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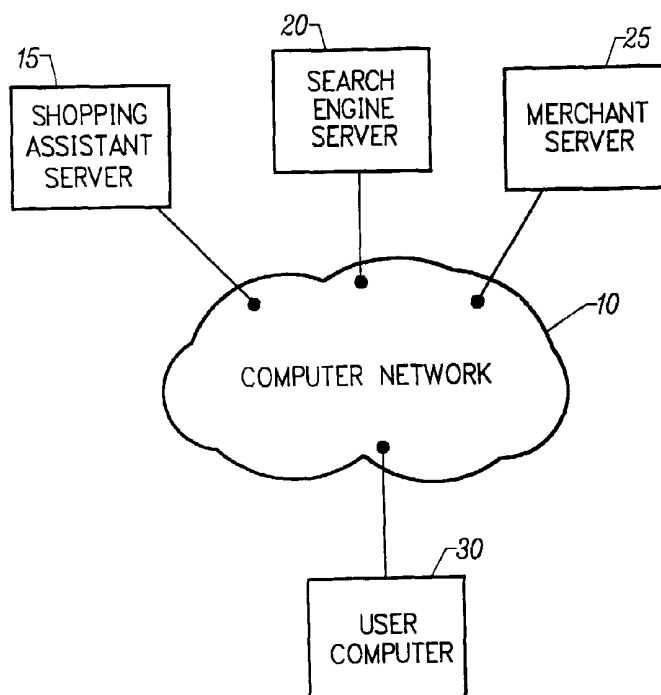
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(54) Title: METHOD AND APPARATUS FOR RECOGNIZING ELECTRONIC COMMERCE WEB PAGES AND SITES

(57) Abstract: By parsing a web page address, the present invention relies on basic web page address syntax to extract a merchant name and a product identifier for each web page loaded by an enhanced web browser. The enhanced web browser creates two child window controls that are web browser elements. The enhanced web browser retrieves the page description for the web page a user desires to have displayed. The page description is forwaded to a first web browser child control. The first web browser child control paints a graphical representation of the web page according to the page description it received. After the enhanced web browser extracts either a merchant name and/or a product identification code, a database server is consulted to discover if the merchant and/or product have been previously registered there. If either the merchant or product are found in the database server, the description of web pages in a page description language are returned to the enhanced web browser. The returned web pages include attributes that are of interest to a consumer engaged in electronic shopping. The merchant and product attribute web pages are forwarded to the second web browser child control. The second web browser child control then paints the graphic representation of the merchant and product attribute web pages on the users display screen.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Method and Apparatus for Recognizing Electronic Commerce Web Pages and Sites

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BACKGROUND OF THE INVENTION

TECHNICAL FIELD

This invention pertains to the field of electronic commerce and the selection and rating of
10   electronic commerce merchants and the web sites that they publish over a computer network.

DESCRIPTION OF THE PRIOR ART

Electronic commerce has steadily expanded over the past few years. This expansion has
15   been primarily fueled by the graphical subset of the Internet known as the World Wide Web
(WWW). The WWW structures information into graphical user interfaces (GUIs) known as
web pages. These web pages organize and present information in a manner that is easy to
comprehend. Navigating the WWW requires a specialized software tool called a browser.
The browser can retrieve web pages from remote computers connected to the Internet and
20   then present them to a computer user in their intended graphic form. The act of viewing web
pages in their graphic form, especially in succession, has come to be known as browsing.

Electronic commerce has been facilitated by a technology that supports the implementation of
interactive graphical user interfaces. These interactive GUIs are commonly known as active
25   server pages (ASPs). These are much more complicated in structure than their early non-
interactive predecessors that are referred to as static pages. A particular electronic
commerce merchant normally publishes both static and ASP web pages over the Internet.
The collection of web pages that an electronic commerce merchant publishes is normally
referred to as a web site.

30

Electronic commerce merchants will ordinarily operate a web site that offers a plurality of
products and/or services that consumers may purchase electronically over the Internet. To
bring the notion of electronic commerce into a more familiar context, it is sometimes helpful to
compare a web site to a traditional brick and mortar retail store. A small, specialized retail
35   store might carry sporting goods. Grander retail stores, often referred to as department
stores, may in fact offer a wide variety of different products. In either case, the traditional
retail establishment offers some collection of products for sale. In the brick and mortar
establishment, the products are usually displayed on product shelves that are organized in a

manner that helps the consumer find the product they want. In the department store, not only are the products organized on aisles of shelves, but collection of shelves are segregated by product category.

5   Electronic merchandising approximates this retail store paradigm. A web site can offer a variety of products in a single category, such as a web site devoted to sporting goods. Or, a web site could conceivably offer a plethora of various merchandise categories, each of which has a variety of product offerings.

10   Advertising has long been the traditional means for attracting customers to the specialized retail or department store. In the *real world*, this is accomplished through conventional media such as radio, television, and newspapers. These traditional forms of media are usually targeted toward a specific segment of the buying population. Potential customers would see an advertisement and presumably flock to the retail store with credit card or cold, green cash
15   in hand.

In electronic commerce, the merchandising game follows new rules because of the inherent publication capabilities provided by the World Wide Web. In the *virtual world* of electronic commerce, electronic merchants normally advertise their product offerings using *banner*
20   *advertisements* published by various means. The most common mechanism for displaying banner ads to potential customers is through a specialized web tool that is called a search engine. The search engine is normally embodied with an interactive graphical user interface. The search engine allows any Internet user to search the WWW for web pages that that person may be interested in.
25

By monitoring the queries that a user submits to the search engine, the search engine can ascertain if the user is searching for a product, and if so what type of product. Of course, the search engine can determine any other buying propensity that a particular user exhibits by the structure of the queries they submit. The search engines known to date will correlate the
30   computer user's buying propensity to a category of advertisements that sponsoring merchants want to present to potential consumers. Once an appropriate advertisement is selected, it is presented the to the computer user as a banner along with the results of the search query.

35   With this correlation in hand, the search engine will present one or more banner advertisements that promote products or services commensurate with the postulated buying propensity. In lay terms, for example, if a computer user submits a query looking for classic cars, the search engine will most probably present an advertisement for a web site that sells obsolete or hard to find automotive parts.
40

In the realm of electronic commerce, just about any computer user can be a potential consumer. Consequently, electronic commerce merchants are compelled to present their banner advertisements on as many search engines and in as many product categories as possible. Whenever a computer user submits a query, even if that computer user is only

5   interested in obtaining information, the search engine will present an advertisement to the computer user. The banner advertisement displayed to a computer user includes a hyperlink that will direct the browser to the sponsors' web site. Of course, the electronic commerce merchant that sponsored the advertisement hopes that this will draw the computer user to their web site.

10

From the electronic merchants' perspective, computer users using any given search engine can only be considered potential customers. There is simply no way for the search engine to determine if the computer user is simply looking for information on a given topic or if that computer user is actually interested in purchasing a product. Electronic merchants incur a

15   cost for each impression of their banner advertisement that is presented to computer user. If the search engine could guarantee that a particular computer user was actually a potential consumer, all of the electronic commerce merchants that are engaged in a given product category would want to have their banners presented to that user.

20   Unfortunately, the search engine can not identify actual potential customers. This means that there is little incentive for electronic commerce merchants to present their banner advertisements every time the search engine indicates an interest in a product category. However, once the computer user is attracted to a web site as a result of a banner advertisement, the probability that that particular computer user is really shopping for a

25   product increases substantially. In a sense, whenever a computer user uses a banner advertisement to *hyper-link* to an electronic merchants' web site, there is an implicit qualification of that computer user as an actual shopper.

This is where three sets of competing interests collide. First, there is the interest of the

30   merchant that sponsored the banner ad. Second, there is the interest of the search-engine company that owes its existence to advertising revenue. Lastly, the computer user, as a potential consumer, would benefit from knowing about competing merchants that are selling the same product. Also, once a computer user has used a hyper-link to traverse a web site, other competing merchants would certainly like to know about that computer user.

35   Unfortunately, only the merchant that sponsored the banner ad will be graced by a visit to it's web site and that merchant is not likely to share its contact with a *qualified* consumer with its competitors.

Electronic commerce merchants that operate web sites use banner advertisements as a

40   means to attract potential customers. The number of electronic commerce merchants that

are on-line today continues to increase. The problem with using a search engine as a presentation means for advertisements is that there are only a handful of popular search engines. To foster competition, electronic merchants would need to have their banners presented alongside those of their competitors. This conflicts with the limited amount of

5   screen space that the search engine can devote to advertisements while still providing the search utility the computer user is looking for. The limited advertising space has driven the search engine companies to create elaborate presentation mechanisms that let sponsoring merchants pay additional fees in order to occlude their competition. None of these factors consider the benefits that competition offers to the on-line consumers.

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The prior art banner presentation mechanism as embodied in the various search engines has proven itself as an efficient means to attract potential computer users to electronic commerce web sites. The prior art, though, has not incorporated any means to provide competitive information to potential consumers. Not only is the prior art financially motivated to curb

15   competition, it is technically limited to the presentation of banner ads that are coupled with hyper-links. This technology could not feasibly provide consumers with information relative to competing merchants and/or products. The fact that sponsoring merchants can not be assured that a banner advertisement will be presented to a computer user that has been qualified as a potential customer means that competing merchants are not financially

20   motivated to present competing advertisements. And even if they were so inclined, search engine companies can not accommodate every merchant and in fact they are financially motivated not to.

What is needed then is a mechanism that provides a computer user with a list of competing

25   products and electronic commerce merchants whenever the computer user is actually seeking to make an electronic purchase. The utility of this mechanism would be greatly enhanced if it could also provide rating information about those merchants and the products they offer. One such mechanism has appeared in the prior art, that being specialized web sites that manage catalogues of competing web sites and the products offered there.

30   However, this is not a desirable means of shopping for products because these specialized web sites do not have the exhaustive search capability that known search engines provide to the computer user. One additional, but very annoying artifact of these specialized comparison web sites is that the computer user can not view the comparison data concurrently with the web site that is actually part of the merchant's web site.

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Using these specialized merchant comparison web sites, the computer user can only find merchants and products that have been registered with that site. Hence, the computer user could not find competitive information about products that are not so pre-registered with the comparison site. One solution to this pre-registration problem has been demonstrated quite

40   successfully; one prior art comparison web site has used a dedicated server to *crawl* the web

in search of available web pages. This method parses the content of every web page that is found on the WWW and determines if that web page is in fact an electronic commerce web page, and if so, the corresponding merchant and product that the page offers. The prior art can only identify these web pages by there content and presupposes that content to be

5   immutable. This renders the results of a crawling session obsolete if any electronic commerce merchant changes the appearance or substance of a web page. And again, the computer user must visit the special product comparison web site in order to experience the benefits of competing merchants and products.

10   Both the search engines that present banner advertisements and the specialized merchant comparison web sites that seek to foster competition are of no value if the computer user does not first visit those sites. If the computer user directly enters the web address of a merchant that sells a particular product, that user will not have access to any comparison data. So, in the case where a computer user knows the address of a particular on-line book

15   seller and calls up that web site directly using the browser, the prior art could not provide an enumeration of comparable web sites or products.

SUMMARY OF THE INVENTION

20   The present invention cures the shortcomings of the prior art. The present invention ascertains that the computer user is actually shopping for a product. This enables the present invention to qualify the computer user as a potential consumer. The search engine of prior art is simply incapable of making this distinction. Once the present invention has determined that the computer user is actually shopping, comparison data is automatically

25   presented to the computer user. The computer user does not need to visit a special web site to view the comparison data. The present invention works with every web site and presents comparison data to the user while the user is actually viewing a product web site.

In the preferred embodiment of the present invention, a shopping assistant server is used to

30   accepts or otherwise accumulate information on competing web sites and product web pages published on the Internet. The shopping assistant server is connected to a computer network. In many cases, the Internet is used as the connection means. The shopping assistant server maintains two databases. The first database maintains information about the products web pages are offering for sale. The second database maintains information

35   pertaining to electronic commerce merchants doing business over the Internet. Collectively, these two databases enable the shopping assistant server to provide any computer user with information about competing web sites and the products that they offer.

The shopping assistant server can accept information pertaining to electronic commerce

40   merchants or products available for sale over the Internet in one of two ways. First, the

shopping assistant server can accept direct input from a system operator. Second, the shopping assistant server can actively crawl the World Wide Web and seek out the Web pages that are offering to sell products. Product web pages are automatically correlated with electronic commerce merchants registered in a merchant database. If a particular web page

5   cannot be associated with a merchant already registered in the database, the shopping assistant server automatically creates a new electronic commerce merchant profile in the database.

What distinguishes the present invention from the prior art is the unique manner in which the

10   present invention determines if a computer user is actually shopping. The present invention further comprises an enhanced web browser tool. The enhanced web browser tool creates a first web browser control. The enhanced web browser retrieves a web page specified by the user and then forwards the page description for that page to the first web browser control. This enhanced web browser waits until a new web page is loaded and then automatically

15   parses the address of that web page. Once the web address is parsed, a lexical analyzer determines if the web page is affiliated with an electronic commerce merchandise site and if so what product that particular page is presenting or offering for sale. It does so by extracting a merchant name and product identification code from the web page address.

20   By parsing the web page address, the lexical analyzer extracts a merchant name, a product identifier, or both from the web page address. A merchant database hosted on a server is consulted to determine if that merchant is registered. In the event that the server contains merchant attributes for the extracted merchant name, the server returns either a tag or a set of attributes to the enhanced web browser. A shopping assistant module in the enhanced

25   web browser can create a web page description that reflects the merchant attributes. In an alternative, the server can return a precomposed web page that depicts the merchant attributes. This web page is called a merchant tag.

For product identification codes that are successfully extracted from the web page address, a

30   product database server is consulted. The product database server also returns either a tag or a set of attributes to the enhanced web browser. A shopping assistant module in the enhanced web browser can create a web page description that reflects the product attributes. In an alternative, the server can return a precomposed web page that depicts the product attributes. This web page is called a product tag.

35

Once the merchant and/or product tags are received by the enhanced browser, the page descriptions are forwarded to a second web browser child control. The second web browser child control is place adjacent to the first child control so as to be perceived by a computer as a single web browser window. With the first web browser control displaying the content of the

40   user requested web page and the second web browser control displaying the content of the

merchant and/or product tags, the user has simultaneous access to the requested web page and comparative data for the merchant and/or product affiliated with the requested web page.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram that depicts the interconnection of a shopping assistant
sever, a search engine server, a merchant server and a computer user by way of a
computer network;

Fig. 2 is a flow diagram that depicts the various processes that cooperate in order to
provide the functionality of the present invention;

Fig. 3 is a pictorial representation of a typical search engine query form;

Fig. 4 is a pictorial representation of a web page composed by the search engine
server in response to a computer users query;

Fig. 5 is a process flow diagram that illustrates the actions taken by the shopping
assistant browser module whenever a new web page is loaded by the browser;

Fig. 6 is a process flow diagram that illustrates the remaining actions taken by the
shopping assistant browser module after the merchant name and product identifier
are extracted from the web page address;

Fig. 7 is a process flow diagram that depicts the process flow executed by the
shopping assistant server when it receives a data query request from the shopping
assistant browser module;

Fig. 8 is a process flow diagram that depicts the processing thread executed by the
shopping assistant browser module after it has submitted a data query to the
shopping assistant server;

Fig. 9 is a pictorial representation of the computer screen presented to the computer
user while using this invention;

Fig. 10 is a pictorial representation of the GUI for a typical web page where the
amalgamated merchant/product XML tag-set has been integrated with the GUI;

Fig. 10A is a process flow diagram that demonstrates how the enhanced web
browser spawns web-browser controls; and

Fig. 11 is a pictorial representation of a merchant comparison GUI. When the computer user selects the "other merchants" hyperlink integral to the XML tag-set presented with the web page, a new child window is created by browser.

DETAILED DESCRIPTION OF THE INVENTION

5   Fig. 1 is a block diagram that illustrates how the shopping assistant server 15 is connected to a computer network 10. Also connected to the computer network are a plurality of search engine servers 20, a plurality of merchant servers 25, and a plurality of user computers 30. The computer network 10 can be any suitable network, but the present invention is most appropriately utilized using the Internet.

10

Fig. 2 is a flow diagram that depicts the various processes that cooperate in order to provide the functionality of the present invention. The computer user 35 will ordinarily interact with the enhanced web browser 40 for the purpose of viewing web pages published over the Internet. The enhanced web browser 40 accepts web page addresses from the computer

15   user 35. When the computer user 35 enters a web page address, the enhanced web browser 40 will attempt to loaded a web page corresponding to the web address. In a typical browsing session, the computer user 35 would ordinarily enter the web address of a search engine. The enhanced web browser 40 will establish a communications session with the search engine server 15 using a first TCP/IP communications channel 45. Once this first TCP/IP

20   communications channel 45 is open, the enhanced web browser 40 and the search engine 50 can effectively communicate with each other whenever the computer user 35 submits queries to the search engine 50.

The search engine server 15 uses active server page technology to compose a web page

25   that the computer user 35 can use to submit search queries. The search engine server 50 will respond to an initial web browser request by preparing this query form and delivering it to the enhanced web browser 40. The enhanced web browser 40 will then present the search engine query form to the computer user 35. The computer user 35 will then use the search engine query form to submit a search topic. The search query form, embodied as an active

30   server page, will then return the search topic to the search engine server 50. The search engine server 50 will use the search topic as the basis of a query as it consults an index of all known web pages published over the Internet. The search engine maintains this index of web pages in a web page index 55.

35   Fig. 3 is a pictorial representation of a typical search engine query form. Although not an important aspect of the present invention, this figure is presented for the sake of completeness. The search engine query form shown in this figure will minimally be comprised of a search-topic data-entry-field 100 and a search submission command of button 105. The computer user 35 would enter a search topic into the search engine query form a

40   using the search-topic data-entry field 100. Once the computer user 35 has entered a search

topic, the computer user 35 will then submit the search query to search engine 50 by using the search submission command of button 105. In the example presented in this case, the computer user 35 has entered a search topic "CLASSIC CARS".

5   Fig. 4 is a pictorial representation of a web page composed by the search engine server 50 in response to a computer users query. In the example presented in this figure, the search results for "CLASSIC CARS" include two web pages. These are presented in the search results window 110. Also presented to the computer user 35 are two banner advertisements. In this figure, "Rod's Rods Classic Cars" and "ENTER CLASSIC RALLY" represent two such

10   banner advertisements. It should be noted that the substantive composition of this Fig. 4 is for illustrative purposes only. What is important to note is that a plurality of banner advertisements are presented to the computer user 35. Not only do these banner advertisements present a graphical message, but they further comprise a hyper-link. The hyper-link for each banner advertisement will direct the enhanced web browser 40 to a web

15   page designated by the sponsoring advertiser. The search results presented in the search results window 110 also further comprise hyper-links. These hyper-links will direct the enhanced web browser 40 to the web page identified by the search engine server 50 when it consulted the web page index database 55.

20   Fig. 2 further illustrates that the enhanced web browser 40 establishes a second TCP/IP connection 60 with a merchant server 65. This occurs when the computer user 35 either directly enters the Web address of the merchant server 65 or uses one of the hyper links affiliated with the banner advertisements or search results presented by the search engine server 50. Once the second TCP/IP communications channel is established, the enhanced

25   web browser 40 can retrieve web pages stored by the merchant server 65 in a web page repository 70. Having so retrieved a web page, the enhanced web browser 40 will present the web page to the computer user 35.

In the current embodiment, the enhanced web browser 40 further comprises a software

30   module called a shopping assistant browser module 42. The shopping assistant browser module 42 examines the web address of every web page retrieved by the enhanced web browser 40, but only after the web page is fully loaded. Once a web page is fully loaded, the shopping assistant browser module 42 uses a set of rules to parse the actual web address. Most electronic commerce merchants will use a fairly standard syntax for the web page

35   addresses. Consider the following example:

http://www.test-merchant.com/product.cgi?product=1234

This particular web page address follows a reasonably predictable pattern, or syntax. In this

40   simple example, the rule set will immediately recognize the keyword "product" and the equal

sign (=) as lexical tokens that will immediately be followed by a product identification code. From this simple rule structure, the shopping assistant browser module 42 can infer that the web page currently loaded by the enhanced web browser 40 describes a product with a particular product code. In this illustration, the product code is "1234". A simple extension to

5   this rule structure would include syntax for determining the name of the electronic commerce merchant. In the example web address presented above, the product web page is affiliated with an electronic commerce merchandising site published by a merchant called "test-merchant". The rules engine in the shopping assistant browser module 42 infers this from the domain name included in the web page address. Again, the substantive content of this

10   example is for illustration purposes only.

The shopping assistant browser module 40 will establish a third TCP/IP communications channel 75 with the shopping assistant server 80. This can be done on an as needed basis or the communications channel can be established when the computer user first begins a

15   browsing session and can be maintained so long as the computer user is actively browsing the Internet. Using the third TCP/IP communications channel 75, the shopping assistant browser module 42 will communicate with the shopping assistant server 80 in order to retrieve information on competitive electronic commerce merchants and/or comparative products.

20

All of this processing occurs transparently to the computer user 35. In fact, if the web page loaded by the enhanced browser is not identified by the browser module 42 as a shopping page, the computer user 35 would be entirely oblivious to the fact that the shopping assistant browser module 42 was even present.

25

Fig. 5 is a process flow diagram that illustrates the actions taken by the shopping assistant browser module 42 whenever a new web page is loaded by the browser 40. The first step in this process thread causes the shopping assistant browser module 42 to wait until a new web page is completely loaded (step 120). After the new web page is completely loaded, the

30   shopping assistant browser module 42 checks to see if the web page's domain name is affiliated with an electronic commerce merchant. In the first part of this process, the rules engine extracts the domain name from the web address. The shopping assistant browser module 42 then consults a database maintained locally on the computer users computer. This is called the shopping domain database 130. If the newly loaded web page domain is

35   not found in the shopping domain database 130, the shopping assistant browser module 42 does not perform any additional processing. It then returns to the beginning of the processing thread and waits for a new web page the loaded.

If the domain name for the newly loaded web page can be found in the shopping domain

40   database 130, then the shopping assistant browser module 42 will attempt to extract the

merchant name and a product identifier from the web address (steps 140 and 145).

If the shopping assistant browser module 42 cannot successfully extract the name of a merchant from the web address, it then attempts to extract a product code from the web

5   address (step 145). The product code is known as the merchant product identifier (MPI). If the shopping assistant browser module 42 cannot extract a valid merchant name or a valid MPI, the rules engine assumes that the web page loaded by the browser 40 is not part of an electronic commerce merchant site. In this case the shopping assistant browser module 42 returns to the start of its processing thread and waits for a new web page to be loaded. When

10   the shopping assistant browser module 42 recognizes a merchant name or a valid MPI, it sends this information to the shopping assistant server 80 (step130).

All data extractions from a web address are accomplished using lexical analysis. The shopping assistant browser module 42 parses the web address into a series of tokens. Each

15   token is then assigned some significance in a standardized web address syntax. The simplest token would be the ASCII <FORWARD-SLASH> character. The rules engine uses this token to identify different portions of a web address. For instance, in the aforementioned example, the <FORWARD-SLASH> is used to recognize the termination of the network identifier "http://". After having recognized the network identifier, the rules engine assumes

20   that the next portion of the web address contains the domain name of the electronic commerce merchant. Again, in the aforementioned example, the rules engine would extract as a merchant name of the textual representation "test-merchant".

Fig. 6 is a process flow diagram that illustrates the remaining actions taken by the shopping

25   assistant browser module 42 after the merchant name and product identifier are extracted from the web page address. The shopping assistant browser module 42 determines if the merchant name was successfully extracted from the web page address (step 150). The shopping assistant browser module 42 also determines if the purchase product identifier was successfully extracted from the web page address (step 155). Once these two Boolean

30   operations are completed, the shopping assistant browser module 42 sends a query request to the shopping assistant server 15.

Fig. 7 is a process flow diagram that depicts the process flow executed by the shopping assistant server 15 when it receives a request from the shopping assistant browser module

35   42. The first thing that the shopping assistant server 15 does is to determine if the merchant has been previously identified. The shopping assistant server 80 does this by performing a query of the merchant database 90.

If the shopping assistant server 15 cannot find the merchant in the merchant database 90,

40   then no further processing for the instant request is performed (step 160). If, however, the

merchant can be found in the database 90 then the shopping assistant server 15 retrieves a set of merchant attributes for the merchant (step 165). These merchant attributes are stored in the merchant database 90. In the present embodiment, the merchant attributes include, but should not be limited to a merchant rating, an enumeration of the type electronic

5 commerce facilities the merchant supports, a flag that indicates if the merchant can support secure transactions and a second flag that indicates that the merchant has been certified by a consumer watch service. The merchant attributes are stored in the merchant database 90 as a web page tag-set using extensible markup language (XML). Although not the preferred embodiment because of the associated latency, the merchant attributes could be used as the

10 basis of dynamic web page creation.

The shopping assistant server 15 then determines if the product for the instant request has been previously identified. It does so by looking for the product identifier in the product database 85 (step 175). If the shopping assistant server 15 cannot find the product identifier

15 in the product database 85, no additional product level processing is performed. If the product identifier is found in the product database 85, then the shopping assistant server 15 retrieves product attributes from that database (step 180). In the present embodiment, the product attributes include, but should not be limited to a reasonable price range for the product, product reviews that may describe the performance for quality level of the product,

20 and a list of other merchants that may be offering the product for sale. The product attributes are also stored as a pre-composed web page tag-set using XML.

Once the shopping assistant server 15 has retrieved XML based tag-sets for both the merchant attributes and the product attributes, it then combines the merchant and product

25 XML segments (step 190) before returning the amalgamation to the client, i.e. the shopping assistant browser module 42 (step 195).

Fig. 8 is a process flow diagram that depicts the processing thread executed by the shopping assistant browser module 42 after it has submitted a data query to the shopping assistant

30 server 15. As can be seen from this figure, the shopping assistant browser module 42 waits to receive the XML tag-set from the shopping assistant server 15 (step 200). In the event that the shopping assistant server 15 does not respond within the designated time period for the shopping assistant server 15 responds with a negative knowledge, a timeout is declared. Once the timeout is declared, shopping assistant browser module 42 will return to the start of

35 its processing thread and wait for a new web page to be loaded by the browser 40.

After having successfully received the amalgamated XML tag-set from the shopping assistant server 15, the shopping assistant browser module 42 will then notify the main process thread of the enhanced web browser (step 205). The shopping assistant browser module 42 will

40 then deliver the amalgamated XML tag-set to the enhanced browser. The enhanced web

browser will then parse and display the XML tag-set to the computer user This concludes the processing threat executed by shopping assistant browser module 42.

5   Fig. 9 is a pictorial representation of the computer screen presented to the computer user while using this invention. The enhanced browser 40 generates the outer-most window 210 of this graphical user interface. For the purposes of this discussion this outer-most window can be considered to be the *parent* window. The parent window includes traditional pull down menus and toolbar buttons. This window also includes a web page address data entry field 215. The enhanced browser 40 creates a plurality of child windows 220 in a presentation

10   area. The child windows 220 comprise web-browser controls and are used to present the graphical representation of web pages that are retrieved from remote servers.

In the example presented in figure 9, a typical electronic commerce web page is presented. It should be noted that the web page presented here is for illustration purposes only and can

15   vary based on computer user requests for different web pages. The computer user requests web pages by using the web page address data entry field 215. The main thread of the enhanced web browser receives the description of the user requested web page in a page description language. The main thread of the enhanced web browser directs this page description to a first web browser child control. The first web browser child control will then

20   paint the web page graphics onto the computer screen for presentation to the computer user.

Fig. 10 is a pictorial representation of the GUI for a typical web page where the amalgamated merchant/product XML tag-set has been integrated with the GUI. After the shopping assistant browser module has delivered the XML tag-set to the enhanced browser's main

25   thread, the browser creates a second web-browser control element. The XML page description for the tag-set is then forwarded to the second web-browser control element. The second web browser child control paints the XML page onto the computer screen for presentation to the computer user.

30   The enhanced web browser creates the second browser control element directly adjacent to the screen location of the first browser control element. This results in an apparently seamless integration of the shopping assistant functionality of the present invention with the product web page presented by browser 40 to the computer user 35. This results in the computer user having immediate, simultaneous access to the requested web page and

35   comparison information obtained from the shopping assistant server.

Fig. 10A is a process flow diagram that demonstrates how the enhanced web browser spawns web-browser controls. The main thread of the enhanced browser is shown as reference number 400. When the main thread of the browser receives the description of a

40   web page, it spawns a first web-browser control element 405. The main thread of the

enhanced browser will forward the page description for the web page to the first web browser control 405. The first web browser control 405 will paint the web page according to the page description it received from the web browser main thread. When the main thread of the web browser receives an XML tag-set for a merchant and product, it will create a second browser-control 410.

5

The web browser main thread defines the screen position of both the first browser control and the second browser control. The web browser main thread defines the position and size of the second browser control in a manner that causes the edge of the second browser control to abut the edge of the first browser control. The web browser sets the size of the second browser control such that the length of the edge of the second browser control that abuts the first browser control is visually indistinguishable from the length of the edge of the first browser control that abuts the second browser control. Once the second browser control has been created, the main thread of the enhanced browser will forward the XML tag-set to the second browser control. The second browser control will then present the XML tag-set to the user.

10

15

The XML tag-set received from the shopping assistant server 15 can be extremely simplistic, or as in the preferred embodiment described here, it can include drop-down menus, data entry fields, command buttons and hyperlinks. As can be seen in figure 10, the XML tag-set of the present invention comprises:

20

- a search topic data entry field 225;
- a search command button 230
25
- a pull down that allows the computer user to view key attributes for the electronic merchant presenting the web page 235;
- a pull down that allows the computer user to view a list of other electronic commerce merchants that are selling products similar to one described in the page 240;
30
- a hyperlink that allows the computer user to call up to the enumeration of other electronic commerce merchants selling the same product; and
- a pull down that allows the computer user to retrieve help information on how to use the features of the present invention 250.

35   Fig. 11 is a pictorial representation of a merchant comparison GUI. When the computer user 35 selects the "other merchants" hyperlink 245 integral to the XML tag-set presented with the web page, a new child window is created by browser 40. The browser 40 then contacts the shopping assistant server 15 directly and requests the merchant comparison page corresponding to the product identifier affiliated with the page being displayed in the first child

40   window.

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Alternative Embodiments

5   While this invention has been described in terms of several preferred embodiments, it is
       contemplated that alternatives, modifications, permutations, and equivalents thereof will
       become apparent to those skilled in the art upon a reading of the specification and study
       of the drawings. It is therefore intended that the true spirit and scope of the present
       invention include all such alternatives, modifications, permutations, and equivalents.
10   Some, but by no means all of the possible alternatives are described herein.

       In one of the alternative embodiments considered by the inventor, the shopping assistant
       server has been segregated into two separate servers; one being a merchant database
       server and the second being a product database server. These two servers respond to
15   two separate queries and return separate attribute based XML tags. The enhanced wen
       browser then performs the amalgamation of the two XML tags.

       It is also important to note that the sequence of creation of web browser child controls is
       not important. The main thread of the enhanced web browser can create the web
20   browser child controls when it first start up, or it can create the controls as they are
       needed.

CLAIMS

1. A method for recognizing electronic commerce web sites comprising the steps of:

    creating a first browser control element;

5   creating a second browser control element;

    accepting a web page address;

    retrieving the page description of the web page referenced by said web page
    address;

    forwarding the retrieved contents of the web page to said first browser control

10   element; and

    parsing the web page address in order to extract a merchant name.

2. The method for recognizing electronic commerce web sites of Claim 1 further comprising
    the step of:

15   orienting the first browser control immediately adjacent to the second browser control.

3. The method for recognizing electronic commerce web sites of Claim 1 further comprising
    the steps of:

    submitting a request to a server to identify if said merchant name is included in a

20   merchant database;

    retrieving merchant attributes from said server;

    creating a merchant attribute tag in a web page description language based on said
    attributes; and

    forwarding the merchant attribute tag to said second web browser control element.

25

4. The method for recognizing electronic commerce web sites of Claim 1 further comprising
    the steps of:

    submitting a request to a server to identify if said merchant name is included in a
    merchant database;

30   retrieving a merchant attribute tag stored in a web page description language wherein
    the merchant attribute tag is based on merchant attributes; and

    forwarding the merchant attribute tag to said second web browser control element.

35 5. A method for recognizing electronic commerce web sites comprising the steps of:

    creating a first browser control element;

    creating a second browser control element;

    accepting a web page address;

    retrieving the page description of the web page referenced by said web page

40   address;

    forwarding the retrieved contents of the web page to said first browser control

element; and

parsing the web page address in order to extract a product identifier.

6. The method for recognizing electronic commerce web sites of Claim 5 further comprising
the step of:

orienting the first browser control immediately adjacent to the second browser control.

7. The method for recognizing electronic commerce web sites of Claim 5 further comprising
the steps of:

submitting a request to a server to identify if said product identifier is included in a
product database;

retrieving product attributes from said server;

creating a product attribute tag in a web page description language based on said
product attributes; and

forwarding the product attribute tag to said second web browser control element.

8. The method for recognizing electronic commerce web sites of Claim 5 further comprising
the steps of:

submitting a request to a server to identify if said product identifier is included in a
product database;

retrieving a product attribute tag stored in a web page description language wherein
the product attribute tag is based on product attributes; and

forwarding the merchant attribute tag to said second web browser control element.

9. A system for recognizing electronic commerce web sites comprising:

merchant database server;

computer network;

enhanced web browser comprising:

web control creation module that creates a first web browser child control and
a second web browser child control;

web address selection module that accepts a web page address;

web page selection module that retrieves a web page description from a
merchant commerce server and forwards the web page description to said
first web browser child control; and

syntax analyzer that parses the web page address in order to extract a
merchant name from said web address.

10. The system for recognizing electronic commerce web sites comprising of Claim 9 wherein
the web control creation module creates the second web browser child control adjacent to
the first web browser child control.

11. The system for recognizing electronic commerce web sites of Claim 9 wherein the enhanced web browser further comprises:

 merchant identification module that conveys a query to said merchant database server using said computer network wherein said query is based on said extracted merchant name;

 merchant attribute module that retrieves merchant attributes from said merchant database server corresponding to said extracted merchant name;

 tag composer that creates a merchant tag in page description language for a web page that presents said merchant attributes; and

 tag presentation module that forwards the merchant tag to said second web browser child control.

12. The system for recognizing electronic commerce web sites of Claim 9 wherein the enhanced web browser further comprises:

 merchant identification module that conveys a query to said merchant database server using said computer network wherein said query is based on said extracted merchant name;

 merchant attribute module that retrieves merchant tag from said merchant database server wherein the merchant tag is comprised of a page description language definition of a web page that presents merchant attributes corresponding with said extracted merchant name; and

 tag presentation module that forwards the merchant tag to said second web browser child control.

13. A system for recognizing electronic commerce web sites comprising:

 product database server;

 computer network;

 enhanced web browser comprising:

  web control creation module that creates a first web browser child control and a second web browser child control;

  web address selection module that accepts a web page address;

  web page selection module that retrieves a web page description from a merchant commerce server and forwards the web page description to said first web browser child control; and

  syntax analyzer that parses the web page address in order to extract a product identification code from said web address.

14. The system for recognizing electronic commerce web sites comprising of Claim 13 wherein the web control creation module creates the second web browser child control

adjacent to the first web browser child control.

15. The system for recognizing electronic commerce web sites of Claim 13 wherein the
    enhanced web browser further comprises:

    product identification module that conveys a query to said product database
    server using said computer network wherein said query is based on said
    extracted product identification code;

    product attribute module that retrieves product attributes from said product
    database server corresponding to said extracted product identification code;

    tag composer that creates a product tag in page description language for a
    web page that presents said product attributes; and

    tag presentation module that forwards the product tag to said second web
    browser child control.

16. The system for recognizing electronic commerce web sites of Claim 13 wherein the
    enhanced web browser further comprises:

    merchant identification module that conveys a query to said merchant
    database server using said computer network wherein said query is based on
    said extracted merchant name;

    merchant attribute module that retrieves merchant tag from said merchant
    database server wherein the merchant tag is comprised of a page description
    language definition of a web page that presents merchant attributes; and

    tag presentation module that forwards the merchant tag to said second web
    browser child control.

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FIG. 1

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FIG. 2

Super Search Engine

find: CLASSIC CARS ⌐100

SUBMIT ⌐105

FIG. 3

SEARCH RESULTS FOR
"CLASSIC CARS"

115⌐ Rod's Rods
CLASSIC CARS

⌐110

JIMS CLASSIC RESTORATIONS

NOW USED BY OVER 10,000 CLASSIC
CAR ENTHUSIASTS   JIMS RESTORATIONS

INDEPENDENT CLASSIC

A NEWS LETTER FOR CALSSIC CAR
RESTORATION
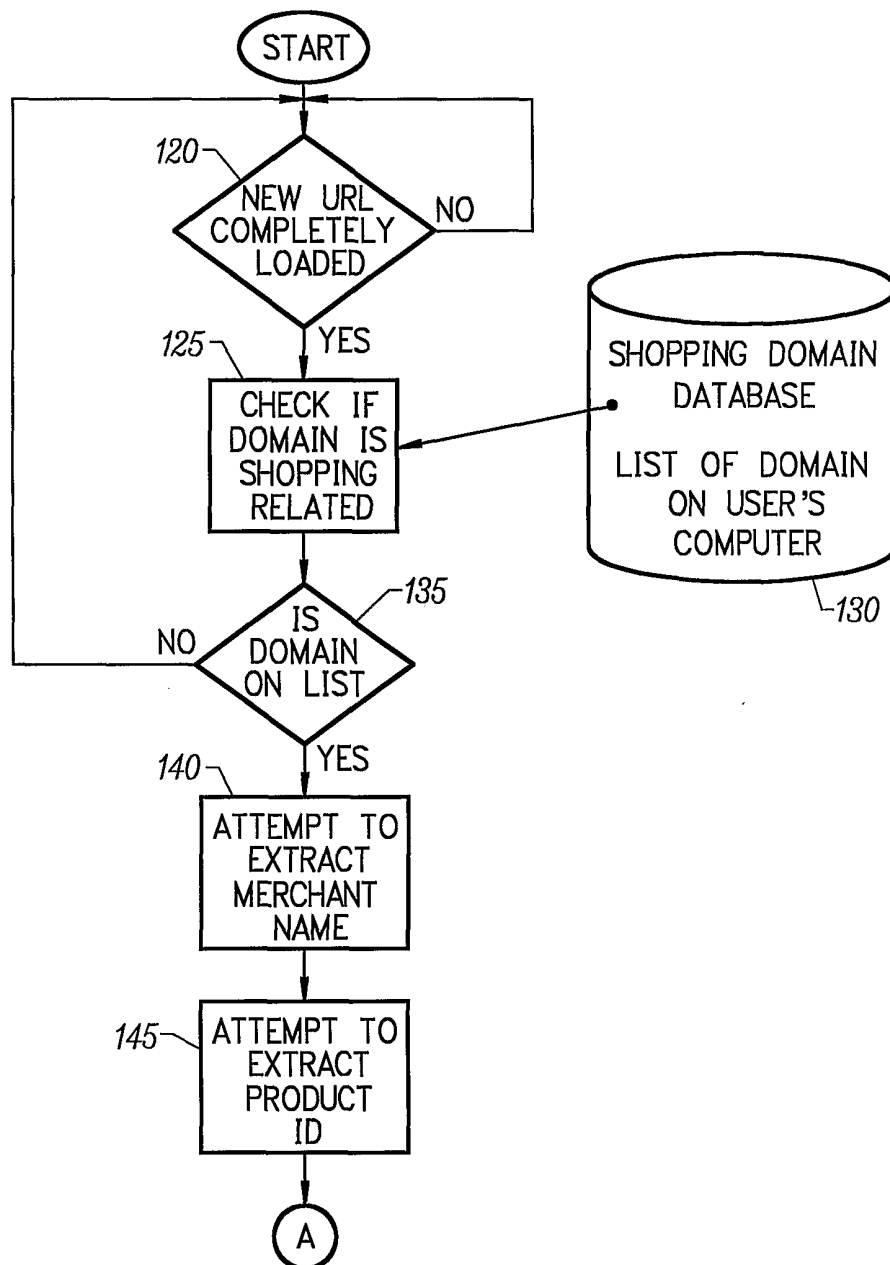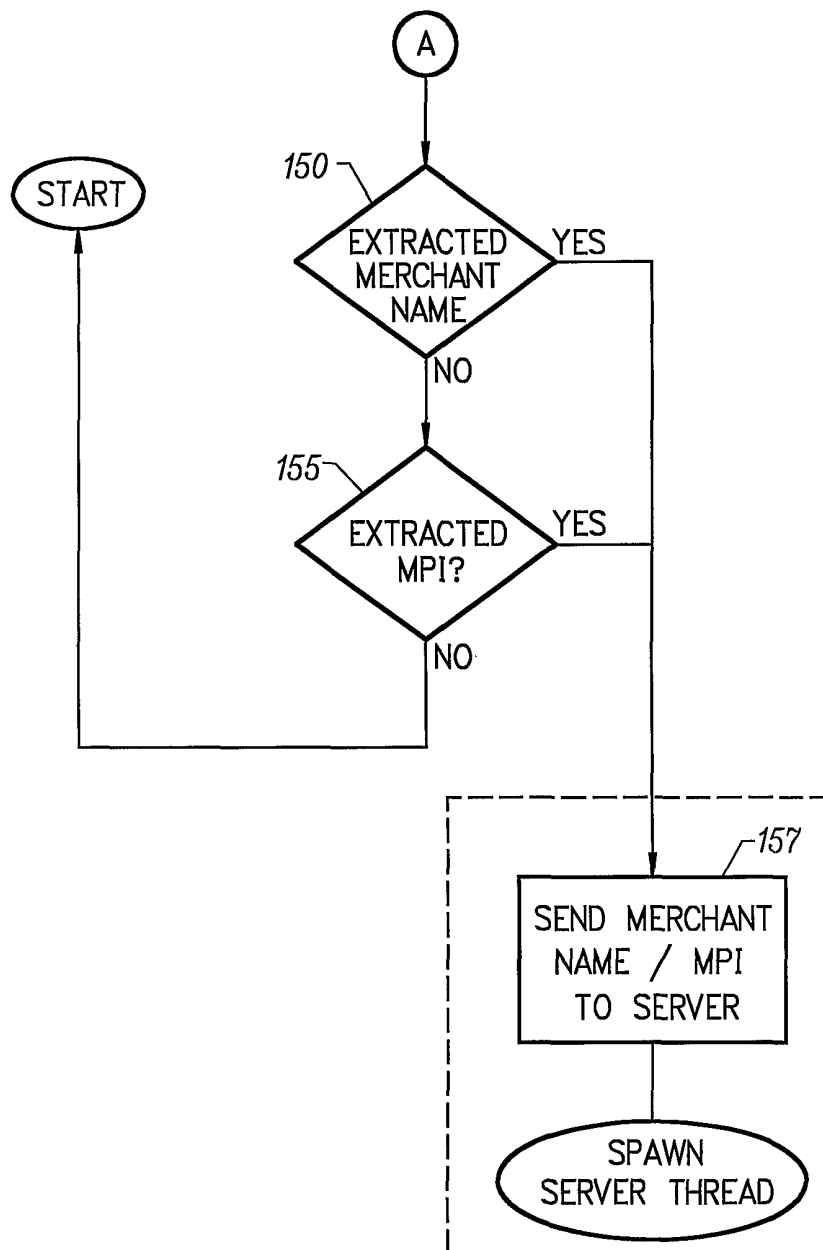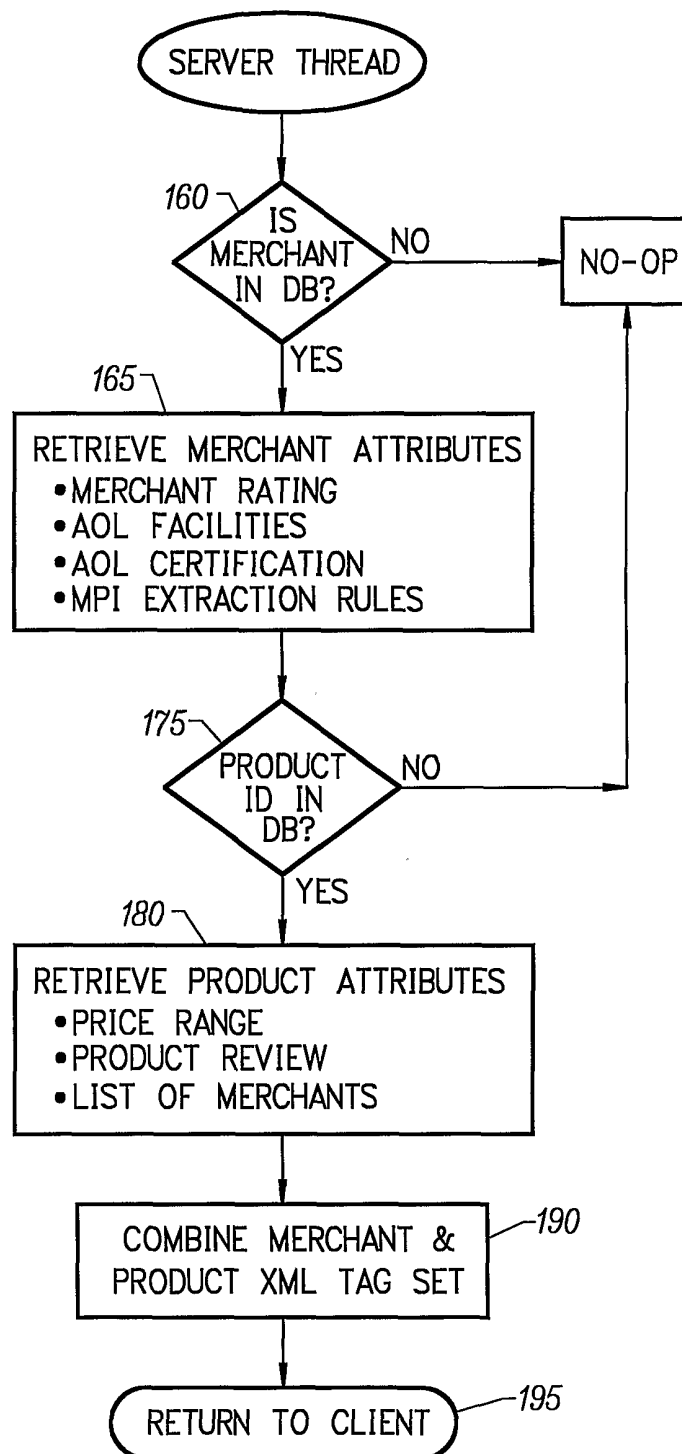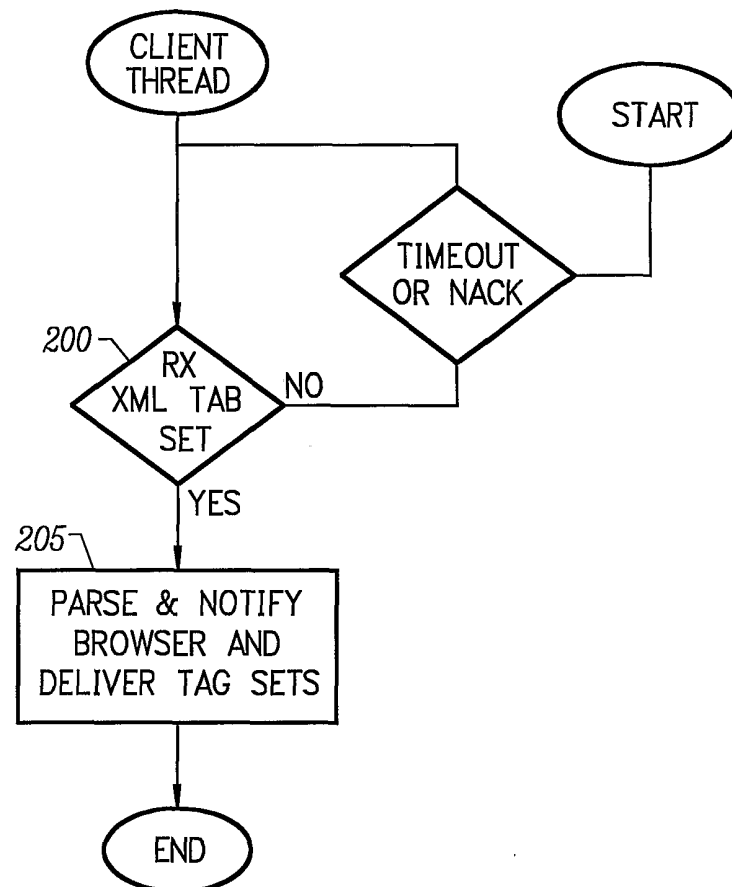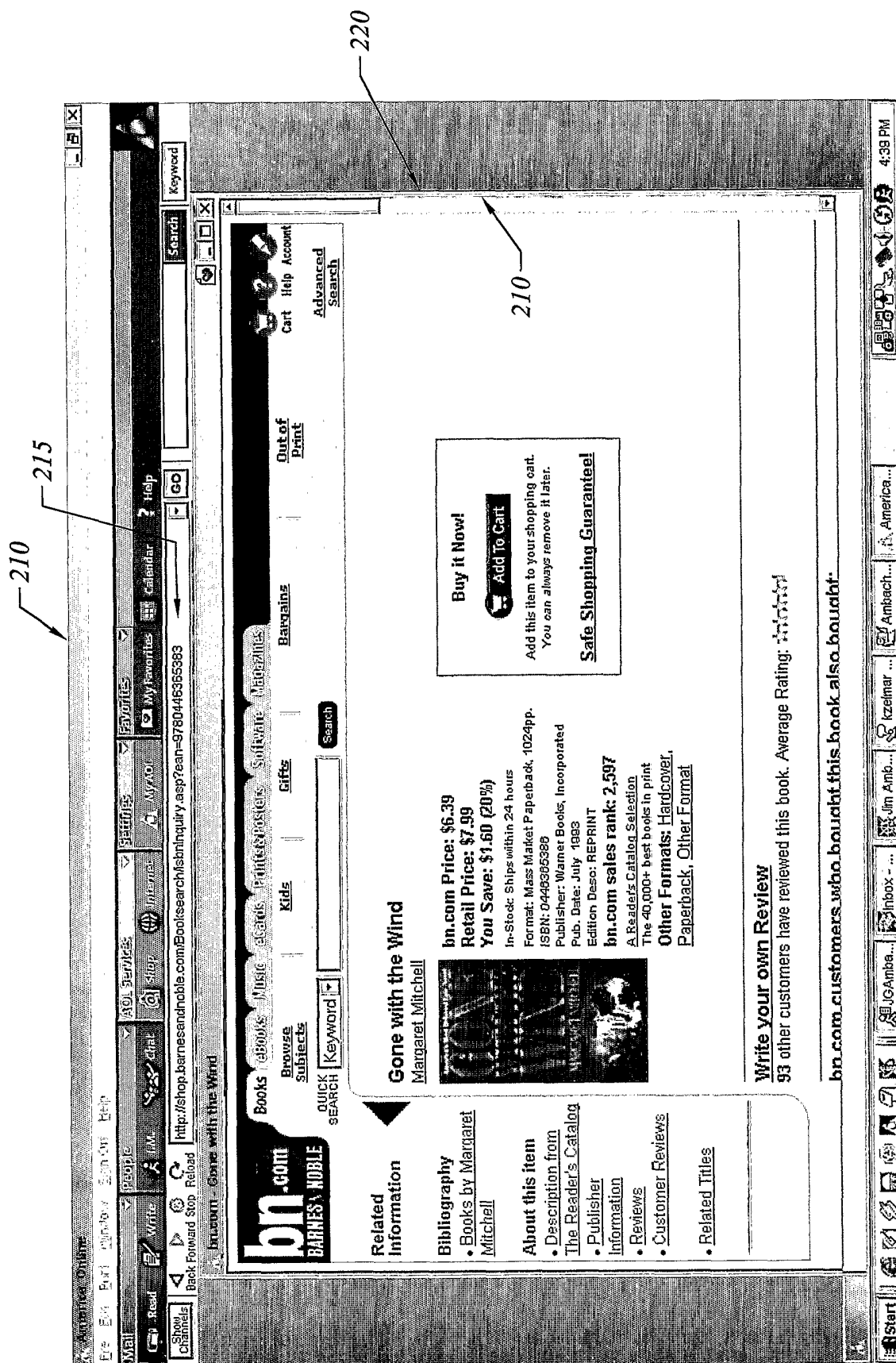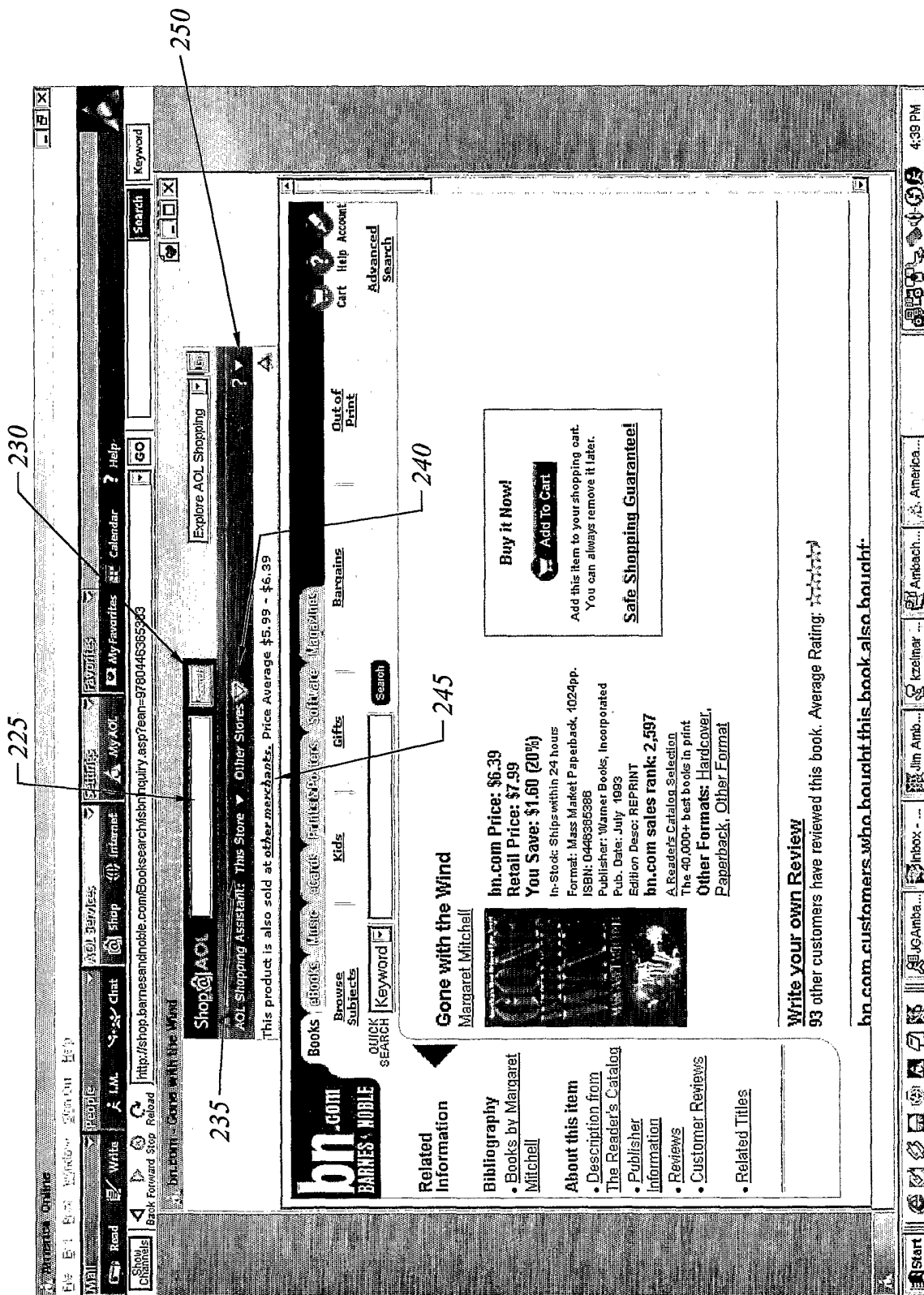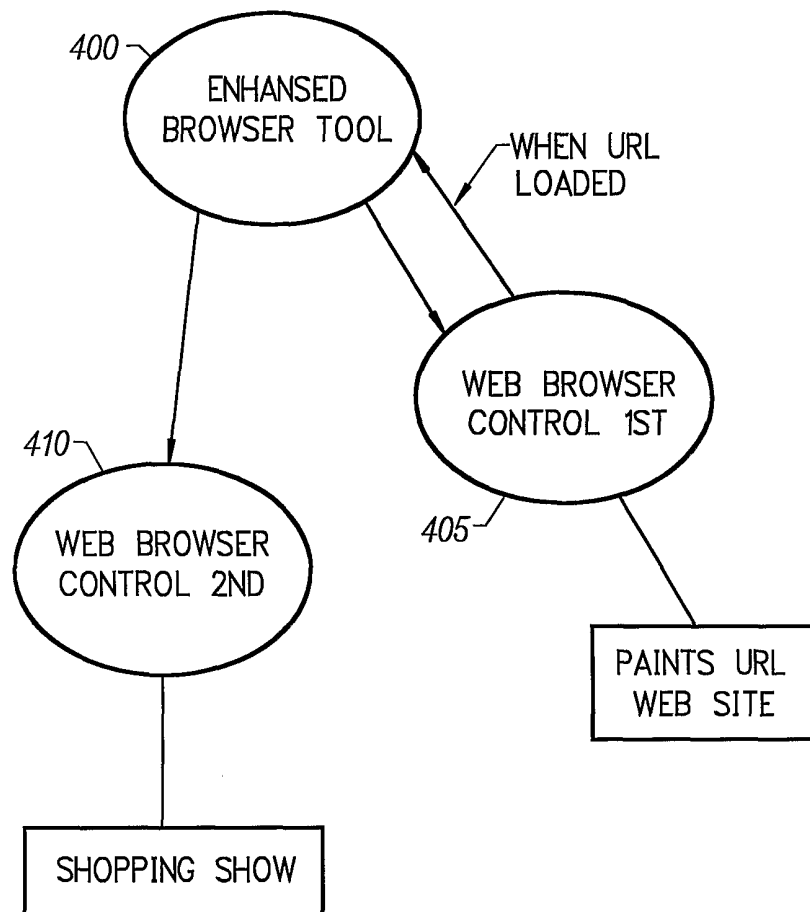
ENTER
CLASSIC
RALLY   ⌐115

FIG. 4

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
          ┌──────────────┼────────────────────┐
          │              ▼                     │
      120─┐        ╱─────────────╲             │
          │      ╱   NEW  URL      ╲    NO     │
          └─────┤  COMPLETELY       ├──────────┘
                 ╲    LOADED       ╱
                   ╲─────────────╱
                         │ YES
      125─┐              ▼                 ┌──────────────────────┐
          │      ┌─────────────┐          │ SHOPPING  DOMAIN      │
          │      │  CHECK  IF  │          │    DATABASE          │
          └──────│  DOMAIN  IS │◄─────────│                      │
                 │  SHOPPING   │          │ LIST  OF  DOMAIN     │
                 │  RELATED    │          │   ON  USER'S         │
                 └─────────────┘          │   COMPUTER           │
                         │                └──────────────────────┘
                         ▼        ┌─135              └─130
          ╱─────────────╲
   NO   ╱       IS        ╲
  ◄────┤     DOMAIN        ├
        ╲    ON  LIST     ╱
          ╲─────────────╱
                 │ YES
      140─┐      ▼
          │ ┌─────────────┐
          │ │  ATTEMPT  TO│
          └─│   EXTRACT   │
            │  MERCHANT   │
            │    NAME     │
            └─────────────┘
                 │
                 ▼
      145─┐ ┌─────────────┐
          │ │  ATTEMPT  TO│
          └─│   EXTRACT   │
            │   PRODUCT   │
            │     ID      │
            └─────────────┘
                 │
                 ▼
               ( A )
```

FIG. 5

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FIG. 6

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```
                    ⭕ SERVER  THREAD ⭕
                              │
                              ▼
              160 ─┐    ◇ IS          ◇  NO        ┌──────────┐
                   └─  MERCHANT  ──────────────────▶│  NO-OP   │
                       ◇ IN DB? ◇                   └──────────┘
                          │ YES                          ▲
                          ▼                              │
    165 ─┐                                               │
  ┌───────────────────────────────────────────┐         │
  │ RETRIEVE  MERCHANT  ATTRIBUTES             │         │
  │  • MERCHANT  RATING                        │         │
  │  • AOL  FACILITIES                         │         │
  │  • AOL  CERTIFICATION                      │         │
  │  • MPI  EXTRACTION  RULES                  │         │
  └───────────────────────────────────────────┘         │
                          │                              │
                          ▼                              │
    175 ─┐        ◇ PRODUCT ◇  NO                        │
                  ◇  ID  IN  ──────────────────────────┘
                  ◇   DB?   ◇
                          │ YES
                          ▼
    180 ─┐
  ┌───────────────────────────────────────────┐
  │ RETRIEVE  PRODUCT  ATTRIBUTES             │
  │  • PRICE  RANGE                            │
  │  • PRODUCT  REVIEW                         │
  │  • LIST  OF  MERCHANTS                     │
  └───────────────────────────────────────────┘
                          │
                          ▼
  ┌───────────────────────────────────┐ ─190
  │    COMBINE  MERCHANT  &            │
  │   PRODUCT  XML  TAG  SET           │
  └───────────────────────────────────┘
                          │
                          ▼
          ⬭ RETURN  TO  CLIENT ⬭ ─195
```

FIG. 7

FIG. 8

FIG. 9

FIG. 10

FIG. 10A

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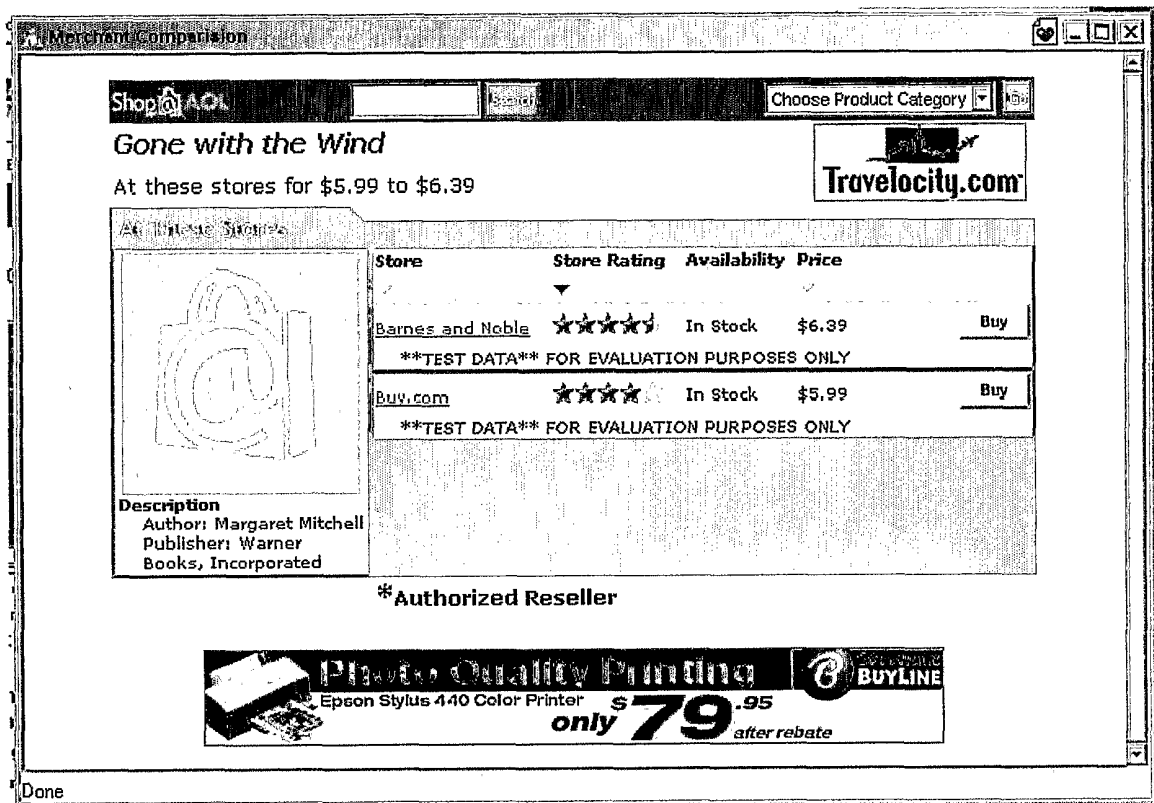
FIG. 11

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 029 141 A (BEZOS JEFFREY P ET AL) 22 February 2000 (2000-02-22) abstract column 1, line 50 -column 3, line 7 column 6, line 1 -column 7, line 5 column 12, line 27 -column 13, line 8 ---	1,3-5, 7-9,13
Y	US 5 913 210 A (CALL CHARLES G) 15 June 1999 (1999-06-15) abstract column 1, line 33 -column 2, line 48 column 3, line 48 -column 4, line 33 column 6, line 32 -column 7, line 48 --- -/--	1,3-5, 7-9,13

| X | Further documents are listed in the continuation of box C. | | X | Patent family members are listed in annex. |

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Date of the actual completion of the international search	Date of mailing of the international search report
27 September 2001	05/10/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Boyadzhiev, Y

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 897 622 A (COHEN MICHAEL ARI ET AL) 27 April 1999 (1999-04-27) abstract column 3, line 1 -column 3, line 55 column 6, line 47 -column 7, line 67 column 9, line 14 -column 9, line 54	1-16
A	DOORENBOS R B ET AL: "A SCALABLE COMPARISON-SHOPPING AGENT FOR THE WORLD-WIDE WEB" PROCEEDINGS OF THE FIRST INTERNATIONAL CONFERENCE ON AUTONOMOUS AGENTS MARINA DEL REY, CA., FEB. 5 - 8, 1997, PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON AUTONOMOUS AGENTS, NEW YORK, ACM, US, vol. CONF. 1, 1997, pages 39-48, XP000915342 ISBN: 0-89791-877-0 abstract page 39, right-hand column, line 39 -page 40, right-hand column, line 52 page 41, right-hand column, line 13 -page 42, left-hand column, line 30 page 46, left-hand column, line 3 -page 47, left-hand column, line 5	1,5,9,13

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

ional Application No

PCT/US 00/29430

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US 5913210	A	15-06-1999	US	6154738 A	28-11-2000
US 5897622	A	27-04-1999	NONE		