

[0024] Internet **13** is representative of a preferred use of the present invention, but should not be considered limiting, as the invention could apply in other networks and combinations of networks.

[0025] ISP **15** in this embodiment comprises a server **31**, a modem bank **33**, represented here by a single modem, and a mass storage repository **29** for storing digital data. The modem bank is a convenience, as connection to the server could be by another type of network link. ISP **15**, as is typical in the art, provides Internet access services for individual subscribers. In addition to well-known Internet access services, ISP **15** also provides a unique subscription service as an Internet portal for the purpose of storing many WEB pages or destinations along with any passwords and or personal codes associated with those pages, in a manner described in more detail below. This unique portal service is provided by execution of Portal Software **35**, which is termed by the inventors the Password-All suite. The software of the invention is referred to herein both as the Portal Software, and as the Password-all software suite. Also, in much of the description below, the apparatus of the invention is referred to by the Password-All terminology, such as the Password-All Server or Password-All Portal.

[0026] ISP **15** is connected to Internet **13** as shown. Other equipment known in the art to be present and connected to a network such as Internet **13**, for example, IP data routers, data switches, gateway routers, and the like, are not illustrated here but may be assumed to be present. Access to ISP **15** is through a connection-oriented telephone system as is known in the art, or through any other Internet/WEB access connection, such as through a cable modem, special network connection (e.g. TI), ISDN, and so forth. Such connection is illustrated via access line **19** from Internet appliance **17** through modem bank **33**.

[0027] In a preferred embodiment a user has access to Internet Password-All Portal services by a user name and password as is well known in the art, which provides an individualized WEB page to the subscriber. In another embodiment wherein a user has other individuals that use his or her Internet account, then an additional password or code unique to the user may be required before access to portal **31** is granted. Such personalized Portal WEB pages may be stored in repository **29**, which may be any convenient form of mass storage.

[0028] Three Internet servers **23**, **25**, and **27**, are shown in Internet **13**, and represent Internet servers hosted by various enterprises and subscribed to by a user operating appliance **17**. For example, server **23** may be a bank server wherein interactive on-line banking and account managing may be performed. Server **25** may be an investment server wherein investment accounts may be created and managed. Server **27** may be an airline or travel server wherein flights may be booked, tickets may be purchased, and so on. In this example, all three servers are secure servers requiring user ID and password for access, but the invention is not necessarily limited to just secure services.

[0029] In a preferred embodiment of the present invention, a subscribing user operating an Internet-capable appliance, such as appliance **17**, connects to Password-All Portal system **11** hosted by ISP **15**, and thereby gains access to a personalized, interactive WEB page, which in turn provides access to any one of a number of servers on Internet **13** such as servers **23**, **25**, and **27**, without being required to enter additional passwords or codes. In a preferred embodiment the software that enables this service is termed Password-All by the inventors. Password-All may be considered to be a software suite executing on the unique server, and in some instances also on the user's station (client). Additional interactivity provided by portal software **35** allows a connected user to search his listed pages for information associated with keywords, text strings, or the like, and allows a user to program user-defined tasks involving access and interaction with one or more Internet-connected servers such as servers **23**, **25**, and **27** according to a pre-defined time schedule. These functions are taught in enabling detail below.

[0030] **FIG. 2** is an illustration of a personalized portal page as may be seen on a display monitor according to an embodiment of the present invention, provided by Password-All Portal software **35** executing on server **31**, in response to secure access by a subscriber. Page **32** presents an interactive listing **34** of user-subscribed or member WEB pages, identified in this example by URL, but which may also be identified by any convenient pseudonym, preferably descriptive, along with user name and typically encrypted password information for each page. Listed in a first column under destination, are exemplary destinations LBC.com, My Bank.com, My Stocks.com, My shopping.com, Mortgage-.com, and Airline.com. These are but a few of many exemplary destinations that may be present and listed as such on page **33**. In order to view additional listings listed but not immediately viewable from within application **33**, a scroll bar **35** is provided and adapted to allow a user to scroll up or down the list to enable viewing as is known in the art.

[0031] Items listed in list **34** in this example may be considered destinations on such as servers **23**, **25**, and **27** of **FIG. 1**. Typically the URL associated with an item on this list will not take a user to a server, per se, but to a page stored on a server. User names and password data associated with each item in list **34** are illustrated in respective columns labeled user name, and password, to the right of the column labeled destination. Each listing, or at least a portion of each listing, is a hyperlink invoking, when selected, the URL to that destination. In some instances a particular service may have more than one associated URL. For example, My Bank.com may have more than one URL associated for such as different accounts or businesses associated also with a single subscriber. In this case there may be a sublisting for different destinations associated with a single higher-level listing. This expedient is not shown, but given this teaching the mechanism will be apparent to those with skill in the art.

[0032] In some embodiments one page **33** may be shared by more than one user, such as a husband and wife sharing a common account and subscription. An instance of this is illustrated herein with respect to the server labeled Mortgage.com wherein both a John and a Jane Doe are listed together under the column labeled user name. In another embodiment, a network of individuals, perhaps business owners, authorized co-workers, investment parties, or the like may share one application. In this way, system **11** may be adapted for private individuals as well as business uses.

[0033] After gaining access to application **33** which is served via Internet portal server **31** of **FIG. 1**, a user may scroll, highlight, and select any URL in his or her list **34** for the purpose of navigation to that particular destination for further interaction. Application **33** already has each password and user name listed for each URL. It is not necessary, however, that the password and user name be displayed for a user or users. These may well be stored transparently in a user's profile, and invoked as needed as a user makes selections. Therefore, a user is spared the need of entering passwords and user names for any destinations enabled by list **34**. Of course, each list **34** is built, configured and maintained by a subscribing user or users, and an editing facility is also provided wherein a user may edit and update listings, including changing URL's adding and deleting listings, and the like.

[0034] In another aspect of the invention new listings for a user's profile, such as a new passthrough to a bank or other enterprise page, may be added semi-automatically as follows: Typically, when a user opens a new account with an enterprise through interaction with a WEB page hosted by the enterprise, the user is required to provide certain information, which will typically include such as the user's ID, address, e-mail account, and so forth, and typically a new user name and password to access the account. In this process the user will be interacting with the enterprise's page from his/her browser. A Password-All plug-in is provided wherein, after entering the required information for the new enterprise, the user may activate a pre-determined signal (right click, key stroke, etc.), and the Password-All suite will then enter a new passthrough in the user's Password. All profile at the Password-All Portal server.

[0035] In a related method for new entries, the enterprise hosting the Password-All Portal may, by agreement with other enterprises, provide log-in and sign-up services at the Password-All Portal, with most action transparent to the user. For example, there may be, at the Password-All Portal, a selectable browser list of cooperating enterprises, such as banks, security services, and the like, and a user having a Password-All Portal subscription and profile may select among such cooperating enterprises and open new accounts, which will simultaneously and automatically be added to the Password-All Portal page for the user and to the server hosted by the cooperating enterprise. There may be some interactivity required for different accounts, but in the main, much information from the user's profile may be used directly without being re-entered.

[0036] The inventors have anticipated that many potential users may well be suspicious of providing passwords and user names to an enterprise hosting a Password-All Portal Server executing a service like Password-All according to embodiments of the present invention. To accommodate this problem, in preferred embodiments, it is not necessary that the user provide the cleartext password to Password. All. Instead, an encrypted version of each password is provided. When a user links to his passthrough page in Password-All at the Password-All Portal server, when he/she invokes a hyperlink, the encrypted password is returned to the user's system, which then, by virtue of the kept encryption key or master password, invokes the true and necessary password

for connection to the selected destination. It is thus not necessary that cleartext passwords be stored at the Password-All Portal server, where they may be vulnerable to attack from outside sources, or to perceived misuse in other ways as well.

[0037] In a related safety measure, in a preferred embodiment of the invention, a user's complete profile is never stored on a single server, but is distributed over two or more, preferably more, servers, so any problem with any one server will minimize the overall effect for any particular user.

[0038] Password-All, as described above, allows a user to access a complete list of the user's usual cyberspace destinations, complete with necessary log-on data, stored in an encrypted fashion, so a user may simply select a destination (a hyperlink) in the Password-All list, and the user's browser then invokes the URL for the selected destination. In an added feature, Password-All may display banner ads and other types of advertisement during the navigation time between a hyperlink being invoked and the time the destination WEB page is displayed.

[0039] In yet another embodiment of the invention, a user/subscriber need not access the Password-All page to enjoy the advantages of the unique features provided. In this variation, a Plug-In is provided for the subscriber's WEB browser. If the subscriber navigates by use of the local browser to a WEB page requiring a secure log-in, such as his/her on-line banking destination, when the subscriber is presented with an input window for ID and Password, the plug in may be activated by a predetermined user input, such as a hot key or right click of the mouse device. The plug-in then accesses, transparently, the Password-All page (which may be cached at the client), and automatically accesses and provides the needed data for log-on.

[0040] In yet another aspect of the invention a search option **37** allows a user to search list **34** for specific URL's based on typed input such as keywords or the like. In some cases, the number of URL's stored in list **34** can be extensive making a search function such as function **37** an attractive option. A criteria dialog box **51** illustrated as logically separated from and below list **34** is provided and adapted to accept input for search option **37** as is known in the art. In one embodiment, search option **37** may bring up a second window wherein a dialog box such as box **51** could be located.

[0041] In another aspect of the invention the search function may also be configured in a window invoked from window **33**, and caused to search all or selected ones of listed destinations, and to return results in a manner that may be, at least to some extent, configured by a user. For example, a dialog box may be presented wherein a user may enter a search criteria, and select among all of the listed destinations. The search will then be access each of the selected destinations in turn, and the result may be presented to the user as each instance of the criteria is found, or results may be listed in a manner to be accessed after the search.

[0042] Preferably the search function is a part of the Password-All Portal software, available for all users, and may be accessed by hyperlinks in user's personal pages. In some embodiments users may create highly individualized search functions that may be stored in a manner to be usable only by the user who creates such a function.

[0043] In many aspects of the present invention, knowledge of specific WEB pages, and certain types of WEB pages, is highly desirable. In many embodiments characteristics of destination WEB pages are researched by persons (facilitators) maintaining and enhancing Password-All Portal software **35**, and many characteristics may be provided in configuration modules for users to accomplish specific tasks. In most cases these characteristics are invoked and incorporated transparent to the user.

[0044] In yet another aspect of the present invention, the Password-All suite is structured to provide periodic reports to a user, in a manner to be structured and timed by the user, through the user's profile. For example, reports of changes in account balances in bank accounts, stock purchases, stock values, total airline travel purchases, frequent-flier miles, and the like may be summarized and provided to the users in many different ways. Because the Password-All Portal server with the Password-All software site handles a broad variety of transactional traffic for a user, there is an opportunity to summarize and collect and process statistics in many useful ways. In preferred embodiments of the invention such reports may be furnished and implemented in a number of different ways, including being displayed on the user's secure personal WEB page on the Password-All Portal.

[0045] In addition to the ability of performing tasks as described above, task results including reports, and hard documents such as airline tickets may be sent over the Internet or other data packet-networks to user-defined destinations such as fax machines, connected computer nodes, e-mail servers, and other Internet-connected appliances. All tasks may be set-up and caused to run according to user-defined schedules while the user is doing something else or is otherwise not engaged with the scheduled task.

[0046] In another embodiment of the present invention, recognizing the increasing use of the Internet for fiscal transactions, such as purchasing goods and services, a facility is provided in a user's profile to automatically track transactions made at various destinations, and to authorize payment either on a transaction-by-transaction basis, or after a session, using access to the user's bank accounts, all of which may be pre-programmed and authorized by the user.

[0047] Other functions or options illustrated as part of application **35** include a last URL option **41**, an update function **43**, and an add function **45**. Function **41** allows a user to immediately navigate to a last visited URL. Update function **43** provides a means of updating URL's for content and new address. An add function enables a user to add additional URL's to list **34**. Similarly, function **45** may also provide a means to delete entries. Other ways to add accounts are described above. It should be noted that the services provided by the unique Password-All Portal in embodiments of the present invention, and by the Password-All software suite are not limited to destinations requiring passwords and user names. The Password-All Portal and software in many embodiments may also be used to manage all of a user's bookmarks, including editing of bookmarks and the like. In this aspect, bookmarks will typically be presented in indexed, grouped, and hierarchical ways.

[0048] There are editing features provided with Password-All for adding, acquiring, deleting, and otherwise managing bookmarks. As a convenience, in many embodiments of the

invention, bookmarks may be downloaded from a user's Password-All site, and loaded onto the same user's local browser. In this manner, additions and improvements in the bookmark set for a user may be used without the necessity of going to Password-All. Further, bookmarks may be uploaded from a user's local PC to his/her home page on the Password-All site by use of one or more Password-All plug-ins.

[0049] It will be apparent to the skilled artisan, given the teaching herein, that the functionality provided in various embodiments of the invention is especially applicable to Internet-capable appliances that may be limited in input capability. For example, a set-top box in a WEB TV application may well be without a keyboard for entering IDs and Passwords and the like. In practice of the present invention keyboard entry is minimized or eliminated. The same comments apply to many other sorts of Internet appliances.

[0050] In preferred embodiments of the invention, once a subscriber-user is in Password-All, only an ability to point-and-click is needed for all navigation. To get into the Password-All site, using a limited apparatus, such as an appliance without a keyboard or keypad, a Smartcard or embedded password may be used, or some other type of authentication.

[0051] It will be apparent to one with skill in the art that an interactive application such as application **33** may be provided in a form other than a WEB page without departing from the spirit and scope of the present invention. For example, an application such as application **33** may be provided as a downloadable module or program that may be set-up and configured off-line and made operational when on-line.

[0052] **FIG. 3** is a flow diagram illustrating user interaction with the Internet Password-All Portal of **FIG. 1**. The following process steps illustrated, according to an embodiment of the present invention, are intended to illustrate exemplary user-steps and automated software processes that may be initiated and invoked during interaction with an Internet portal of the present invention such as portal **31** of **FIG. 1**. In step **53** a user connects to the Internet or another previously described switched-packet network via a compatible appliance such as Internet appliance **17** of **FIG. 1**.

[0053] At step **55**, a user enters a user-name and password, which, in one embodiment, may simply be his ISP user name and password. In another embodiment, a second password or code would be required to access an Internet portal such as portal server **31** of **FIG. 1** after logging onto the Internet through the ISP. In some cases, having a special arrangement with the ISP, there may be one password for both Internet access through the ISP and for Password-All. At step **57** a personal WEB page such as page **32** of **FIG. 2** is displayed via Internet portal server **31**. At minimum, the personalized WEB page will contain all user configured URL's, and may also be enhanced by a search function, among other possibilities.

[0054] In step **58** a user will, minimally, select a URL from his or her bookmarked destinations, and as is known by hyperlink technology, the transparent URL will be invoked, and the user will navigate to that destination for the purpose of normal user interaction. In this action, the Password-All Portal software transparently logs the user on to the destination page, if such log-on is needed.

[0055] At step **60** the user invokes a search engine by clicking on an option such as described option **37** of **FIG. 2**. At step **62**, the user inputs search parameters into a provided text field such as text field **51** of **FIG. 2**. After inputting such parameters, the user starts the search by a button such as button **52**. The search engine extracts information in step **64**. Such information may be, in one option, of the form of URL's fitting the description provided by search parameters. A searched list of URL's may be presented in a separate generated page in step **66** after which a user may select which URL to navigate to. In an optional search function, the user may provide search criteria, and search any or all of the possible destinations for the criteria.

[0056] In another embodiment wherein WEB pages are cached in their presentable form, information extracted in step **64** may include any information contained in any of the stored pages such as text, pictures, interactive content, or the like. In this case, one displayed result page may provide generated links to search results that include the URL associated with the results. Perhaps by clicking on a text or graphic result, the associated WEB page will be displayed for the user with the result highlighted and in view with regards to the display window.

Enhanced Agent for WEB Summaries

[0057] In another aspect of the present invention, a software agent, termed a gatherer by the inventors, is adapted to gather and return summary information about URL's according to user request or enterprise discretion. This is accomplished in embodiments of the present invention by a unique scripting and language parsing method provided by the inventor wherein human knowledge workers associated with the service provide written scripts to such a gatherer according to subscriber or enterprise directives. Such a software gatherer, and capabilities thereof, is described in enabling detail below.

[0058] Referring now to **FIG. 1**, there is illustrated an exemplary architecture representing a portal service-network which, in this case is hosted by ISP **15**. Portal software **35** in this embodiment executes on portal server **31** set-up at the ISP location. Mass repository **29** is used for storing subscriber information such as passwords, login names, and the like. Internet servers **23**, **25**, and **27** represent servers that are adapted to serve WEB pages of enterprises patronized by a subscriber to the portal service such as one operating Internet appliance **17**.

[0059] The main purpose of portal software **35** as described above with reference to **FIG. 2**, is to provide an interactive application that lists all of the subscriber's WEB sites in the form of hyperlinks. When a user invokes a hyperlink from his personal list, software **35** uses the subscriber's personal information to provide an automatic and transparent login function for the subscriber while jumping the subscriber to the subject destination.

[0060] Referring again to **FIG. 2**, an interactive list **34** containing user-entered hyperlinks and a set of interactive tools is displayed to a subscriber by portal software **35** of **FIG. 1**. One of the tools available to a subscriber interacting with list **34** is agent (software) **39**. Agent **39** may be programmed to perform certain tasks such as obtaining account information, executing simple transactions, returning user-requested notification information about upcoming

events, and so on. Search function **37** and update function **43** may be integrated with agent **39** as required to aid in functionality.

[**0061**] It is described in the above disclosure that agent **39** may, in some embodiments, search for and return certain summary information contained on user-subscribed WEB pages, such as account summaries, order tracking information and certain other information according to user-defined parameters. This feature may be programmed by a user to work on a periodic time schedule, or on demand.

[**0062**] In the following disclosure, enhancements are provided to agent **39**. Such enhancements, described in detail below, may be integrated into agent **39** of portal software **35** (FIGS. **1** and **2**); and may be provided as a separate agent or gatherer to run with portal software **35**; or may, in some embodiments, be provided as a standalone service that is separate from portal software **35**.

[**0063**] **FIG. 4** is a block diagram illustrating a summarization software agent **67** and various capabilities and layers thereof according to an embodiment of the present invention. Summarization agent **67**, hereinafter termed gatherer **67**, is a programmable and interactive software application adapted to run on a network server. Gatherer **67** may, in one embodiment, be integrated with portal software **35** of **FIG. 1** and be provided in the form of a software module separate from agent **39** (**FIG. 2**). In another embodiment, gatherer **67** may be a part of agent **39** as an enhancement to the function of that agent as previously described. In still another embodiment, gatherer **67** may be provided as a parent or client-side application controlled by a separate service from the portal service described above.

[**0064**] In this exemplary embodiment gatherer **67** is a multi-featured software application having a variety of sub-modules and interface modules incorporated therein to provide enhanced function. Gatherer **67** has a client/service interface layer **69** adapted to enable directive input from both a client (user) and a knowledge worker or workers associated with the service. A browser interface **77** is provided in layer **69**, and adapted to provide access to application **67** from a browser running on a client's PC or other Internet or network appliance. Interface **77** facilitates bi-directional communication with a user's browser application (not shown) for the purpose of allowing the user to input summary requests into gatherer **67** and receive summary results. Interface **77** supports all existing network communication protocols such as may be known in the art, and may be adapted to support future protocols.

[**0065**] Layer **69** also comprises a unique input scripting module **79** that is adapted to allow a human knowledge worker to create and supply directive scripts containing the site logic needed by gatherer **67** to find and retrieve data from a WEB site. In this case, gatherer **67** executes and runs on a network server such as server **31** of **FIG. 1**. However, this is not required in order to practice the present invention.

[**0066**] It is assumed in this example that gatherer **67** is part of the portal software suite **35** running on server **31** of **FIG. 1**. Gatherer **67** may be provided as several dedicated agents, or as one multi-functional agent without departing from the spirit and scope of the present invention. For example, one gatherer **67** may be scripted and programmed to execute a single user request with additional gatherers **67** called upon to perform additional user-requests. Alternatively, one gatherer **67** may be dedicated and assigned to each individual user and adapted to handle all requests from that user.

[**0067**] Interface layer **69** facilitates exchange of information from both a client and a knowledge worker. A client operating a WEB browser with an appropriate plug-in is enabled to communicate and interact with gatherer **67**. For example, a user may enter a request to return a summary of pricing for all apartments renting for under $1000.00 per month located in a given area (defined by the user) from apartments.com (one of user's registered WEB sites). The just mentioned request would be categorized as either a periodic request, or a one time (on demand) request. The communicated request initiates a service action wherein a knowledge worker associated with the service uses module **79** to set-up gatherer **67** to perform it's function. Module **79** is typically executed from a network-connected PC operated by the knowledge worker.

[**0068**] According to an embodiment of the present invention, a unique scripting method facilitated by module **79** is provided to enable gatherer **67** to obtain the goal information requested by a user. For example, the above mentioned example of WEB-site apartments.com has a specific HTML (hyper-text-markup-language) logic that it uses to create its site and post its information. Such site logic is relatively standard fare for a majority of different sites hosted by different entities. Using this knowledge, a knowledge worker creates a site-specific script or template for gatherer **67** to follow. Such a template contains descriptions and locations of the appropriate fields used, for example, at apartments.com. Apartment description, location, deposit information, rental information, agent contact information, and other related fields are matched in terms of location and label description on the template created with module **79**. Completed templates are stored in a database contained in a storage facility such as, perhaps, repository **29** of **FIG. 1**. Such templates may be reused and may be updated (edited) with new data.

[**0069**] In one embodiment, one script may contain site logics for a plurality of WEB pages, and instructions for specific navigational instruction and password or login information may be contained therein and executed serially, such as one site at a time. It is important to note that the knowledge worker or workers may perform much of their scripting via automatic controls such as by object linking and embedding (OLE) and a minor portion of scripting may be performed manually in an appropriate computer language, many of which are known in the art).

[**0070**] Gatherer **67** also has a process layer **71** adapted for internal information gathering and parameter configuration. An optional portal server interface **81** is provided and adapted to allow gather **67** to provide updated information to a user's list of hyperlinks and also to obtain data from portal server **31** if required. For example, required hyperlinks may be mirrored from a user's home page to a scripting template for navigational purposes. In an embodiment wherein gatherer **67** is part of a standalone service, a convention for providing user login information may be supplied at the client's end when a request is made. For example, an encrypted password may be supplied by a client plug-in and gatherer **67** may temporarily borrow the user's encryption key when auto login is performed.

[0071] An appliance configuration module **83** is provided and adapted to allow a user to define and configure an Internet appliance to communicate with the service and receive summary information. Such appliances may include but are not limited to palm top PC's, lap top PC's, cellular telephones, WEB TV's, and so on. Typically, a user will be presented a configuration WEB page from a network server that displays in his browser window on his desktop PC. The page contains an interface for communicating device parameters and communication protocol types to module **83**. In this way, a user may configure a preferred device for receipt of summary information. Device parameters and communication protocols inherent to such a device are incorporated into the scripting of the site template and are used as instructions for WEB summary delivery.

[0072] A navigation layer **73** is provided and adapted to perform the function of external site navigation and data gathering for gatherer **67**. To this end, a communication interface/browser control module **85** is provided and adapted to function as a WEB browser to access WEB sites containing WEB data. Control **85** receives its instruction from the scripted template created by the knowledge worker.

[0073] A parsing engine **87** is provided and adapted to parse individual WEB sites according to a template created via scripting module **79**. Parsing engine **87** may be a Pearl engine, an IE HTML engine, or any other or combination of known parsing engines. The template (not shown) tells control **85** and parsing engine **87** where to go and what fields at the destination site to look for to access desired data. Once the data fields are located, parsing engine **87** gathers current data in the appropriate field, and returns that data to the service for further processing such as data conversion, compression and storage, and the like.

[0074] Because WEB sites use tools that use consistent logic in setting up their sites, this logic may be used by the summarization service to instruct control **83** and parsing engine **87**. The inventor provides herein an exemplary script logic for navigating to and garnishing data from amazon™.com. The hyperlinks and/or actual URLs required for navigation are not shown, but may be assumed to be included in the template script. In this example, a company name Yodlee (known to the inventors) is used in the script for naming object holders and object containers, which are in this case Active X™ conventions. In another embodiment, Java™ script or another object linking control may be used. The scripted template logic example is as follows:

```
[0075] # Site amazon.orders.x—shows status of orders from Amazon login( 7);
[0076] get("/exec/obidos/order-list/");
[0077] my@tables=get_tables_containing_text("Orders:");
[0078] my $order_list=new Yodlee::ObjectHolder('orders');
[0079] $order_list->source('amazon');
[0080] $order_list->link_info(get_link_info0);
[0081] my@href_list;
[0082] my@container_list;
[0083] foreach my $table (@tables) {
[0084] my@grows=get_table_rows0;
[0085] foreach my $i (0 . . . $#rows) {
[0086] select_row($i);
[0087] my $text=get_text($rows[$i]);
[0088] next if $text=~/Orders:|Status/;
[0089] my @items=get_row_items0;
[0090] next unless @items>=4;
[0091] my($order_num, $date, $status);
[0092] select_cell(1);
[0093] $order_num=get_cell_text0;
[0094] my $href=get_url_of_first_href(get_cell0);
[0095] select_cell(2);
[0096] $date=get_cell_text0;
[0097] select_cell(3);
[0098] $status=get_cell_text();
[0099] next unless defined $order_num and defined $date and defined $status;
[0100] my $order=new Yodlee::Container-('orders');
[0101] $order->order_number($order_num);
[0102] $order->date($date);
[0103] $order->status($status);
[0104] $order_list->push_object($order);
[0105] if( defined $href) {
push(@href_list, $href);
push(@container_list, $order);
[0108] foreach my $i (0 . . . $#href_list) {
[0109] get($href_list[Si]);
[0110] @tables=get_tables_containing_text("Items Ordered:");
[0111] foreach my $table (@tables ) {
[0112] my @rows=get_table_rows0;
[0113] foreach my $j (0 . . . $#rows ) {
[0114] select_row($j);
[0115] my $href=get_url_of_first_href(get_row0);
[0116] next unless defined $href;
[0117] my @child_list=get_children(get_row0, 'a');
[0118] next unless defined $child_list[0];
[0119] my $text=get_text($child_list[0]);
[0120] $container_list[$i]->description($text);
}
[0122] }
[0123] result($order_list);
```

[0124] The above example is a script that instructs control **85** and parser **87** to navigate to and obtain data from

Amazon™.com, specifically that data that reflects the user's current order status. Scripts may also be written to obtain virtually any type of text information available from any site. For example, a user may wish to obtain the New York Times headlines, the top ten performing stocks, a comparative list of flights from San Francisco to New York, etc. In one embodiment, metadata may be associated with and used in-place of the actual scripted language for the purpose of reducing complication in the case of many scripts on one template.

[0125] A data processing layer **75** is provided and adapted to store, process, and present returned data to users according to enterprise rules and client direction. A database interface module **89** is provided and adapted to provide access for gatherer **67** to a mass repository such as repository **29** of **FIG. 1**, for the purpose of storing and retrieving summary data, templates, presentation directives, and so on. Gatherer agent **67** may also access data through interface **89** such as profile information, user account and URL information, stored site logics and so on. Data scanned from the WEB is stored in a canonical format in a database such as repository **29**, or in another connected storage facility. All stored data is, of course, associated with an individual who requested it, or for whom the data is made available according to enterprise discretion.

[0126] A summarization page module **91** is provided and adapted to organize and serve a WEB summary page to a user. Module **91**, in some embodiments, may immediately push a WEB summary to a user, or module **91** may store such summarized pages for a user to access via a pull method, in which case a notification may be sent to the user alerting him of the summary page availability. Summarization module **91** includes an HTML renderer that is able to format data into HTML format for WEB page display. In this way, e-mail messages and the like may be presented as HTML text on a user's summarization page. Moreover, any summary data from any site may include an embedded hyperlink to that site. In this way, a user looking at an e-mail text in HTML may click on it and launch the appropriate e-mail program. Other sites will, by default, be linked through the summary page.

[0127] Many users will access their summary data through a WEB page as described above, however, this is not required in order to practice the present invention. In some embodiments, users will want their summary information formatted and delivered to one of a variety of Internet-capable appliances such as a palm top or, perhaps a cell phone. To this end, the renderer is capable of formatting and presenting the summary data into a number of formats specific to alternative devices. Examples of different known formats include, but are not limited to XML, plain text, VoxML, HDML, audio, video, and so on.

[0128] In a preferred embodiment of the present invention, gather **67** is flexible in such a way as it may act according to enterprise rules, client directives, or a combination of the two. For example, if a user makes a request for summary data about a user/subscribed WEB page to be periodically executed and presented in the form of a HTML document, then gather **67** would automatically access and analyze the required internal information and user provided information to formulate a directive. Using scripting module **79**, a knowledge worker provides a template (if one is not already created for that site) that contains the "where to go" and "what to get" information according to site logic, user input, and known information.

[0129] Alternatively, if a user requests a summary about data on one of his sites such as, perhaps, current interest rates and re-finance costs at his mortgage site, the service may at it's own discretion provide an additional unsolicited summary from an alternate mortgage site for comparison. This type of summarization would be designed to enhance a user's position based on his profile information. In this case, updated data about latest interest rates, stock performances, car prices, airline ticket discounts, and so on would be stored by the service for comparative purposes. If a user request for a summary can be equaled or bettered in terms of any advantage to the user, such summary data may be included.

[0130] In many cases, created templates may be re-used unless a WEB site changes it's site logic parameters, in which case, the new logic must be accessed and any existing templates must be updated, or a new template may be created for the site. The templates contain site-specific script obtained from the site and stored by the knowledge workers. In one embodiment, companies hosting WEB pages automatically provide their site logics and any logic updates to the service by virtue of an agreement between the service and the WEB hosts.

[0131] In an alternative embodiment gatherer **67** may be implemented as a client application installed on a user's PC. In this embodiment, a user would not be required to supply log-in or password codes. Summarization scripts may be sent to the client software and templates may be automatically created with the appropriate scripts using log-in and password information encrypted and stored locally on the user's machine.

[0132] In addition to providing WEB summary information, gatherer **67** may also be used to provide such as automatic registration to new sites, and for updating old registration information to existing sites. For example, if a user whishes to subscribe, or register at a new site, only the identification of the site is required from the user as long as his pertinate information has not changed. If a new password or the like is required, gatherer **67** through control module **73** may present login or password codes from a list of alternative codes provided by a user. In another embodiment, a database (not shown) containing a wealth of password options may be accessed by gatherer **67** for the purpose of trying different passwords until one is accepted by the site. Once a password or log-in code is accepted, it may be sent to a user and stored in his password list and at the network level.

[0133] It will be apparent to one with skill in the art that a software application such as gatherer **67** may be implemented in many separate locations connected in a data network. For example, a plurality of gatherer applications may be distributed over many separate servers linked to one or more mass repositories. Client applications include but are not limited to a WEB-browser plug-in for communicating to the service. Plug-in extensions may also be afforded to proxy servers so that auto-login and data access may still be performed transparent to a user.

[0134] In another embodiment, plug-ins enabling communication with gatherer **67** may be provided and configured to

run on other network devices for the purpose of enabling such a device to initiate a request and get a response without the need for a desktop computer.

[0135] In most embodiments a user operating a desktop PC will order a one time or periodic summary related to some or all of his subscribed WEB sites. A logical flow of an exemplary request/response interaction is provided below.

[0136] **FIG. 5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of **FIG. 4** operating in a user-defined mode. In step **93**, a user has initiated a new request for a summary (summary order). It is assumed for the purpose of discussion, that the request of step **93** involves a site wherein no template has been created. In step **95**, the request is received and analyzed. A knowledge worker will likely perform this step. The new request may be posted to the user's portal home page, sent directly to gatherer **67**, or even communicated through e-mail or other media to the service.

[0137] In step **97** a knowledge worker accesses particular site logic associated with the request URLs. For example, if the request involves a plurality of URLs, then all site logics for those URLs are accessed. Logic may be available in a repository such as repository **29** of **FIG. 1** if they were obtained at the time of user registration to a particular URL, or sent in by WEB-site hosts shortly after registration. If it is a completely new URL, then the logic must be obtained from the site. In most cases however, the logic will be known by virtue of a plurality of users accessing common URLs. Therefore cross-linking in a database of logic/user associations may be performed to access a logic for a site that is new to one particular user, but not new to another.

[0138] In step **99**, the knowledge worker creates a template by virtue of scripting module **79 (FIG. 4)** containing all site logic, URLs, log-in and password information, and the user request information. As described previously, templates may be re-used for a same request. In most cases, scripting may be mostly automated with minimum manual input performed by the knowledge worker. In many cases, an existing template will match a new request exactly, and may be re-used. In that case steps **97**, **99**, and **101** would not be required.

[0139] In step **101** the template is stored and associated with the requesting user. The stored template may now be retrieved at a scheduled time for performing the summary gathering. At step **103**, a browser control such as module **85** of **FIG. 4** is activated to access the stored template and navigate to specified URLs for the purpose of gathering summary data. If a timing function is attributed to the template stored in step **101**, then the template may self execute and call up the browser function. In another embodiment, **10** the knowledge worker may notify the browser control to get the template for it's next task. In some embodiments, a plurality of controls may be used with one template as previously described.

[0140] In step **105**, automatic log-in is performed, if required, to gain access to each specified URL. In step **107**, a specified WEB-page is navigated to and parsed for requested data according to the logic on the template. If there are a plurality of WEB-pages to parse, then this step is repeated for the number of pages. A variety of parsing engines may be used for this process such as an IE™ parser, or a Pearl™ parser. Only the requested data is kept in step **107**.

[0141] A request may be an on-demand request requiring immediate return, or a scheduled request wherein data may be posted. At step **109**, such logic is confirmed. If the data is to be presented according to a periodic schedule, then summary data parsed in step **107** is stored for latter use in step **111**. In step **113**, the summary data is rendered as HTML if not already formatted, and displayed in the form of a summary WEB-page in step **115**. The summary page may be posted for access by a user at a time convenient to the user (pull), or may be pushed as a WEB-page to the user and be made to automatically display on the user's PC. Notification of summary page availability may also be sent to a user to alert him of completion of order.

[0142] If the summary data is from a one-time on-demand request and required immediately by a user, then a network appliance and data delivery method (configured by the user) is confirmed, and the data is rendered in the appropriate format for delivery and display in step **117**. In step **119**, the summary data is delivered according to protocol to a user's designated appliance. In step **121** a user receives requested information in the appropriate format.

[0143] It will be apparent to one with skill in the art that there may be more or fewer logical steps as well as added sub-steps than are illustrated in this example. For example, step **105** may in other embodiments include sub-steps such as getting an encryption key from a user. In still another embodiment, part of a request may be rendered as HTML as in step **113** while certain other portions of the same request data might be rendered in another format and delivered via alternative methods. There are many possibilities.

[0144] The method and apparatus of the present invention may be used to present summaries to users without user input. Process logic such as this is detailed below.

[0145] **FIG. 6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of **FIG. 4** in a User-independent smart mode with minimum or no user input. In step **117** an enterprise-initiated summary process begins. In this case, the enterprise may be assisting a user in finding a better deal or, perhaps presenting the individual with summaries from and links to alternative pages not yet subscribed to by a user.

[0146] In step **119**, a database containing user information and parameters is accessed and reviewed. Certain information specific to a user may be required to initiate an enterprise-sponsored summary report. At step **121**, the knowledge worker accesses the site logic specific to the specified target site or sites for summarization. In step **123**, the knowledge worker modifies an existing user template, or creates a new one if necessary. At step **125** the template is stored in a repository such as repository **29** and associated with the user.

[0147] As described in **FIG. 5**, the template either self-executes according to a timed function and invokes a browser control such as control **85 (FIG. 4)**, or is accessed by control **85** as a result of task notification. In step **127**, the browser control begins navigation. Auto logins are performed, if required, in step **129** to gain access to selected sites. If the WEB pages are new to a user, and the user has no registration with the WEB site, then through agreement,

or other convention, the service may be provided access to such sites. Such an agreement may be made, for example, if the host of the WEB site realizes a possibility of gaining a new customer if the customer likes the summary information presented. In many other situations, no password or login information is required to obtain general information that is not personal to a client.

[0148] In step **131**, all sites are parsed for summary data and stored in canonical fashion in step **133**. At step **135**, the data is compiled and rendered as HTML for presentation on a summary page. In step **137**, a WEB summary containing all of the data is made available to a user and the user is notified of its existence.

[0149] Providing certain information not requested by a user may aid in enhancing a user's organization of is current business on the WEB. Moreover, unsolicited WEB summaries may provide better opportunities than the current options in the user's profile. Of course, assisting a user in this manner will require that the enterprise (service) have access to the user's profile and existing account and service information with various WEB sites on the user's list. A user may forbid use of a user's personal information, in which case, no enterprise-initiated summaries would be performed unless they are conducted strictly in an offer mode instead of a comparative mode.

[0150] The method and apparatus also may be practiced in a language and platform independent manner, and be implemented over a variety of scalable server architectures.

[0151] The method and apparatus of the present invention may be practiced via private individuals on the Internet, businesses operating on a WAN connected to the Internet, businesses operating via private WAN, and so on. There are many customizable situations.

[0152] The present invention as taught herein and above should be afforded the broadest of scope. The spirit and scope of the present invention is limited only by the claims that follow.

What is claimed is:

1. An Internet Portal, comprising:

an Internet-connected server; and

a portal software executing on the server, including a summary software agent;

wherein the Portal maintains a list of Internet destinations specific for a subscriber, and the summary software agent accesses the Internet destinations, retrieves information according to pre-programmed criteria, and summarizes the retrieved information for delivery to the subscriber.

2. The Portal of claim 1 further comprising a configuration and intitiation interface for a subscriber to set up and start a summary search.

3. The Portal of claim 1 wherein the summary searches are configured for individual clients as templates stored and retrieved at the Internet-connected server.

4. The Portal of claim 1 wherein information retrieved in a summary search is stored to be retrieved by the subscriber.

5. The Portal of claim 1 wherein information retrieved in a summary search is downloaded immediately to the subscriber.

6. The Portal of claim 1 wherein autologins are performed for the subscriber at each Internet site according to a data stored for the subscriber at the Portal.

7. In an Internet Portal system, a method for providing summaries of information at WEB sites, URLs for which are maintained for individual subscribers, the method comprising steps of:

(a) configuring a summary software agent executable on the Portal to access the URLs;

(b) retrieving information from individual ones of the WEB sites accessed according to pre-programmed criteria specific to each subscriber;

and

(c) providing the information to the subscriber.

8. The method of claim 7 further comprising a step for the subscriber to configure and intitiate, via a configuration and initiation interface, a summary search.

9. The method of claim 7 wherein the summary searches are configured for individual clients as templates stored and retrieved at the Internet-connected server.

10. The method of claim 7 wherein information retrieved in a summary search is stored to be retrieved by the subscriber.

11. The method of claim 7 wherein information retrieved in a summary search is downloaded immediately to the subscriber.

12. The method of claim 7 wherein autologins are performed for the subscriber at each Internet site according to a data stored for the subscriber at the Portal.

* * * * *