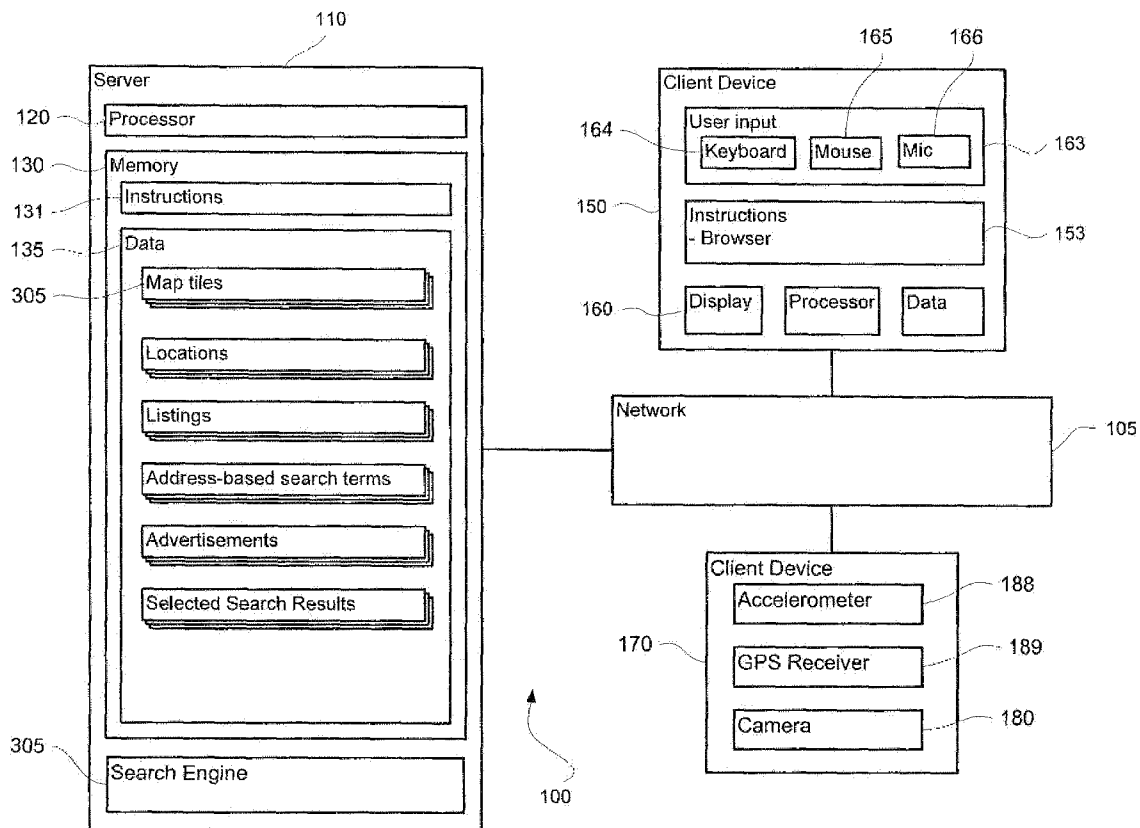




US 20150261858A1

(19) **United States**(12) **Patent Application Publication**
Tang et al.(10) **Pub. No.: US 2015/0261858 A1**(43) **Pub. Date: Sep. 17, 2015**(54) **SYSTEM AND METHOD OF PROVIDING
INFORMATION BASED ON STREET
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(US)(52) **U.S. Cl.**
CPC G06F 17/30864 (2013.01); **G06F 17/30241**
(2013.01); **G06F 17/30398** (2013.01); **G06Q**
30/0256 (2013.01)(57) **ABSTRACT**(73) Assignee: **Google Inc.**, Mountain View, CA (US)(21) Appl. No.: **12/493,532**(22) Filed: **Jun. 29, 2009****Publication Classification**(51) **Int. Cl.**
G06Q 30/00 (2006.01)
G06Q 30/02 (2006.01)
G06F 15/16 (2006.01)

A system and method is provided that infers a user's intent when the user searches for a particular address or other geographic location. In that regard, the system and method may select advertisements in response to a user searching for street addresses. The advertisements may be selected by searching for advertisements that match search terms associated with the street address, where the search terms were associated with the street address based on the businesses at the street address.



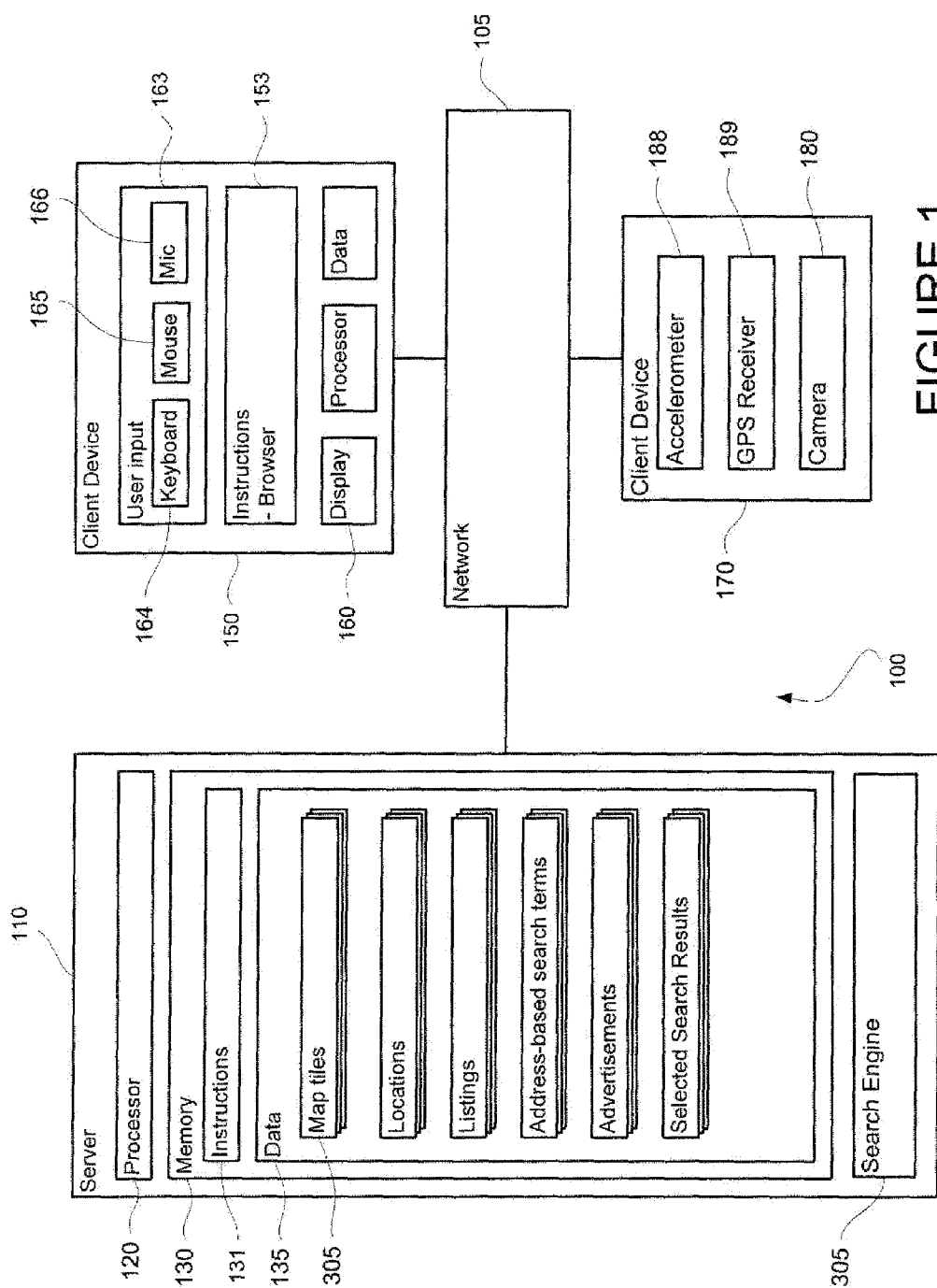


FIGURE 1

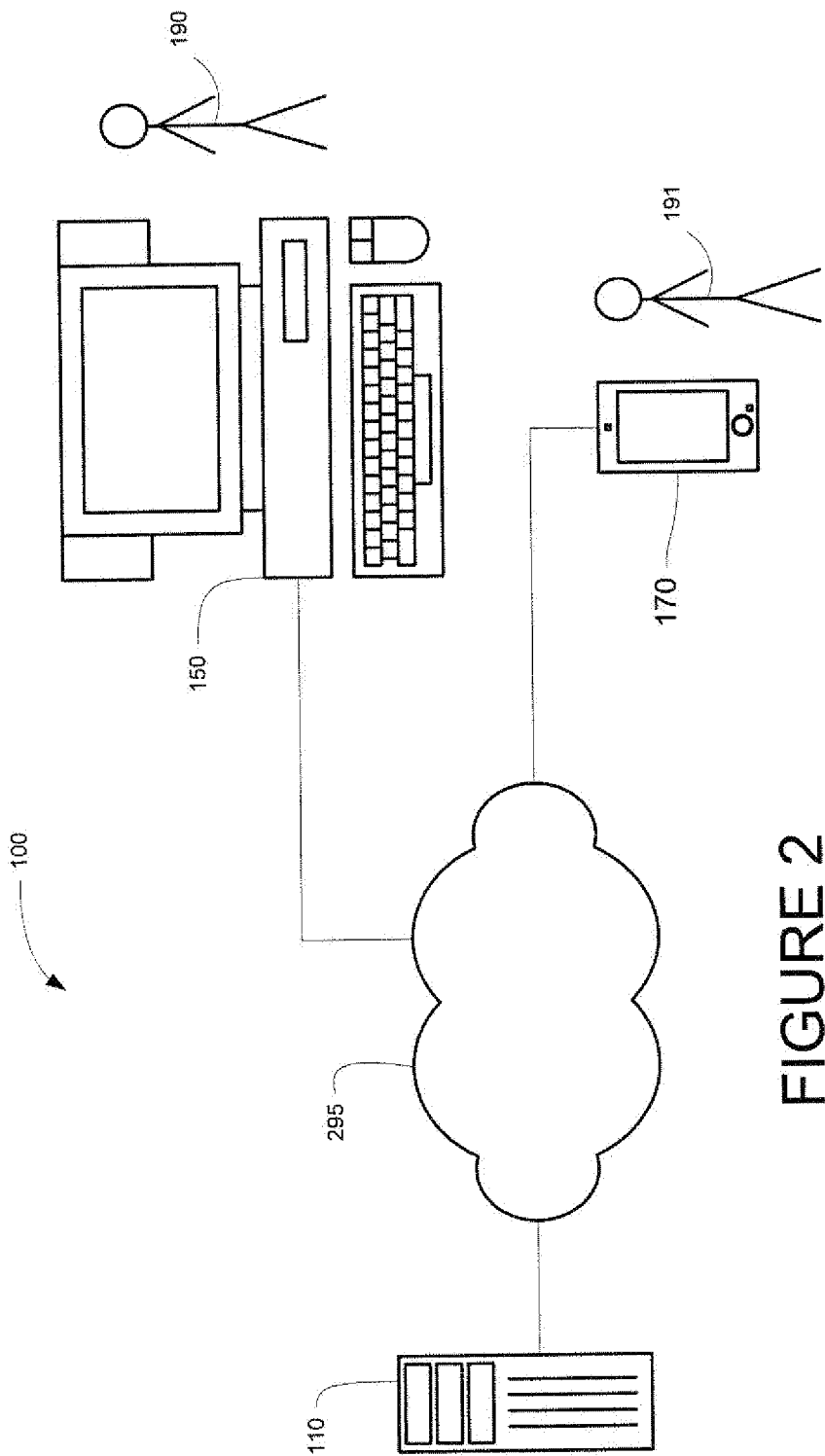


FIGURE 2

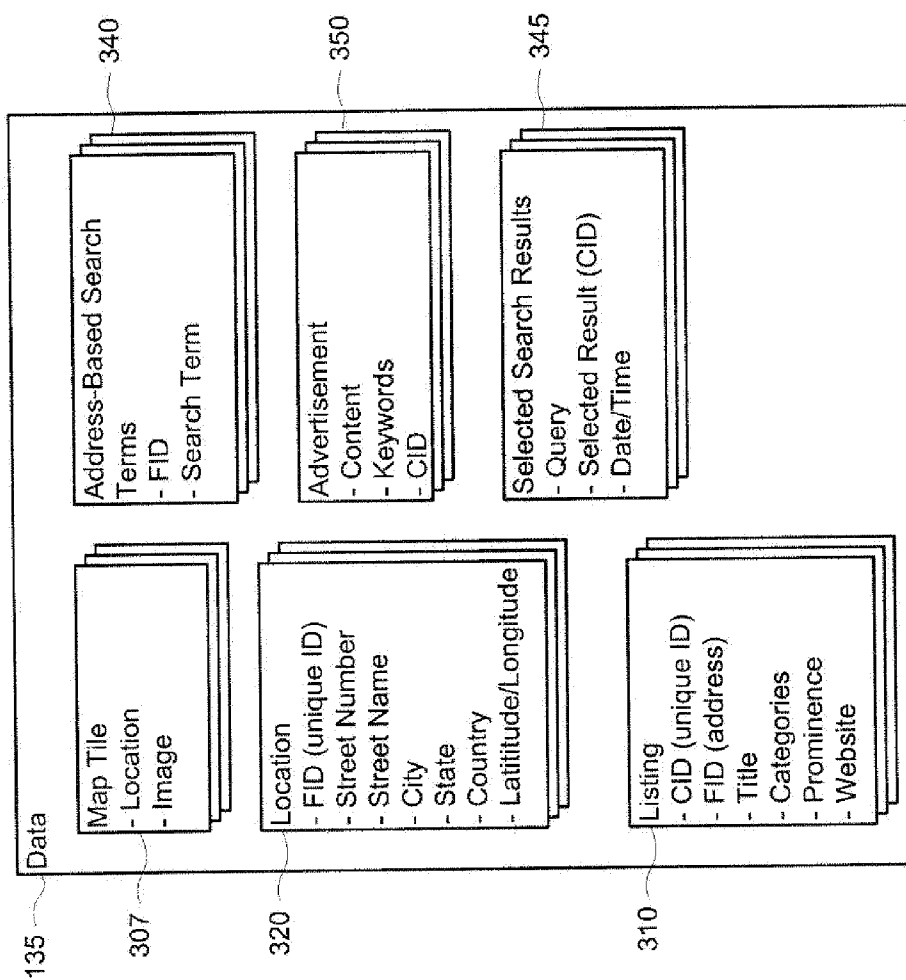


FIGURE 3

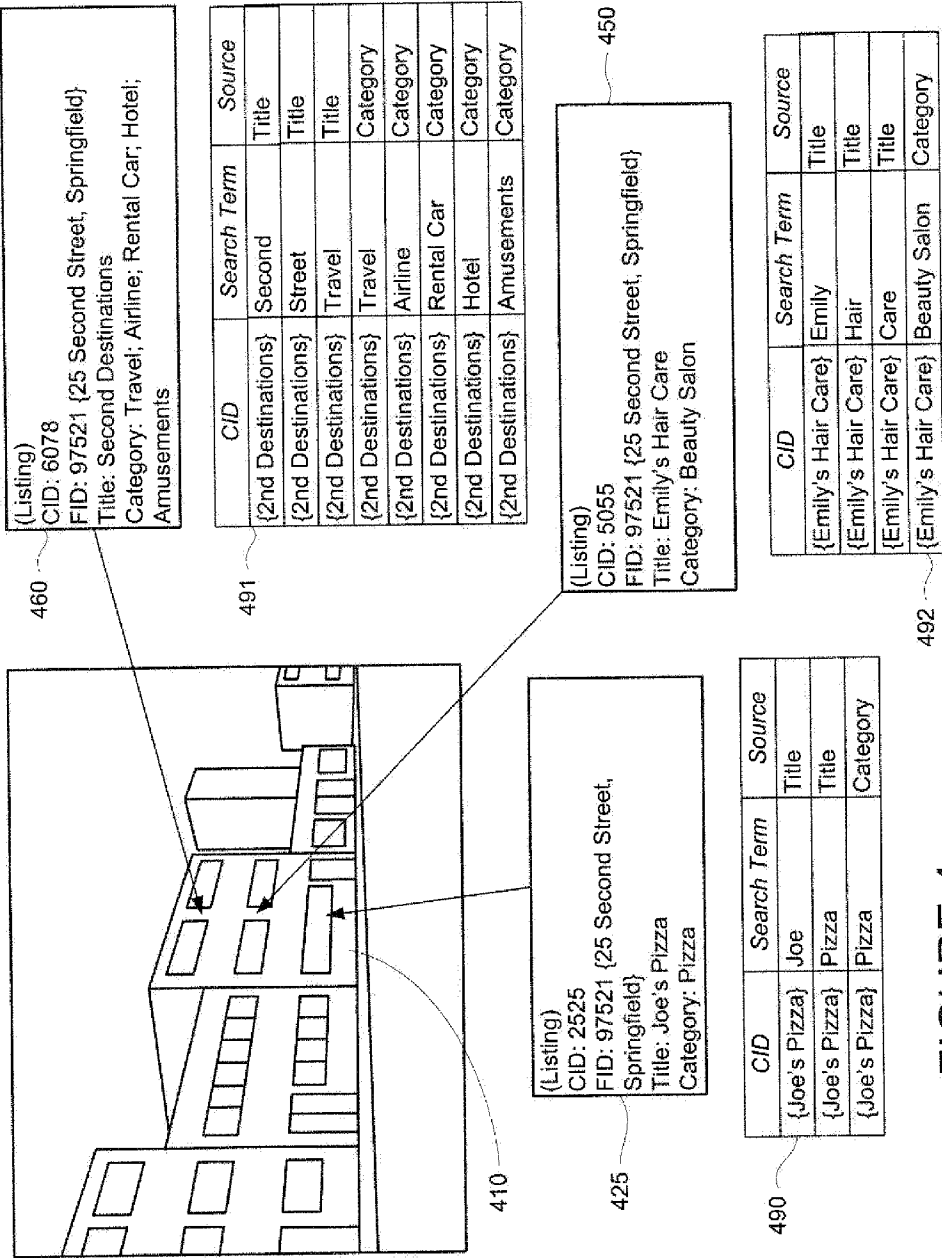


FIGURE 4

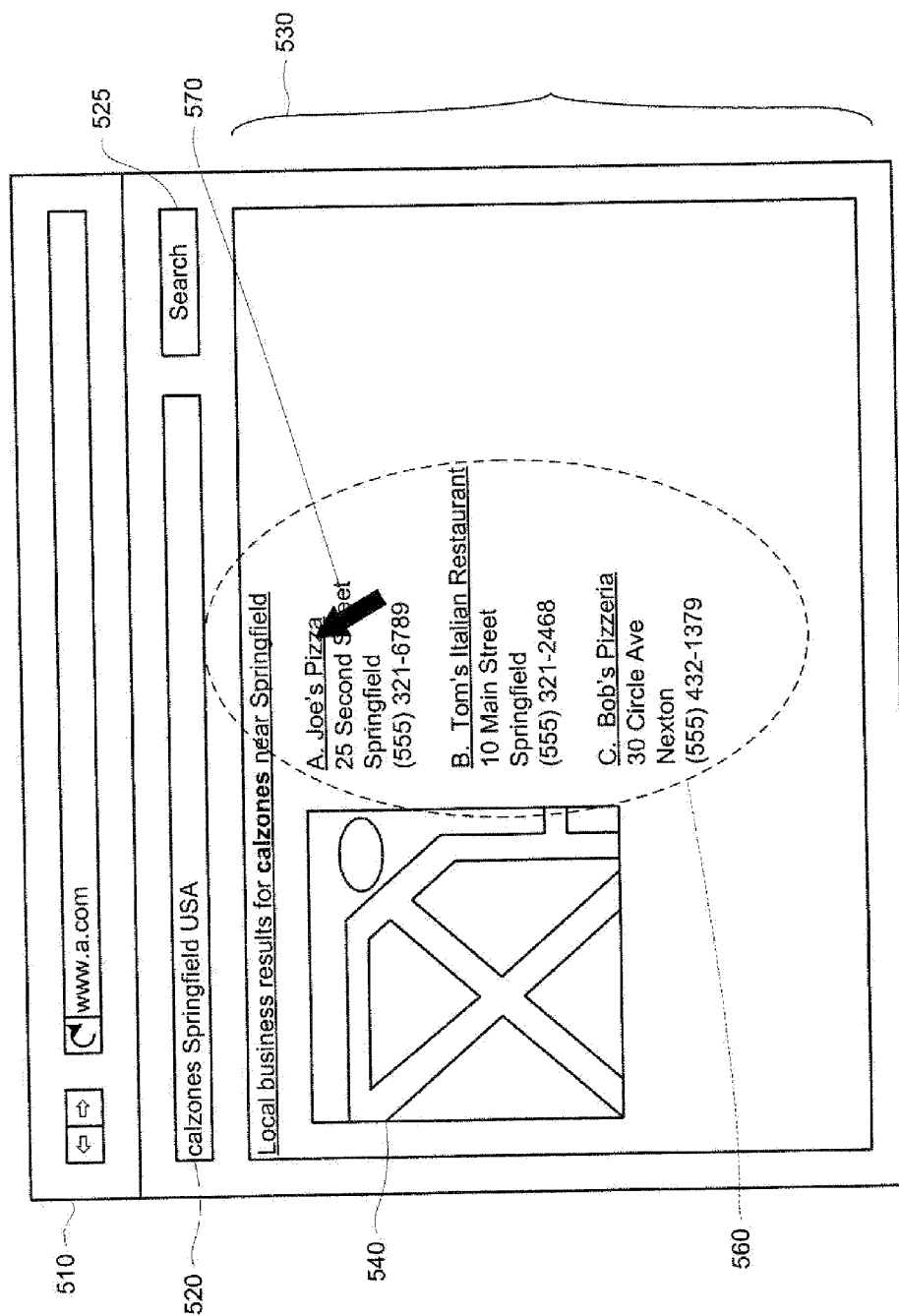


FIGURE 5

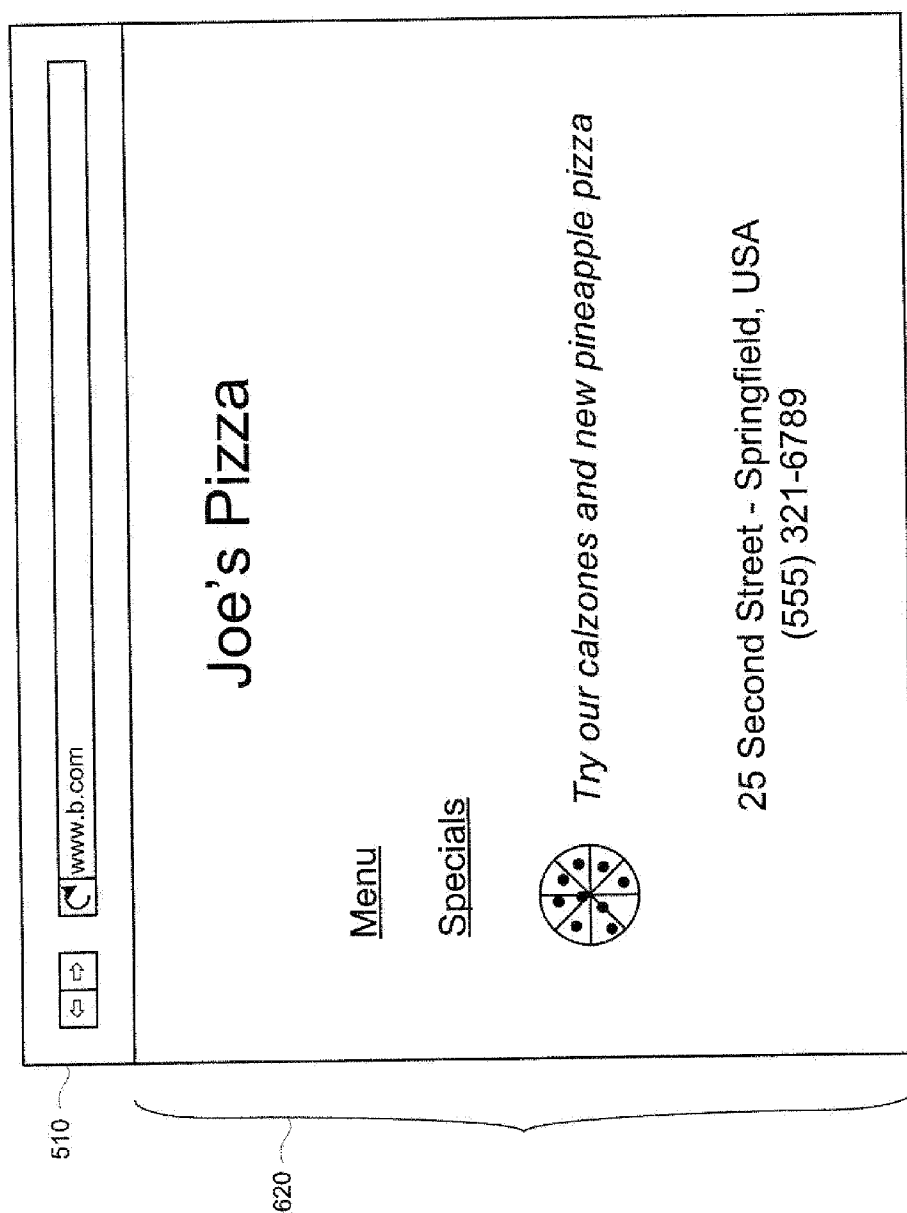


FIGURE 6

710

Instances where listing was selected from search results		
<i>CID</i>	<i>Date</i>	<i>Query</i>
{Joe's Pizza}	1/1/09 10:00 am	Calzones Springfield USA
{Joe's Pizza}	1/1/09 11:05 am	Pizza
{Joe's Pizza}	1/1/09 12:40 pm	Calzones Pizza
{Joe's Pizza}	1/1/09 2:08 pm	Springfield Pizza
{Joe's Pizza}	1/1/09 4:30 pm	Calzones
{Joe's Pizza}	1/1/09 7:10 pm	Calzones
{Joe's Pizza}	1/1/09 9:10 pm	Menu
...	...	...

712 714 716

720

Most popular query for listing		
<i>CID</i>	<i>Search Term</i>	<i>Clicks</i>
{Joe's Pizza}	Calzones	210
{Joe's Pizza}	Pizza	190
{Joe's Pizza}	Menu	80
...	...	...

722

FIGURE 7

810

Candidate terms per listing		
CID	Search Term	Source
{Joe's Pizza}	Joe	Title
{Joe's Pizza}	Pizza	Title
{Joe's Pizza}	Pizza	Category
{Joe's Pizza}	Calzones	Query (210)

811

812

813

814

FIGURE 8

910

Best candidate search term at location, by listing				
FID	CID	Search Term	Source	
{25 Second Street, Springfield }	{Emily's Hair Care}	Haircut	Query (100)	
{25 Second Street, Springfield }	{Joe's Pizza}	Calzones	Query (210)	
{25 Second Street, Springfield }	{2nd Destinations}	Destinations	Title	

920

921

922

923

FIGURE 9

1010

Search term, by location	
{25 Second Street, Springfield }	Calzones
{26 Second Street, Springfield }	Discount Store
{27 Second Street, Springfield }	Beauty
...	...

FIGURE 10

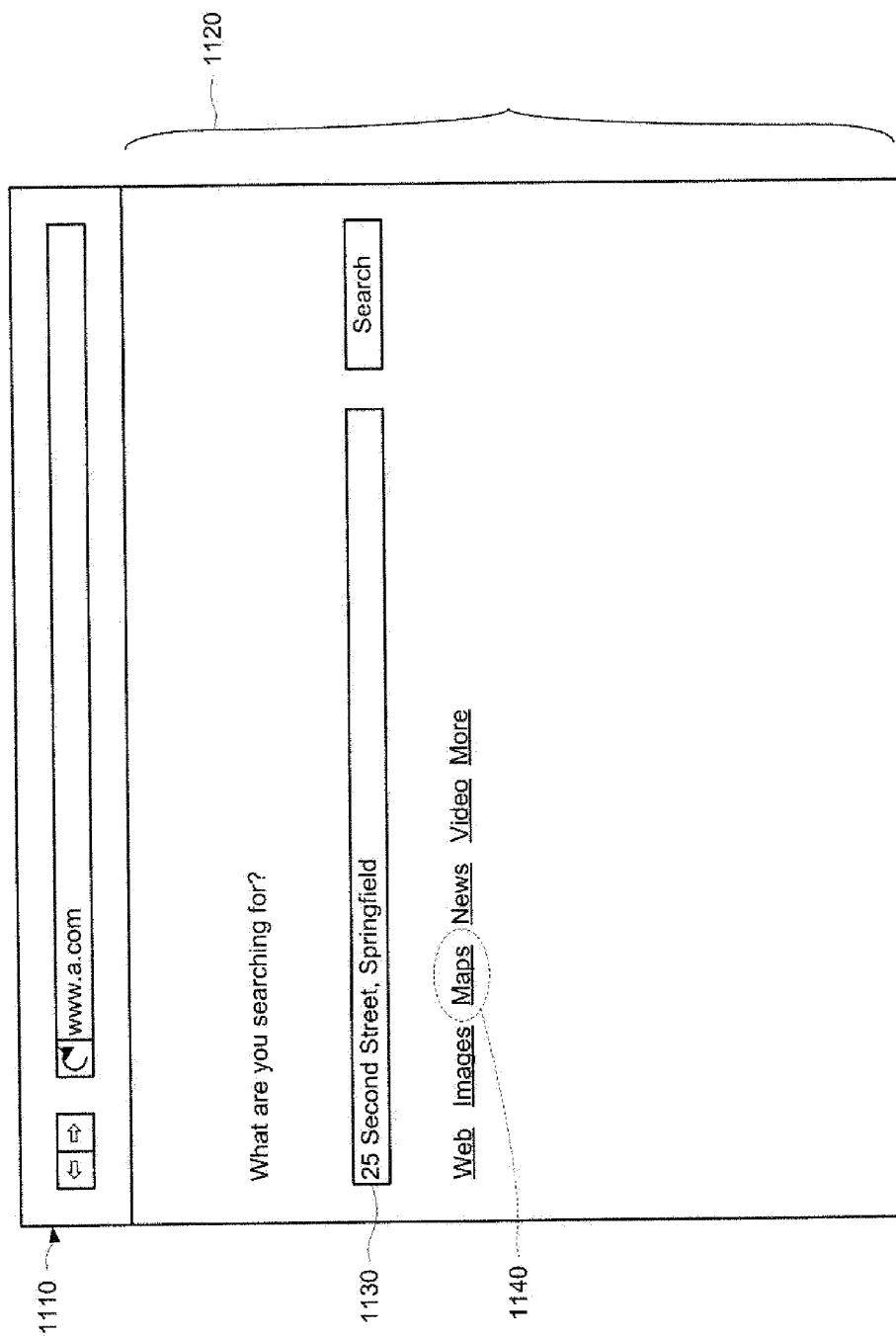
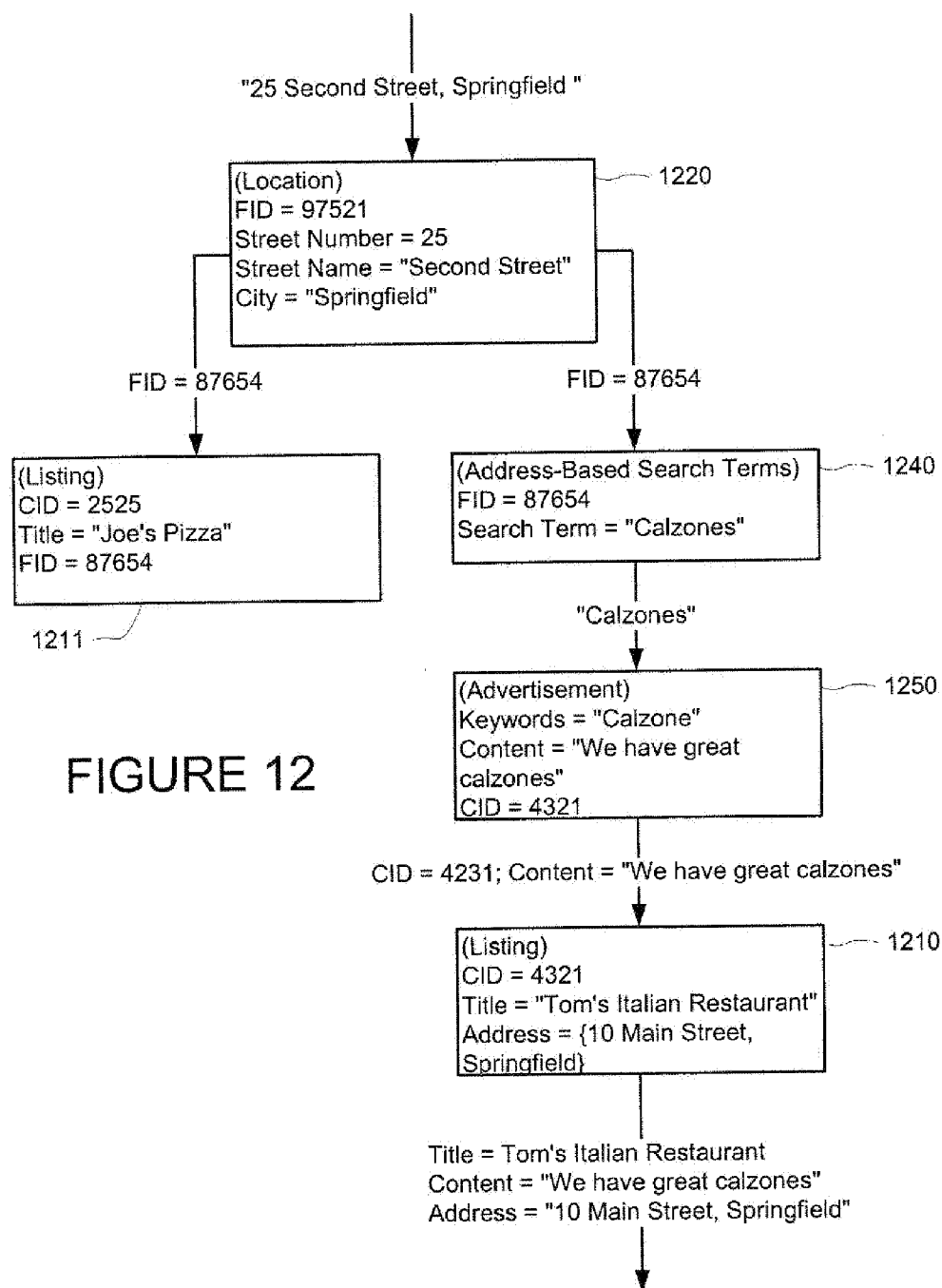


FIGURE 11



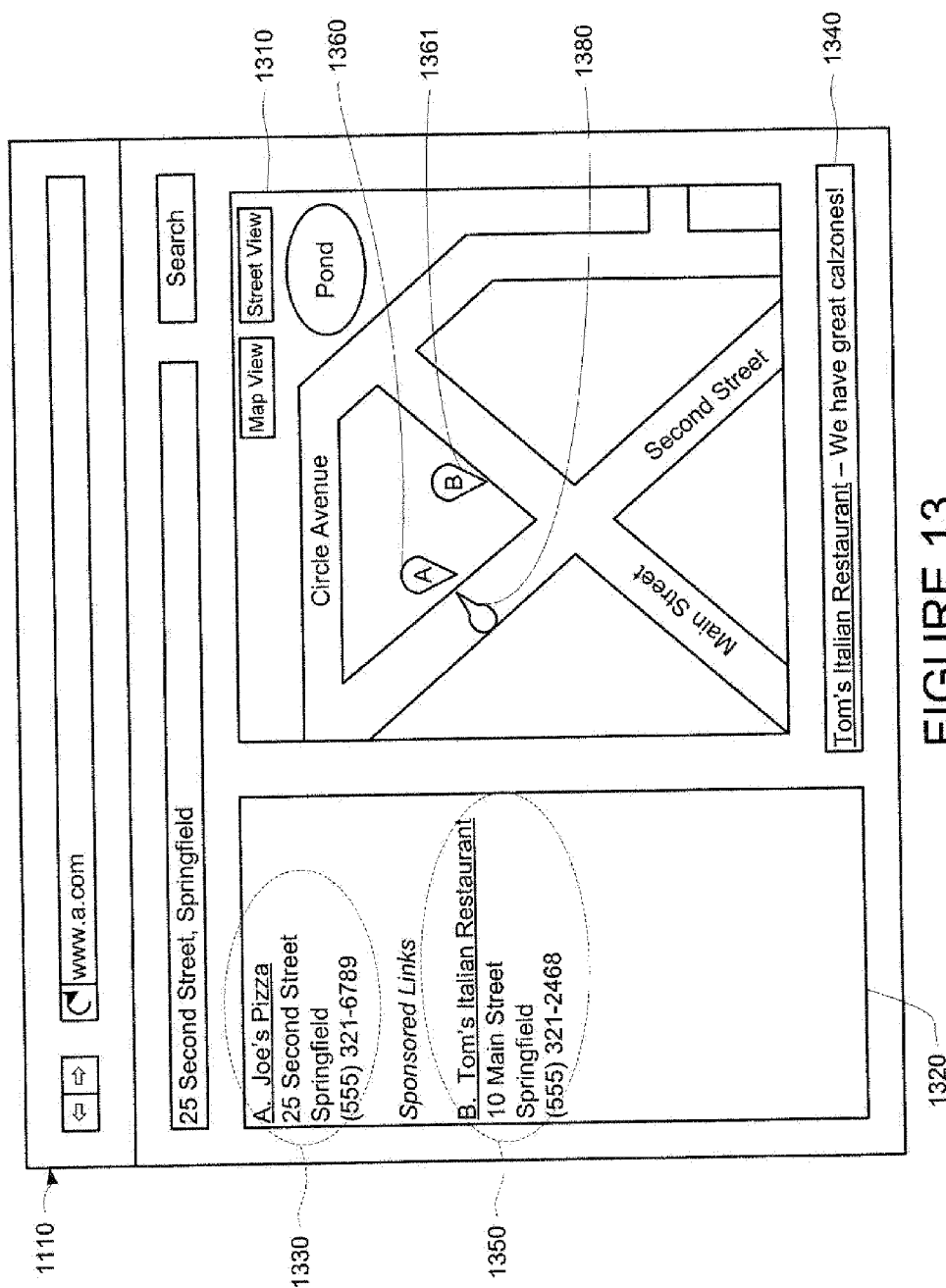


FIGURE 13

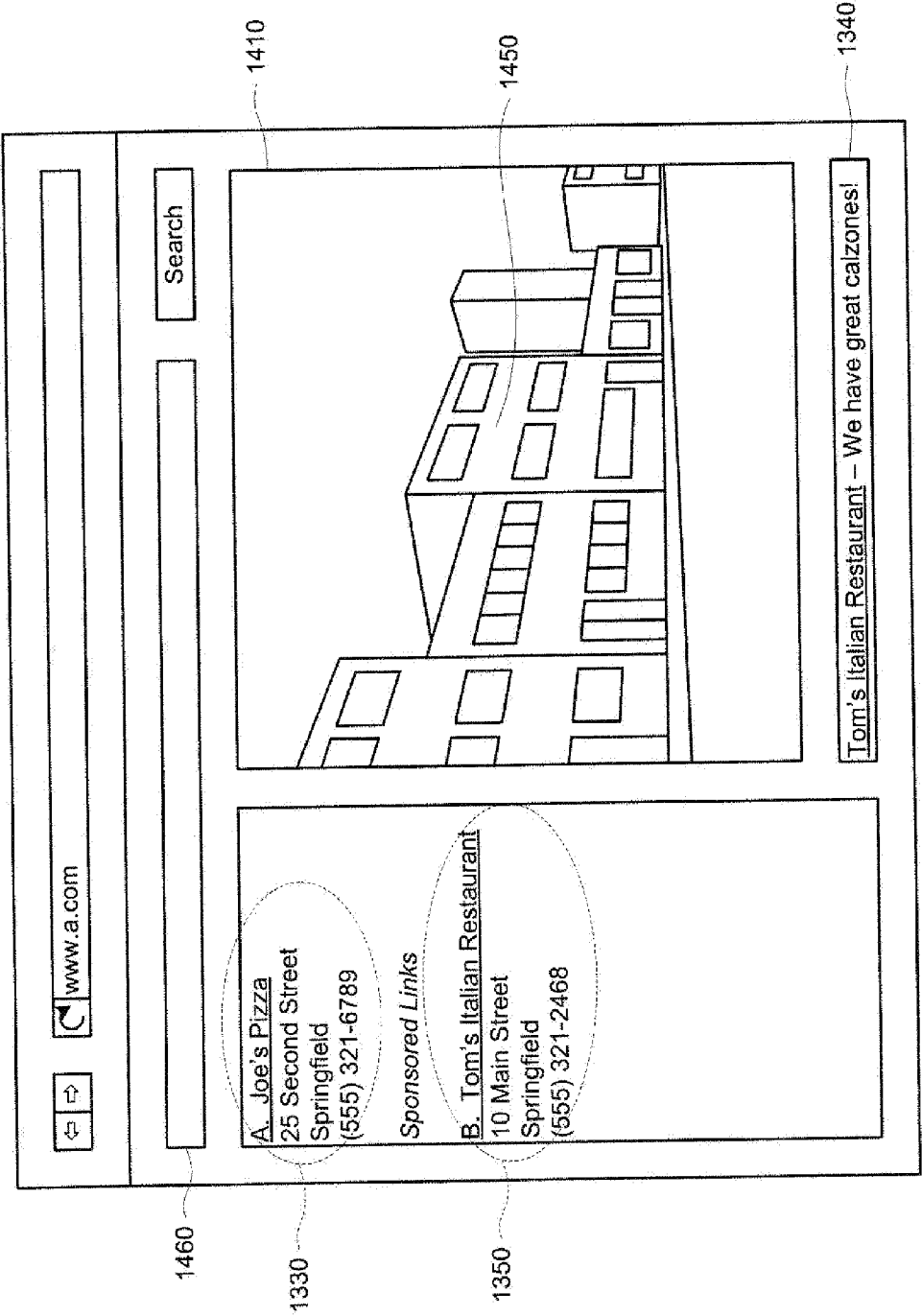


FIGURE 14

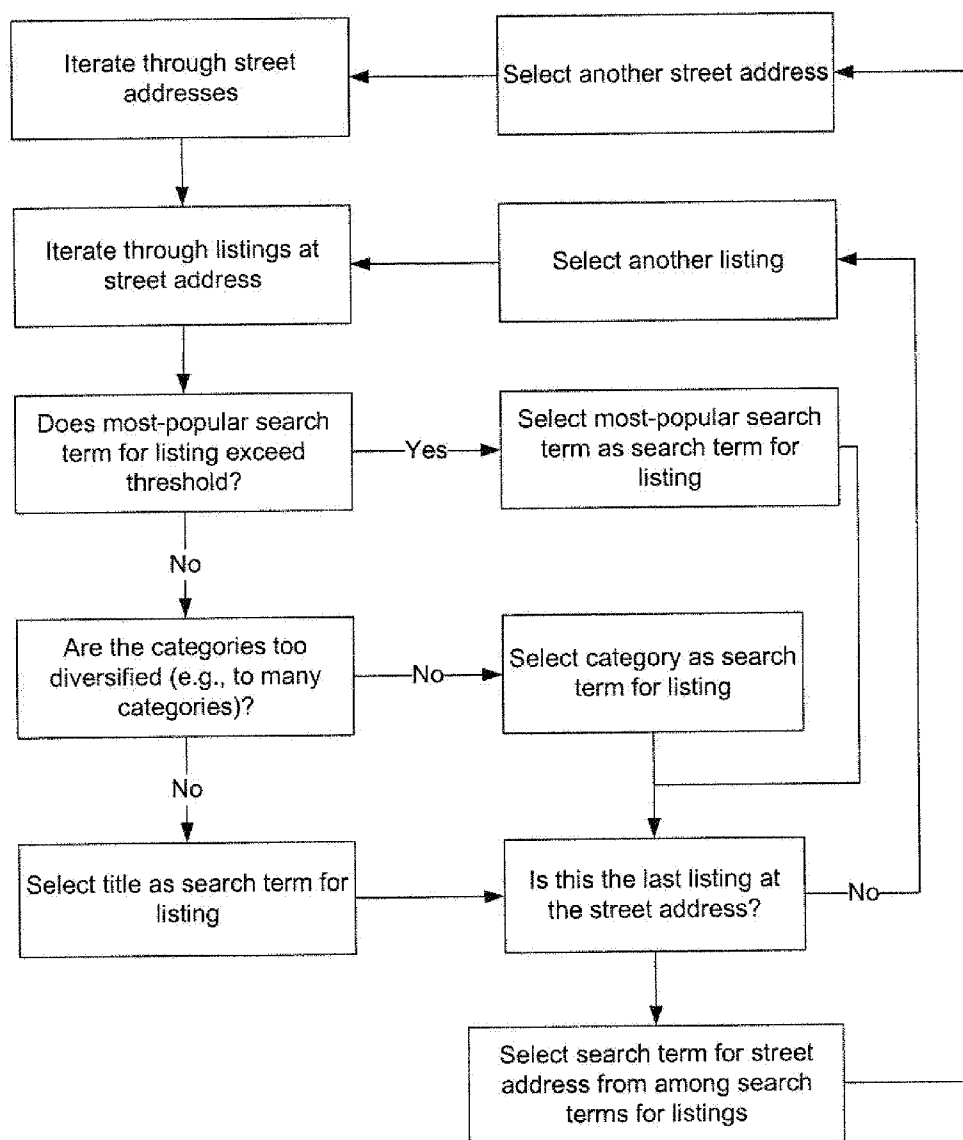


FIGURE 15

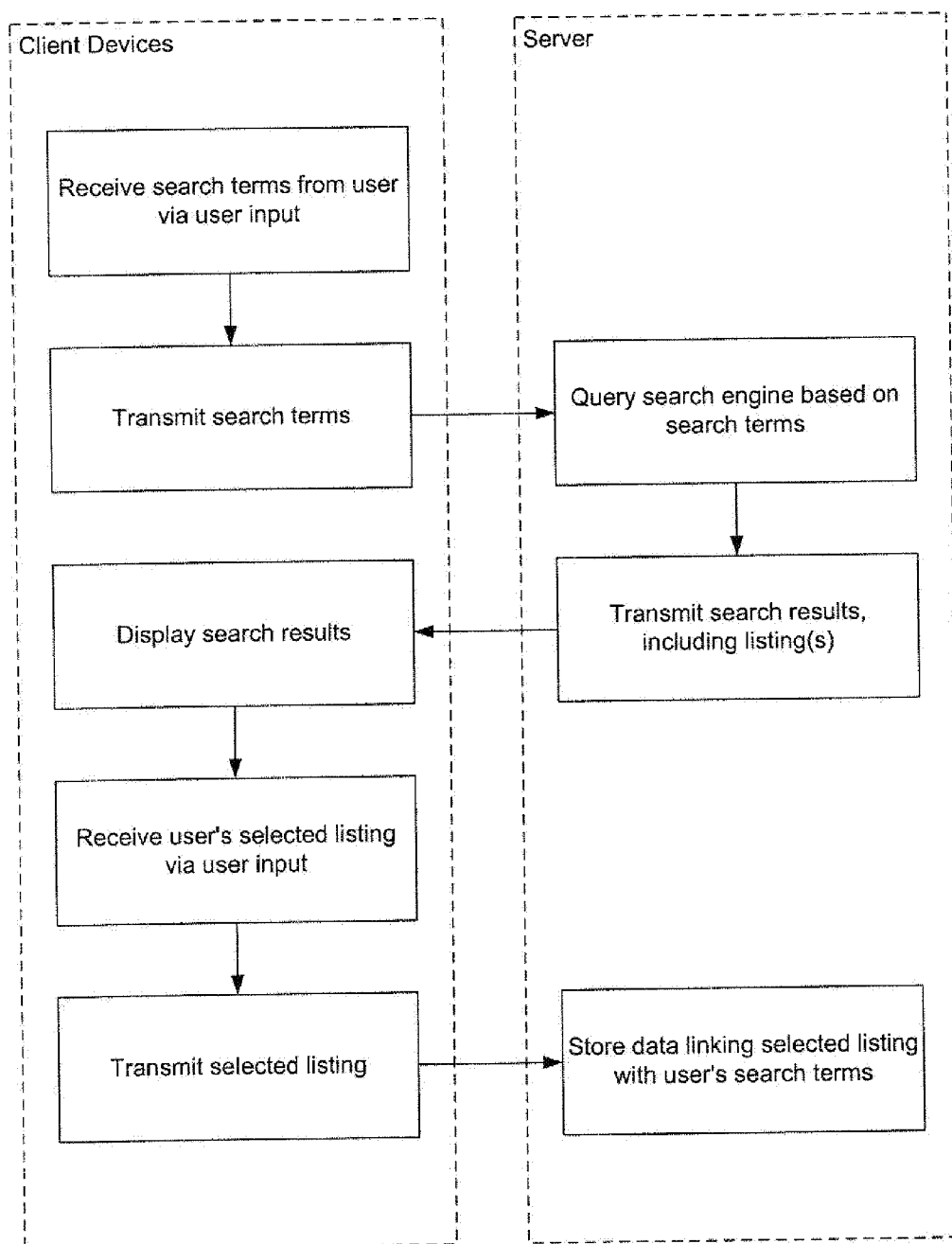


FIGURE 16

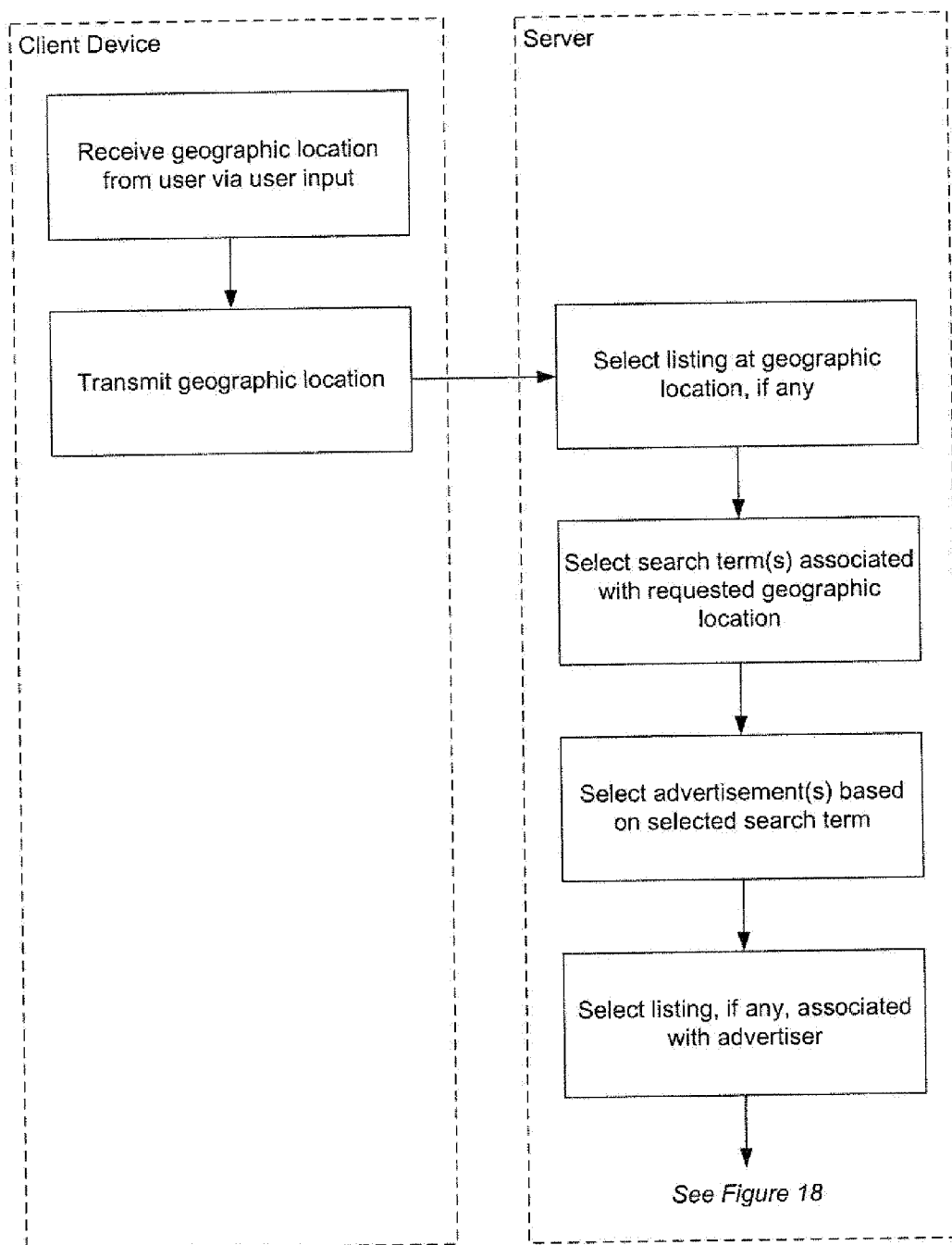


FIGURE 17

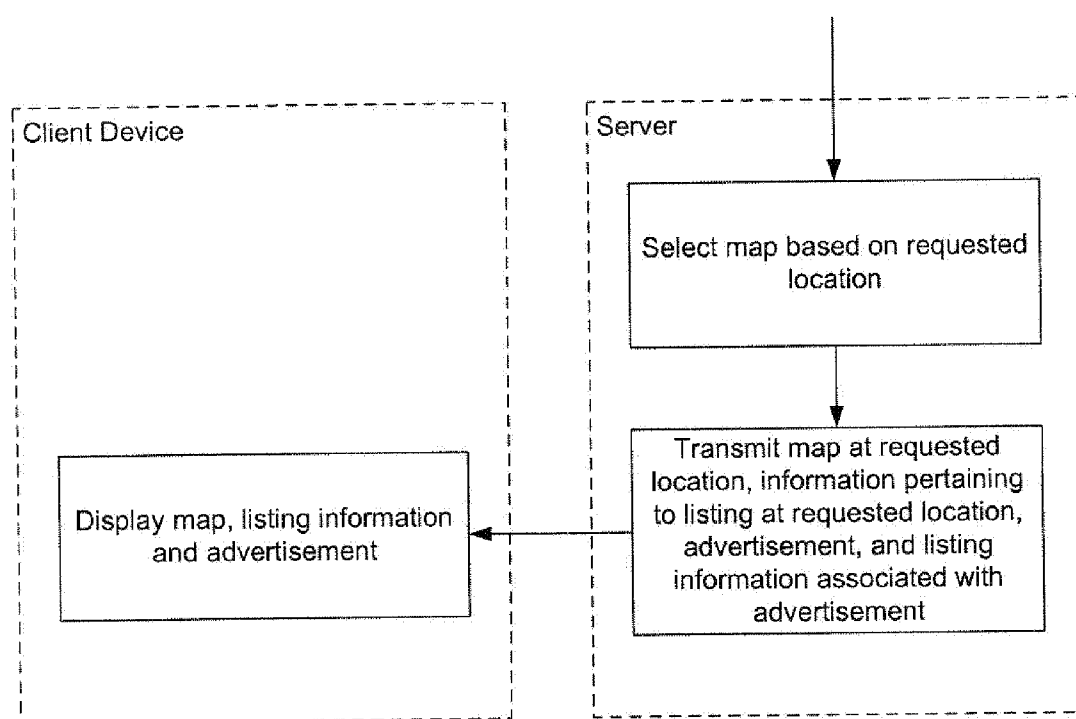


FIGURE 18

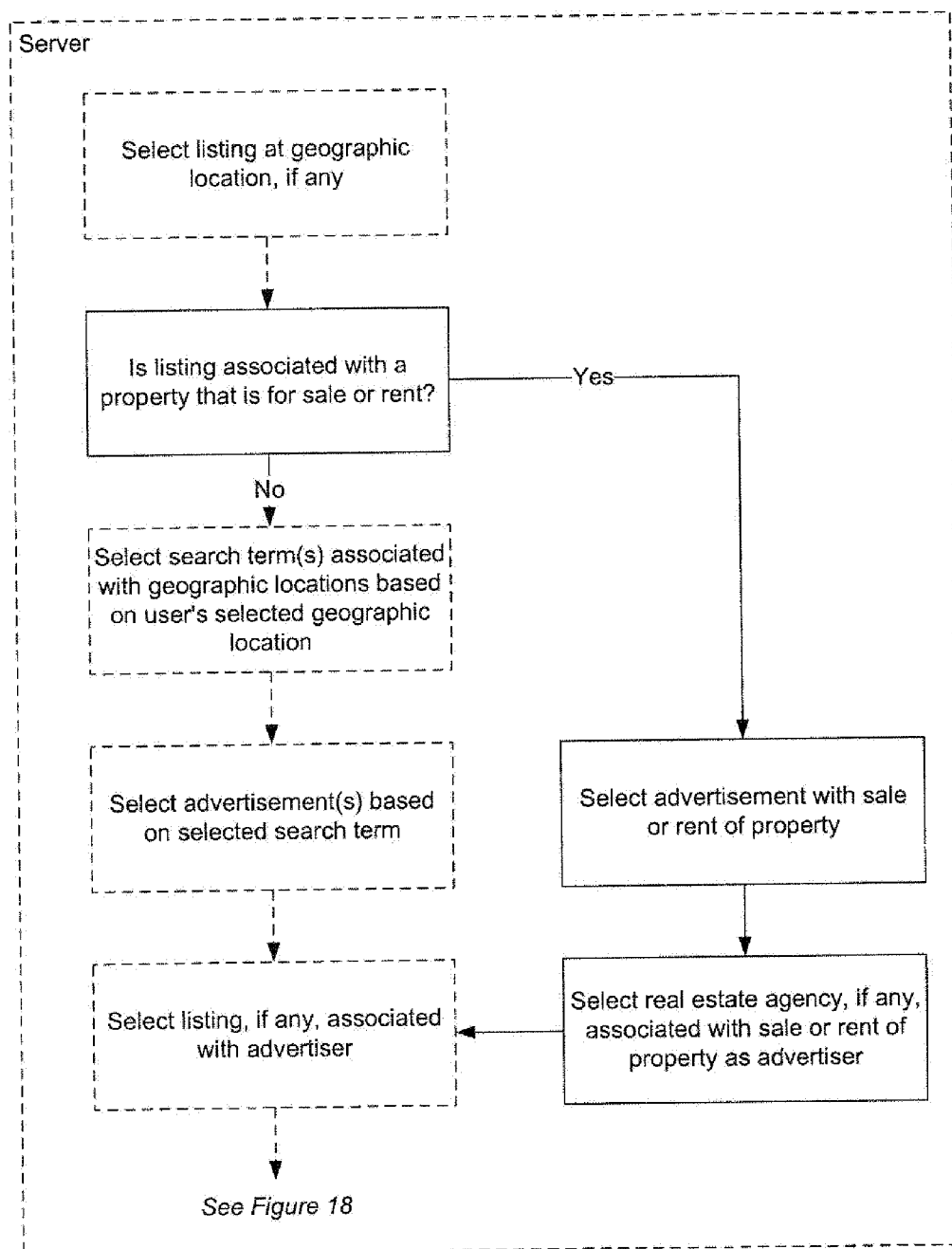
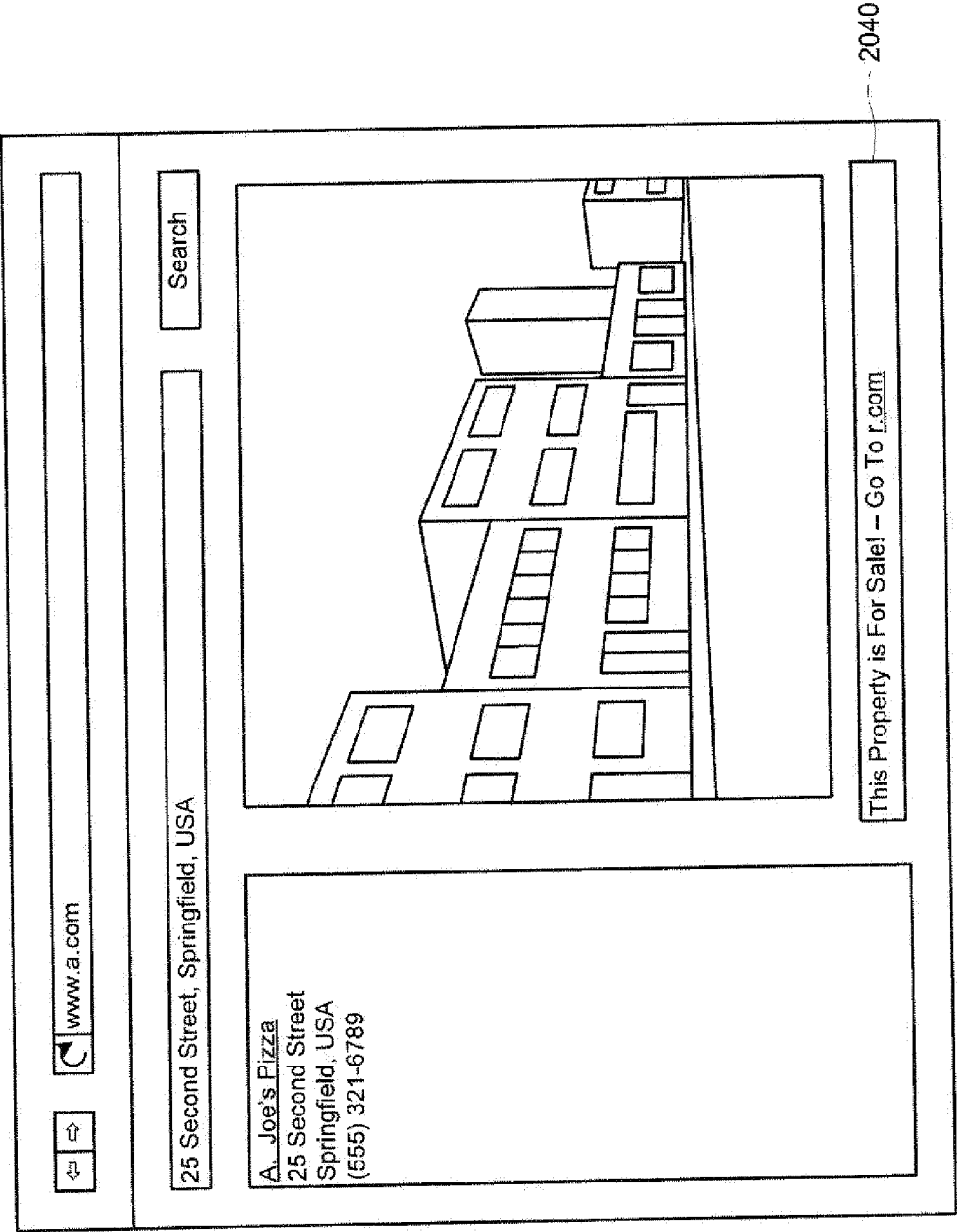


FIGURE 19



2040

FIGURE 20

SYSTEM AND METHOD OF PROVIDING INFORMATION BASED ON STREET ADDRESS

BACKGROUND OF THE INVENTION

[0001] Google offers a variety of services related to searching. For example, a user may enter a search term on a web page offered by the service, and the service returns a webpage containing matching results. A variety of techniques may be used to rank the results. For example, if the results are websites, the websites may be ranked based on their popularity. The results may also be selected and ranked based on the prior search history, e.g., a result is more likely to be ranked higher if many prior users selected the same result in response to a similar query.

[0002] A user may also enter a street address or latitude/longitude position as a search request. In response, the user will receive a webpage containing the results of the search. The results may include a map of the requested location and all of the businesses known by the system to be located at the address.

[0003] In addition to searching for locations, a user may also enter other search terms. For example, a user may search for “pizza” while viewing a map. In response, the service may provide listings that are proximate to the map and fall within the category of pizza restaurants or otherwise match the request such as having the term “pizza” in their company name. Other results may be provided as well, such as web pages and other information. The service may also display, to the user, responsive advertisements that are limited to particular geographic areas (e.g., particular cities or ranges of latitude/longitude coordinates).

[0004] In certain circumstances, the service also stores an association between the search terms entered by a user and the portion of the map being viewed by a first user. Those terms may be used, either alone or in combination with other prior user searches and criteria, to query and display advertisements when subsequent users view a portion of the map that overlaps with the prior portion.

[0005] Google Maps is also capable of displaying street level images of geographic locations. These images, identified in Google Maps as “Street Views”, typically comprise photographs of buildings and other geographic features and allow a user to view a geographic location from a person’s perspective as compared to a top-down map perspective. When a street level image is taken, it is typically associated with a location such as the latitude/longitude position of the camera. The street level image may also comprise a 360° panorama, such that the user may view the panorama—and the objects captured therein—from a variety of angles. The service also displays a street address to the user that is intended to approximate the closest street address to the location of the camera when the image was taken.

BRIEF SUMMARY OF THE INVENTION

[0006] In one aspect, a method of selecting information associated with a geographic location is provided. The method includes receiving a request from a second user where the request identifies a geographic location. It also determines a search query associated with the geographic location, wherein the search query is further associated with a listing at the geographic location, and wherein the listing was selected by a first user when search results were provided to the first

user in response to the search query. The method also selects information based on the search query and provides the information to an electronic display for display to the second user.

[0007] In another aspect, a method of selecting information associated with a geographic location is provided. The method relates to: receiving a request from a second user, the request identifying a geographic location; determining a first search query associated with the geographic location, determining a second search query associated with the geographic location; selecting the first search query or the second search query based on how often a listing at the geographic location was selected by users when included among search results provided to users in response to the first search query; selecting information based on the selected search query; and providing the information to an electronic display for display to the second user.

[0008] Yet a further aspect relates a system that includes a first computer at a first node of a network and a client device at a second node of the network different from the first node. The first computer has access to a set of instructions operable by the first computer, a set of street addresses, listing information for businesses where each business is associated with a member of the set of street addresses, and a set of advertisements where each advertisement is associated with a keyword. The client device comprises a user input device, an electronic display, a processor and instructions operable by the processor. The instructions of the first computer comprising include: selecting a listing keyword for each street address based on the listing information, receiving a street address from the client device, determining a listing keyword based on the street address that was received, selecting an advertisement based on the correspondence between the advertisement’s keyword and the determined listing keyword, and transmitting the advertisement to the client device over the network. The instructions of the client device include: transmitting a street address to the first computer; and displaying, on the electronic display, the advertisement transmitted by the first computer.

[0009] Still another aspect comprises a method of displaying an advertisement. The method includes: receiving, from a user input device, a street address; providing data identifying the street address to a computer over a network; receiving data identifying an advertisement; and displaying, on an electronic display device in accordance with instructions executed by a processor, an advertisement and information associated with the street address; wherein the advertisement was selected based on the most-popular search term for a business located at the street address, and where the most-popular search term comprises the search term that was associated with the most user selections of the business when the business was listed among other search results in response to a search including the term.

[0010] Other aspects include computer-usable medium including a program comprising computer code for performing the foregoing methods.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a functional diagram of a system in accordance with an aspect of the invention.

[0012] FIG. 2 is a pictorial diagram of a system in accordance with an aspect of the invention.

[0013] FIG. 3 is a functional diagram of data in accordance with an aspect of the invention.

[0014] FIG. 4 is a diagram of sample data associated with a street address in accordance with an aspect of the invention.

[0015] FIG. 5 is a screen shot of a search and search results in accordance with an aspect of the invention.

[0016] FIG. 6 is a screen shot of a webpage associated with a search result in accordance with an aspect of the invention.

[0017] FIG. 7 is a diagram of sample data associated with a listing in accordance with an aspect of the invention.

[0018] FIG. 8 is a diagram of sample data associated with a listing in accordance with an aspect of the invention.

[0019] FIG. 9 is a diagram of sample data associated with a plurality of listings at a street address in accordance with an aspect of the invention.

[0020] FIG. 10 is a diagram of sample data associated with a plurality of street addresses in accordance with an aspect of the invention.

[0021] FIG. 11 is a screen shot of a search in accordance with an aspect of the invention.

[0022] FIG. 12 is a flowchart of the processing of sample data in accordance with an aspect of the invention.

[0023] FIG. 13 is a screen shot in accordance with an aspect of the invention.

[0024] FIG. 14 is a screen shot of a street level image in accordance with an aspect of the invention.

[0025] FIG. 15 is flowchart in accordance with an aspect of the invention.

[0026] FIG. 16 is a flowchart in accordance with an aspect of the invention.

[0027] FIG. 17 is a flowchart in accordance with an aspect of the invention.

[0028] FIG. 18 is a flowchart in accordance with an aspect of the invention.

[0029] FIG. 19 is a flowchart in accordance with an aspect of the invention.

[0030] FIG. 20 is a screen shot of a street level image in accordance with an aspect of the invention.

DETAILED DESCRIPTION

[0031] In one aspect, the system and method infers a user's intent when the user searches for a particular address or other geographic location. In that regard, the system and method may select advertisements in response to a user searching for street addresses.

[0032] The advertisements may be selected by searching for advertisements that match search terms associated with the street address. The search terms may become associated with the address by analyzing the businesses located at the street address. The search terms may comprise the titles and categories of the businesses. The search terms may also comprise the most-popular search terms for finding the businesses at the address. Yet further, a single search term may be selected for the entire street address such that the search term is determined to be the most effective search term for the most popular business at the address.

[0033] As shown in FIGS. 1-2, a system 100 in accordance with one aspect of the invention includes a computer 110 containing a processor 120, memory 130 and other components typically present in general purpose computers.

[0034] Memory 130 stores information accessible by processor 120, including instructions 131 that may be executed by the processor 120. It also includes data 135 that may be retrieved, manipulated or stored by the processor. The memory may be of any type capable of storing information accessible by the processor, including a computer-readable

medium such as a hard-drive, memory card, ROM, RAM, DVD or other optical disks, as well as other write-capable and read-only memories. The processor 120 may be any well-known processor, such as processors from Intel Corporation or AMD. Alternatively, the processor may be a dedicated controller such as an ASIC.

[0035] The instructions 131 may be any set of instructions to be executed directly (such as machine code) or indirectly (such as scripts) by the processor. For example, the instructions may be stored as computer code on the computer-readable medium. In that regard, the terms "instructions" and "programs" may be used interchangeably herein. The instructions may be stored in object code format for direct processing by the processor, or in any other computer language including scripts or collections of independent source code modules that are interpreted on demand or compiled in advance. Functions, methods and routines of the instructions are explained in more detail below.

[0036] Data 135 may be retrieved, stored or modified by processor 120 in accordance with the instructions 131. For instance, although the system and method is not limited by any particular data structure, the data may be stored in computer registers, in a relational database as a table having a plurality of different fields and records, XML documents or flat files. The data may also be formatted in any computer-readable format such as, but not limited to, binary values, ASCII or Unicode. By further way of example only, image data may be stored as bitmaps comprised of pixels that are stored in accordance with formats that are compressed or uncompressed, lossless (e.g., BMP) or lossy (e.g., JPEG), and bitmap or vector-based (e.g., SVG), as well as computer instructions for drawing graphics. The data may comprise any information sufficient to identify the relevant information, such as numbers, descriptive text, proprietary codes, pointers, references to data stored in other memories (including other network locations) or information that is used by a function to calculate the relevant data.

[0037] Although FIG. 1 functionally illustrates the processor and memory as being within the same block, it will be understood by those of ordinary skill in the art that the processor and memory may actually comprise multiple processors and memories that may or may not be stored within the same physical housing. For example, some of the instructions and data may be stored on removable CD-ROM and others within a read-only computer chip. Some or all of the instructions and data may be stored in a location physically remote from, yet still accessible by, the processor. Accordingly, references to a processor or computer will be understood to include references to a collection of processors or computers that may or may not operate in parallel.

[0038] The computer 110 may be at one node of a network 105 and capable of directly and indirectly communicating with other nodes of the network. For example, computer 110 may comprise a web server that is capable of communicating with client devices 150 and 170 via network 105. Yet further, server 110 may use network 105 to transmit and display information to user 190 on monitor 160 of client device 150. Server 110 may also comprise a plurality of computers that exchange information from different nodes of a network for the purpose of receiving, processing and transmitting data to the client devices; in this instance, the client devices may be at different nodes of the network than any of the computers comprising server 110.

[0039] Network 105, and intervening nodes between server 110 and client devices, may comprise various configurations and use various protocols including the Internet, World Wide Web, intranets, virtual private networks, wide area networks, local networks, private networks using communication protocols proprietary to one or more companies, cellular and wireless networks, Internet relay chat channels (IRC), instant messaging, simple mail transfer protocols (SMTP), Ethernet, WiFi and HTTP, and various combinations of the foregoing. Although only a few computers are depicted in FIGS. 1-2, it should be appreciated that a typical system can include a large number of connected computers.

[0040] Each client device may be configured similarly to the server 110, with a processor, memory and instructions. Each client device 150 and 170 may be a personal computer, intended for use by a person 190-191, having all the internal components normally found in a personal computer such as a central processing unit (CPU), display device 160 (for example, a monitor having a screen, a projector, a touch-screen, a small LCD screen, a television, or another device such as an electrical device that is operable to display information processed by a processor), DVD drive, hard-drive, user input 163 (for example, a mouse 165, keyboard 164, touch-screen or microphone 166), speakers, modem or network interface device (telephone, cable, wireless or otherwise), and all of the components used for connecting these elements to one another.

[0041] Although the client devices 150 and 170 may comprise a full-sized personal computer, the system and method may also be used in connection with mobile devices capable of wirelessly exchanging data with a server over a network such as the Internet. For example, a client device 170 may be a wireless-enabled PDA such as a Blackberry phone or an Internet-capable cellular phone. The user may input information using a small keyboard (in the case of a Blackberry phone), a keypad (in the case of a typical cell phone), a touch screen (in the case of a PDA) or any other user input device. Indeed, computers in accordance with the systems and methods described herein may comprise any device capable of processing instructions and transmitting data to and from humans and other computers including general purpose computers, network computers lacking local storage capability, and set-top boxes for televisions.

[0042] The client devices may also include a component, such as circuits, to determine the geographic location and orientation of the device. For example, client device 170 may include a GPS receiver 189 to determine the device's latitude, longitude and altitude position. The component may also comprise software for determining the position of the device based on other signals received at the client device 170, such as signals received at a cell phone's antenna from one or more cell phone towers if the client device is a cell phone. It may also include an accelerometer 188 or gyroscope to determine the direction in which the device is oriented. By way of example only, the device may determine its pitch, yaw or roll (or changes thereto) relative to the direction of gravity or a plane perpendicular thereto. In that regard, it will be understood that a client device's provision of location and orientation data as set forth herein may be provided automatically to the user, the server, or both.

[0043] Although certain advantages are obtained when information is transmitted or received as noted above, other aspects of the system and method are not limited to any particular manner of transmission of information. For

example, in some aspects, information may be sent via a medium such as a disk, tape or CD-ROM. In other aspects, the information may be transmitted in a non-electronic format and manually entered into the system. Yet further, although some functions are indicated as taking place on a server and others on a client, various aspects of the system and method may be implemented by a single computer having a single processor.

[0044] Server 110 may store map-related information, at least a portion of which may be transmitted to a client device. For example and as shown in FIG. 3, the server may store map tiles 307, where each tile is a map image of a particular geographic area. Depending on the resolution (e.g., whether the map is zoomed in or out), one tile may cover an entire region such as a state in relatively little detail. Another tile may cover just a few streets in high detail. The map information is not limited to any particular format. For example, the images may comprise street maps, satellite images, or a combination of these, and may be stored as vectors (particularly with respect to street maps) or bitmaps (particularly with respect to satellite images).

[0045] The various map tiles are each associated with geographical locations, such that the server 110 is capable of selecting, retrieving and transmitting one or more tiles in response to receiving a geographical location.

[0046] A location may be expressed and requested in various ways including but not limited to latitude/longitude positions, street addresses, street intersections, an x-y coordinate with respect to the edges of a map (such as a pixel position when a user clicks on a map), building names, and other information in other reference systems that is capable of identifying a geographic locations (e.g., lot and block numbers on survey maps). Moreover, a location may define a range of the foregoing.

[0047] The system and method may translate locations from one reference system to another. For example, the server 110 may access a geocoder to convert a location identified in accordance with one reference system (e.g., a street address such as "1600 Amphitheatre Parkway, Mountain View, Calif.") into a location identified in accordance with another reference system (e.g., a latitude/longitude coordinate such as (37.423021°, -122.083939)).

[0048] In one aspect and as shown in FIG. 3, data 135 defines a set of locations 320 where each location is associated with a street address and a unique identifier (FID). Each location 320 may further be associated with a latitude/longitude coordinate, which may represent the actual latitude/longitude position of the street address or an approximation thereof.

[0049] The server may also access listing information identifying local businesses or other objects or features associated with particular geographic locations. For example, each listing 310 may be associated with a title (such as a company's name), a category (such as "pizza", "Italian restaurant" or "ballpark") and other information (such as store hours and food on a menu). The information may be compiled by automatically gathering business information such as from web-sites or telephone directories. The information may also be stored by users; the users may enter or edit the listing information themselves via web pages served by the server 110. Accordingly, the listing information may be obtained from various sources and contain potentially overlapping informa-

tion, such as one category that is managed by the operator of the server and another category that is obtained from third parties (e.g., yellow pages).

[0050] The listing data may also be associated with a geographic location. For example, if the listing refers to a store, the location may identify the store's street address. The listing may refer to a particular location **320** via the location's unique identifier (FID).

[0051] In many cases, there will be a single listing **310** for each different business. However, it will be understood that the same business may be associated with many different listings, and that a single listing may be associated with many different businesses.

[0052] Listings may refer to other geographically-located objects in addition to or instead of businesses. For example, listings may also identify individual's homes, landmarks, roads, bodies of land or water, items located in a store, items that can be moved to different locations etc. Therefore, while many of the examples below refer to business listings, most aspects of the system and method are not limited to any particular type of listing.

[0053] The server may also store a set of advertisements **350**. The system and method may select an advertisement based at least in part on whether it is returned in response to a query containing search terms. For example, a company may pay the operator of the server each time the content of the advertisement is displayed or selected by a user in response to the user searching for the keyword "pizza." In that regard, advertisements may be associated with keywords which may be used, along with other criteria, to determine whether the advertisement corresponds with one or more search terms. Search terms are typically text based, but may include other types of data including data representing images and sounds.

[0054] In one aspect and as shown in FIG. 1, the advertisements **350** may be directly or indirectly associated with geographic locations. For example, an advertiser may have specifically directed that an advertisement be displayed only when a user is viewing a map or other information associated with a particular geographic area, such as a city or latitude/longitude range. Alternatively, the advertisement may be associated with a listing **310** that is, in turn, associated with a location **320**. Other advertisements may not be limited or associated with any particular geographic location.

[0055] In addition to the operations illustrated in FIGS. 15-19, various operations in accordance with a variety of aspects of the invention will now be described. It should be understood that the following operations do not have to be performed in the precise order described below. Rather, various steps can be handled in reverse order or simultaneously.

[0056] In one aspect, the method associates search terms with street addresses based on the listings located at the street address. The system and method may create sets of search terms by iterating over and analyzing each listing at a street address, and using a variety of information as a source for search terms.

[0057] The names and categories of businesses at the address may be used as address-based search terms. For example, as shown in FIG. 4, there may be three different businesses located in a single building **410** at the fictional address "25 Second Street, Springfield". The first business may be a restaurant on the first floor named "Joe's Pizza" that falls within the category of "pizza." The business may be represented by listing data **425** and assigned a unique ID (CID) **2525**. (For ease of reading, various figures use the

listing's title in lieu of the numeric CID.) The system and method may thus create a table **490** of search terms based on listing **425**, where the search terms are drawn from the words contained in the listing's title and category.

[0058] The system and method may similarly iterate through the listings **450** and **460** at the address, and create tables **491** and **492** accordingly.

[0059] The system and method may also select search terms from prior searches that were used to find the listing. The search term may come from prior user queries that resulted in the listing being displayed to, and subsequently selected by, the user. Further still, the search term may be selected from the query that resulted in the listing being selected more times than any other query.

[0060] FIG. 5 illustrates a search that may have been conducted by a user. Specifically, the user entered the query "calzones Springfield" into browser **510** (such as a Google Chrome browser) via text box **520**. When the user selected the search button **525**, the query was transmitted to the server **110** and passed to the search engine **305**. The search engine, in turn, interpreted the query as a request to search for listings associated with the term "calzones" in or near the city of Springfield. Server **110** then returned a webpage **530** of search results for display in the browser. The results included a map **540** of the queried geographic location (Springfield) as well as information **560** from listings that match the search. It will be understood that additional and different types of results may have been returned and displayed in the webpage as well, including by way of example only links to web pages, videos, pictures, sponsored links, advertising and other content.

[0061] The results of the search may be user selectable. For example, the displayed listing for Joe's Pizza may comprise a hyperlink to the website associated with the business, and the user may use his or her mouse to move cursor **570** to click on the listing. In response and as shown in FIG. 6, the browser **510** may navigate the user to the webpage **620** of the listing. Yet further, the hyperlink may take the user to a webpage served by server **110** that provides an introduction and summary of the listing. It will be understood that a user may select search result in any number of ways, including using a keyboard to check a checkbox displayed next to the listing.

[0062] Each time a user selects one of the listings returned as a search result, the system and method may log the selected result and the query that returned the result. For example, as shown in FIG. 7, server **110** may store an entry in a log **710** each time Joe's Pizza was selected by any user in response to a search request. The log identifies the listing **712**, the date and time **714** that the listing was selected, and the query **716** that the user entered when the listing was selected.

[0063] In one aspect, the most-popular search term is only selected from queries that include a geographic location and another search term (e.g., the location "Springfield" in the query "calzones Springfield"). In other aspects, the most-popular search term is the most-popular search term regardless of surrounding terms in the query.

[0064] It will be understood that the system and method log **710** is not limited to any particular data structure. For example, log **710** illustrated in FIG. 7 may comprise a small portion of a variety of data structures **345** (FIG. 3) that store information associating user queries and the results selected by users in response to those queries.

[0065] In one aspect, the system and method determines the most popular search term for the listing. For example, as the

system iterates through listings, the system and method may query data **345** based on the identity of the listing and obtain a table such as that shown as log **710**. The system and method then iterates through the words of the queries, and counts how many queries contain the word and resulted in the listing being selected. The words are then sorted by count as shown in table **720**, where the column “clicks” represents how often the term was associated with the selection of the listing (it being understood that a search result may be selected by a user in ways other than clicking it with a mouse). The term associated with the most “clicks” may then be considered the most popular search term for the listing.

[0066] In one aspect of the system and method, the system and method selects a single search term for each listing. FIG. **8** illustrates table **810**, which represents all of the candidate search terms for the foregoing example of “Joe’s Pizza”.

[0067] The system and method may select the most-popular search term over other search terms if the most-popular search term is considered sufficiently relevant to the listing.

[0068] In certain circumstances, the most-popular search may provide advantages over using a listing’s categories. For example, a large department store may be associated with dozens of categories. If a user enters a street address matching the store, it may be difficult to assume that the user was looking for a particular category, e.g., “photos”, “furniture”, or “toys.” However, it may also be discovered that the department store was consistently selected when users queried “discount store”. Accordingly, it may be more reasonable to infer that another user is searching for discount stores when the user enters that address instead of “photos”, “furniture” or similar categories.

[0069] Just one method of determining the relevancy of the most popular search term is to determine whether the most successful query for the listing (e.g., “calzones” as shown at reference **811**) is associated with a value (e.g., 210 clicks) that exceeds a threshold (e.g., a minimum of 100 clicks).

[0070] If the most-popular search term is not sufficiently relevant, the system and method may select one or more of the listing’s categories **813**. The listing’s categories may also be tested for relevancy. For example, a large and prominent department store may be associated with dozens of different categories (e.g., photos, toys and groceries, etc.), none of which are representative of the store. Thus, if the number of categories exceed a threshold (e.g., ten categories), none of the categories may be selected as the listing’s search term.

[0071] In one aspect, only a single category is selected as the street-address. For example, the operator of server **110** may maintain a set of categories and limit each listing to one such category. If the listing is associated with an operator-provided category, the system and method may select the operator-provided category. If the listing is not associated with an operator-provided category but is associated with categories managed by third parties, one of the third-party categories may be selected (e.g., the dominant or first-listed category if there are more than one categories associated with the listing). In yet another aspect, all of the categories associated with a listing may be selected as the search term for the street address.

[0072] If the listing’s most-popular search term and categories are insufficient, one or more of the search terms **811-12** from the title may be selected. For example, the search term for listing **460** (FIG. **4**) may be selected from the listing’s title,

“Second Destinations” because the large number of categories associated with the listing indicates that the categories are too diffuse.

[0073] In one aspect of the system and method, a single search term is selected for an address even if there are multiple listings at the address.

[0074] One manner in which the single term may be selected includes selecting the search term for the most popular listing. For example, if two listings each have a web site, and if the first web site is extremely popular with many back links and the second website is relatively rarely visited with relatively few back links, the second website may be considered more popular. In that regard, the listing associated with the second web site may be considered more popular and its search terms would be used for selecting advertisements based on the street address.

[0075] In another aspect and as shown in FIG. **9**, the system and method may compare the search terms selected from each of the different listings (CID column **921**) at the same address (FID column **920**). For example, if the most-popular search term for one listing resulted in more selections (e.g., resulted in more “clicks”) than the most-popular search term for another listing, the first search term may be selected for the entire building. Therefore, as shown in table **910**, the term “calzones” may be selected for the address because it resulted in “Joe’s Pizza” being selected 210 times. This can be compared to the salon’s most-popular search term (“haircut”) yielding only 100 selections. It can also be compared to the fact that the travel agency’s search term (“destinations”) was taken from the agency’s title, which the system and method may deem less likely to yield worthwhile results than prior queries. Other criteria may also be used to select the search term for an address when multiple listings are present.

[0076] After the system and method selects a search term for one address, the system and method may select additional search terms for additional addresses. FIG. **10** illustrates a table **1010** of different street geographic locations, each of which is associated with a single search term. As shown in FIG. **3**, this information **340** may be stored in data **135**.

[0077] The address-based search terms may be used to select advertisements for display to users. FIG. **11** illustrates a webpage **1120** served by server **110** to client device **150** and displayed on the electronic display using browser **1110**. The search page includes a text box **1130** that allows the user of the client device to enter a search request. FIG. **11** provides the example of a user entering the street address “25 Second Street, Springfield” and no other information.

[0078] Upon receiving the search query, the search engine **305** may determine that the user is interested in viewing a map of the requested location. This may occur automatically as a result of the user entering an address, or manually as a result of the user’s selection of link **1140** entitled “Maps” after entering the query. Regardless, the server **110** may construct a webpage containing a map of the selected address.

[0079] The system and method may also select an advertisement based on the address. For example and as shown in FIG. **3**, server **110** may query locations **320** for a street address that exactly, or most closely, matches the user’s query. When the street address is found, the server **110** uses the location’s FID to query the address-based search terms **340** and retrieve a search term.

[0080] The address-based search term, in turn, is used to select an advertisement. The invention is not limited to any particular system and method of selecting advertisements

based on search terms. However, for purposes of illustration, one aspect may comprise searching advertisements **350** for all advertisements having keywords that correspond with the selected address-based search term. Matching advertisements are then ranked based on any number of criteria, such as ranking an advertisement depending on whether the keyword is an exact match for the address-based search term, the prominence of the business or website associated with the advertisement, and the price of the advertisement.

[0081] FIG. **12** illustrates how an advertisement may be selected based on the data used in the foregoing examples. The address entered by the user, “25 Second Street, Springfield” is parsed to find a matching location record **1220**. The unique identifier (FID=97521) of the matching location is used to retrieve an address-based search term **1240**. The search term “calzones” is then used to find an advertisement **1250** that has “calzones” or a variant thereof as a corresponding keyword **1250**. If a match is found, the server retrieves the content (“We have great calzones”) and the identification of a listing associated with the advertisement (CID=4321). If there is a listing associated with the advertisement, the identification of the listing may be used to pull additional information about the listing such as its title and address. The server may also retrieve one or more listings **1211** associated with the originally-entered address (e.g., “Joe’s Pizza”).

[0082] The advertisement selected with the address-based search term may then be displayed to the user that searched for the street address. FIG. **13** illustrates a screen shot that may be displayed to the user that searched for “25 Second Street, Springfield”. The server displays to the user, via browser **1110** on the client device’s electronic display, an icon **1380** that identifies the requested address on a map **1310** as well as the text of a listing **1330** at the address (other listings at the address may be displayed as well). The server also displays the advertisement **1340**, including in one aspect the name of the advertiser and the content of the advertisement. The server may also display, in the same textbox as the listing at the requested street address, the listing information **1350** of the advertiser as a sponsored link. Icons **1360**, **1361** identifying the location of the listing at the requested address as well as the advertiser, respectively, may also be shown on the map **1310**.

[0083] In that regard and in one aspect, the system and method may display an advertisement based solely on a street address provided by a user. That advertisement may or may not relate to a business at that address.

[0084] As shown in FIG. **14**, the same advertisements **1340** and **1350** may also be shown in connection with a street level image **1410** of the requested location. In one aspect, the user may have entered an address and selected the option of displaying the location in street view.

[0085] In another aspect, the user may not have entered a street address but rather navigated to a particular street level image by panning, zooming, etc. In that regard, the user may have navigated to a street level image that displays building **1450** without entering a street address in textbox **1460**. If so, the system and method may approximate the street address of the building being viewed based on the latitude/longitude of the street level image and the orientation of the view. The approximated street address may then be used to display advertisements **1340** and **1350**.

[0086] Accordingly, in at least one aspect, the system and method infers what the user was looking for based on where the user was looking, and selects an advertisement targeted at this inferred intent.

[0087] One of the advantages of the invention is its ability to accommodate a wide variety of alternatives.

[0088] The system and method may be used in any context where a user enters a street address. For example, in addition to searching for addresses as explained above, the system and method may also be used when a user is searching for directions and enters a destination address.

[0089] Moreover, in other aspects of the invention, the system and method may also be used to select advertisements for locations expressed in other reference systems. For example, locations expressed in latitude/longitude may also be used to select listings and search terms for advertisements. Just one process for using latitude/longitude comprises storing latitude/longitude in association with a listing and obtaining keywords from listings within range of the requested latitude/longitude location. Yet another process comprises obtaining latitude/longitude from GPS receiver **189** of client device **170**, geocoding the latitude/longitude to obtain a street address, and using the street address as described above to obtain an advertisement and display it on the client device.

[0090] The system and method may also be used in connection with continuously-changing locations. For example, if the client device **170** is a cell phone, the client device may consistently display new advertisements as the GPS receiver **189** obtains new location information.

[0091] The most-popular search term may be determined based on other criteria than the criteria set forth above. For example, the most-popular search term may also be determined based on frequency rather than simply the total amount of times the listing was ever selected in response. In that regard, the various queries may be evaluated based on how often they resulted in the listing’s selection within the past day, week, month, etc.

[0092] The threshold used to determine sufficient relevancy between the query and the listing may comprise more than a fixed numeric value. For example, fifty clicks over the course of a year may indicate sufficient relevancy between a query and a small business such as a local pizzeria. However, fifty clicks may not be sufficient to determine the relevancy between a search term and a listing that is associated with a website that is viewed by hundreds of people a day. In that regard, the threshold may be a function of the listing’s prominence. The threshold may also be calculated based on other parameters. Some of these parameters may be specifically tied to the listing under consideration (such as prominence) and others may be independent (such as minimum value of 50 clicks for all listings).

[0093] In another aspect of the system and method, each address may be associated with multiple search terms that are used to query advertisements. For example, if there are multiple listings at an address, a search term from each listing (such as both “calzones” and “beauty salon”) may be used to select advertisements. Moreover, rather than selecting only a single search term from each listing, multiple search terms may be selected. For example, all of the search terms shown in table **810** of FIG. **8** or table **910** of FIG. **9** may be used when selecting advertisements for the listing.

[0094] When multiple search terms are used to select advertisements, weights may be applied to the terms. For example, the listing’s most popular search term may be considered

twice as likely as the listing's title to pull an advertisement that will interest a user. Therefore, when the advertisement is queried with both terms, the query may indicate that the most-popular search term should be given twice as much weight when selecting and ranking advertisements for display.

[0095] The system and method may also select multiple advertisements based on a single street address. For example, there may be multiple advertisements responsive to the same keyword. In another aspect, different advertisements are selected and displayed based on different search terms from one or many listings. By way of example, a different advertisement may be selected and shown for each search term shown in FIGS. 8 and 9.

[0096] The system and method may further assign weights to the location-based search terms and select the number of the advertisements to display based on the weights. The weight may be based on the relative popularity of the most-popular search terms at the requested location. In view of the data shown in FIG. 9, two advertisements may be selected based on "calzones" and one advertisement may be selected based on "haircut" because the listings at the street address received 100 clicks for "haircut" and 210 clicks for "calzones". Alternatively, the weight may be based on other factors, including information that is neither specific to the requested location nor the location's associated listings. For example, a statistical analysis of all-available evidence may indicate that user's are generally twice as likely to choose advertisements that are selected with the term "haircut" than "calzones." As a result, the system and method may display twice as many advertisements based on "calzones" than "haircut" in spite of the popularity of the search terms relative to the listings of 25 Second Street. Weights based on combinations of the above are also possible.

[0097] As noted above, listings are not limited to businesses. In that regard, the system and method may also be used in connection with points of interest (POI). For example, the street address of the Empire State Building in New York City is "350 5th Ave, New York, N.Y. 10018". As of 2009, there were over one hundred businesses associated with the tenants at that address. In that regard, rather than selecting one of the tenants of the building as the search term for the address, the system and method may use the name of building as the source of the advertisement search term. Thus, one aspect of the system and method may determine whether the street address is associated with a landmark or similar POI listing, and accord more weight to the POI listing than business listings when selecting advertisement search terms.

[0098] In other aspects, functions described above as being performed by the server may be performed by the client device, and vice versa. For example, the server may send listing information at the requested address to the client device, and the client device may use the listing information to determine a search term and request more information. In yet more aspects, the client device and server perform and share different functions.

[0099] In still another aspect, the system and method selects advertisements based on whether real estate at the street address is available. FIG. 19 illustrates one possible process, whereby solid lines identify features not identified in prior flowcharts. When the user enters a street address, the system and method may query data 135 to initially determine whether the property or a listing at the address is available for sale or rent. Just one system for performing this query may

comprise querying Multiple Listing Service (MLS) databases for matching results. Yet another system comprises modifying location 320 or listing 310 data to indicate whether the location or business is for sale. Regardless and as shown in FIG. 20, the advertisement 2040 may indicate that the property is for sale and provide a link to the real estate company sponsoring the listing.

[0100] Alternatively, the fact that real estate at the street address is available may be used to select keywords for advertisements rather than (or in addition to) directly selecting the listing agent. For example, if the property is for sale, the system and method may select "mortgage" as the search term. When the advertisement 2040 is displayed, it may indicate both that the property is available and an advertisement that was selected based on the term "mortgage."

[0101] Instead of advertisements, the system and method may also be used to select descriptions of products, services and other information. For example, if some of the search terms were music related, the system and method may provide a description of local bands, local music venues or location-neutral music information such as song titles.

[0102] It will be understood that references herein to "search term" may include search terms that include more than one word, i.e., a search term may comprise multiple words. It will be similarly understood that when a search query "contains" a search term (e.g. "pizza"), the query may only that one term or multiple terms (e.g., "pizza in Springfield").

[0103] Most of the foregoing alternative embodiments are not mutually exclusive, but may be implemented in various combinations to achieve unique advantages. As these and other variations and combinations of the features discussed above can be utilized without departing from the invention as defined by the claims, the foregoing description of the embodiments should be taken by way of illustration rather than by way of limitation of the invention as defined by the claims. It will also be understood that the provision of examples of the invention (as well as clauses phrased as "such as," "including" and the like) should not be interpreted as limiting the invention to the specific examples; rather, the examples are intended to illustrate only one of many possible embodiments.

1. A computer-implemented method of selecting information associated with a geographic location comprising:

receiving, with one or more processors, a request from a second user, the request identifying a geographic location;

determining, with the one or more processors, 1) a listing at the geographic location that was selected by a first user, and 2) a search query that was conducted by the first user that resulted in the listing at the geographic location being provided to, and selected by, the first user, wherein the search query is distinct from the received request;

selecting, with the one or more processors, information based on the search query; and

providing, with the one or more processors, the information to an electronic display for display to the second user.

2. The method of claim 1 wherein the listing comprises data identifying a business.

3. The method of claim 2 wherein determining a search query comprises:

determining, with the one or more processors, a first search term associated with the listing, wherein the listing was

selected by at least one user when search results were provided to the user in response to the user conducting a search containing the first search term;

determining, with the one or more processors, a second search term associated with the listing wherein the listing was selected by at least one user when search results were provided to the user in response to the user conducting a search containing the second search term; and selecting, with the one or more processors, the first search term or the second search term for inclusion in the search query depending on the number of times that the listing was selected by users in response to the first search term and the number of times that the listing was selected by users in response to the second search term, respectively.

4. The method of claim 3 wherein selecting the first search term or the second search term comprises selecting the first search term when the number of times that the listing was selected by users in response to the first search term exceeds the number of times that the listing was selected by users in response to the second search term.

5. The method of claim 3 further comprising selecting the second search term for inclusion in the search query if the number of times that the listing was selected by users in response to the first search term is below a threshold value.

6. The method of claim 1 wherein the second user identified the geographic location by street address.

7. The method of claim 1 wherein the listing is a business located at a street address.

8. The method of claim 7 wherein:

- a first business and a second business are located at the street address;
- the first business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a first search term;
- the second business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a second search term; and
- determining a search query comprises selecting the first search term or the second search term for inclusion in the search query based on the popularity of the first business and the second business.

9. The method of claim 8 wherein the popularity of a business is based on the number of times the business was selected by users from among a plurality of search results.

10. A method of selecting information associated with a geographic location comprising:

- receiving a request from a second user, the request identifying a geographic location;
- determining a first search query associated with the geographic location,
- determining a second search query associated with the geographic location;
- selecting the first search query or the second search query based on how often a listing at the geographic location was selected by users when included among search results provided to users in response to the first search query;
- selecting information based on the selected search query; and
- providing the information to an electronic display for display to the second user.

11. The method of claim 10 wherein the second search query is based on the name of the listing, and wherein the second search query is selected when the number of times the listing was selected by users in response to the first search query is below a threshold.

12. The method of claim 10 wherein the second search query is based on the category of the listing, and wherein the second search query is selected when the number of times the listing was selected by users in response to the first search query is below a threshold.

13. The method of claim 10 wherein selecting the first search query or the second search query is not based on how often the listing was selected by users when included among search results provided to users in response to the second search query.

14. The method of claim 10 wherein the information comprises an advertisement.

15. The method of claim 10 further comprising providing a map to the electronic display for display to the second user, where the map includes the street address.

16. A system comprising:

- a first computer at a first node of a network;
- the first computer having access to a set of instructions operable by the first computer, a set of street addresses, listing information for businesses where each business is associated with a member of the set of street addresses, and set of advertisements where each advertisement is associated with a keyword; and

- a client device at a second node of the network different from the first node, the device comprising a user input device, an electronic display, a processor and instructions operable by the processor;

the instructions of the first computer comprising:

- selecting a listing keyword for each street address based on the listing information, receiving a street address from the client device
- determining a listing keyword based on the street address that was received,
- selecting an advertisement based on the correspondence between the advertisement's keyword and the determined listing keyword, and
- transmitting the advertisement to the client device over the network; and

the instructions of the client device comprising:

- transmitting a street address to the first computer; and
- displaying, on the electronic display, the advertisement transmitted by the first computer.

17. The system of claim 16 wherein the network is the Internet.

18. The system of claim 16 wherein the first computer is a web server.

19. The system of claim 16 wherein the client device is a mobile phone.

20. The system of claim 16 wherein the client device is a personal computer.

21. A method of displaying an advertisement comprising:

- receiving, from a user input device, a street address;
- providing data identifying the street address to a computer over a network;
- receiving data identifying an advertisement; and
- displaying, on an electronic display device in accordance with instructions executed by a processor, an advertisement and information associated with the street address;

wherein the advertisement was selected based on the most popular search term for a business located at the street address, and where the most-popular search term comprises the search term that was associated with the most user selections of the business when the business was listed among other search results in response to a search including the term.

22. The method of claim **21** further comprising transmitting the street address to a search engine.

23. The method of claim **21** further comprising receiving a map in response to providing the street address, and displaying the map on the electronic display.

24. The method of claim **21** wherein the advertisement indicates whether a business or property at the street address is available for sale or rent.

25. The method of claim **21** wherein the street address is provided as the destination identified in a request for directions.

26. The method of claim **21** further comprising receiving and displaying information relating to a business at the street address.

27. The method of claim **21** wherein the instructions comprise a web browser.

28. The method of claim **21** wherein the most-popular search term was contained in a query that identified a geographic location that included the street address.

29. A non-transitory computer-usable medium including a program comprising:

computer code that receives a request from a second user, the request identifying a geographic location;

computer code that determines a search query associated with the geographic location, wherein the search query is further associated with a listing at the geographic location, and wherein the listing was selected by a first user when search results were provided to the first user in response to the search query;

computer code that selects information based on the search query; and

computer code that provides the information to an electronic display for display to the second user.

30. A computer-usable medium including a program comprising:

computer code that receives, from a user input device, a street address;

computer code that provides data identifying the street address to a computer over a network;

computer code that receives data identifying an advertisement; and

computer code that displays, on an electronic display device in accordance with instructions executed by a processor, an advertisement and information associated with the street address;

wherein the advertisement is selected based on the most-popular search term for a business located at the street address, and where the most-popular search term comprises the search term that was associated with the most user selections of the business when the business was listed among other search results in response to a search including the term.

31. The non-transitory computer-usable medium of claim **29**, wherein the computer code that determines the search query, further comprises computer code that:

determines a first search term associated with the listing, wherein the listing was selected by at least one user

when search results were provided to the user in response to the user conducting a search containing the first search term;

determines a second search term associated with the listing wherein the listing was selected by at least one user when search results were provided to the user in response to the user conducting a search containing the second search term; and

selects the first search term or the second search term for inclusion in the search query depending on the number of times that the listing was selected by users in response to the first search term and the number of times that the listing was selected by users in response to the second search term, respectively.

32. The non-transitory computer-usable medium of claim **31**, wherein the computer code that selects the first search term or the second search term selects the first search term when the number of times that the listing was selected by users in response to the first search term exceeds the number of times that the listing was selected by users in response to the second search term.

33. The non-transitory computer-usable medium of claim **29**, wherein:

a first business and a second business are located at a street address associated with the listing;

the first business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a first search term;

the second business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a second search term; and

the computer code that determines the search query comprises computer code that selects the first search term or the second search term for inclusion in the search query based on the popularity of the first business and the second business.

34. A system for selecting information associated with a geographic location, the system comprising:

a processor configured to:

receive a request from a second user, the request identifying a geographic location;

determine a search query associated with the geographic location wherein the search query is further associated with a listing at the geographic location, and wherein the listing was selected by a first user when search results were provided to the first user in response to the search query;

select information based on the search query; and
provide the information to an electronic display for display to the second user.

35. The system claim **34**, wherein the processor is further configured to:

determine a first search term associated with the listing, wherein the listing was selected by at least one user when search results were provided to the user in response to the user conducting a search containing the first search term;

determine a second search term associated with the listing wherein the listing was selected by at least one user when search results were provided to the user in response to the user conducting a search containing the second search term; and

select the first search term or the second search term for inclusion in the search query depending on the number of times that the listing was selected by users in response to the first search term and the number of times that the listing was selected by users in response to the second search term, respectively.

36. The system of claim **35**, wherein the processor is further configured to select the first search term when the number of times that the listing was selected by users in response to the first search term exceeds the number of times that the listing was selected by users in response to the second search term.

37. The system of claim **34**, wherein:

a first business and a second business are located at a street address associated with the listing;

the first business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a first search term;

the second business was selected by at least one user when search results were provided to the user in response to the user conducting a search containing a second search term; and

the processor is configured to determine the search query by selecting the first search term or the second search term for inclusion in the search query based on the popularity of the first business and the second business.

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