ON-LINE GEOGRAPHICAL DIRECTORY

Field of Invention

This invention relates to an on-line geographical or spatial directory. It also relates particularly but not exclusively to a method of categorising items in order to facilitate information retrieval. It further relates particularly but not exclusively to a method and system for indexing information so that Internet users may locate relevant information according to geographical or spatial location. It also relates particularly but not exclusively to a method and system of delivering geographically based advertising over the Internet.

Background of the Invention

Over the past decade, the Internet has become a source of a vast amount of information. Unfortunately, there is no agreed method of indexing or categorisation, so that it is very difficult to identify and locate most of the information which may be relevant to a particular query. Two of the most common ways of locating relevant information on the Internet are to locate a URL in a printed publication or television advertisement and to enter it into a web browser to "visit" the URL and obtain the desired information, or to use one of the many Internet search engines.

The Internet search engines typically maintain indices based on key words which appear on web pages. When some key words are typed into a search engine, the search engine produces a list of hypertext links to documents having those key words. This is a good way of finding some general information on a particular subject, but it is not an effective way of finding all relevant information.

There are advantages and disadvantages to doing business on the Internet. One advantage is that the Internet provides rapid and inexpensive access to an enormous number of different potential customers. This is particularly useful when a business involves selling items such as books or CDs, which have

universal appeal and are non-perishable and relatively inexpensive to ship to anywhere in the world. A disadvantage is that the Internet is less suitable for businesses which have a more local customer base, because it does not provide easy ways of targeting local customers. Similarly, many customers have difficulty in identifying Internet businesses are within their geographical location. For example, a pizza shop might have a customer base located exclusively within a 5 km radius, but an Internet search on "pizza shops" might bring up thousands of such shops from all round the world, so that shops in the relevant geographical location are lost amongst the large number of irrelevant ones.

Indeed, the majority of businesses and organizations have a geographically defined constituency, and are not therefore inherently suited to the presently available Internet search engines. Some search engines such as Altavista allow a search to be confined to a particular country, and Yahoo goes further, allowing a search to be restricted according to country, state and city. However, in many cases, a restriction to a particular city is still not enough. In the case of a pizza shop, a list of all pizza shops in a particular city would still contain far too many shops which were not within a 5 km radius of the potential customer.

One way for a person to attempt to overcome this problem when using an Internet search engine is to use the locality of the particular business as a key word. Thus, the person might type "Pizza Shop Preston" into the search engine. However, this is still unsatisfactory because all relevant pizza shops may not have used the locality name "Preston" as a key word on their Internet web sites, and relevant shops in neighbouring locations will not be located. Further, there may be multiple localities throughout the world with the same locality name. For example, there are approximately thirty eight localities which have the name "Preston" in the United States.

An attempt has been made to address this problem in US Patent 5,930,474, which relates to an Internet organiser for accessing geographically and topically based information. The organiser disclosed in that patent essentially requires the breaking down of a city into various localities, and the compilation of "locality

guides" for the localities, with each business being listed in a particular locality guide. This is useful to some extent, in a similar manner to a neighbourhood telephone directory. However, it still has numerous shortcomings. It fails to distinguish between different types of goods and services for which different locality sizes are appropriate. For example, a person may only be prepared to travel up to 2 km to do the daily grocery shopping, but may be prepared to travel up to 20 km to purchase an item of furniture. A builder of a major project might be happy to have pre-mixed concrete delivered within a maximum of 20 km due to the perishable nature of the product. On the other hand prefabricated steelwork can be transported hundreds of kilometres without deterioration and without a major cost disadvantage. Further, a business classified as being just within the borders of a particular locality may by that classification miss out on business which it might otherwise have gained from a nearby customer who is classified as residing just within the border of an adjoining locality.

An object of the present invention is to overcome of alleviate one or more of the problems present in the prior art.

Summary of the Invention

According to a first aspect of the present invention, there is provided a method of categorising businesses, organizations and individuals in order to facilitate geographically-based searching over the Internet, including the steps of:

(a) registering in a database the names of businesses, organizations and/or individuals;

(b) for each name entry, registering a geographical location identifier; and

(c) for each name entry, optionally registering further information such as address, telephone number, and information about the goods or services offered by the business, organization or individual;

wherein each geographical location identifier indicates the precise geographical location at which the business, organization or individual is located.

The geographical location identifier may be any suitable type of identifier. In one suitable arrangement, each geographical location identifier corresponds to:

(i) a precise point of latitude and longitude where the business, organization or individual in question occupies a small area of land, or

(ii) an area of points of latitude and longitude where the business, organization or individual occupies a larger amount of land.

In a particularly preferred arrangement, the database operates in conjunction with a secondary database of known street addresses and geographical co-ordinates such that, when a new name is entered in the database, a geographical location identifier is provided for that name by entering a street address for the name, which the secondary database can use to provide geographical co-ordinates for the name.

In a preferred arrangement, there are numerous databases at a number of Internet sites located in different countries or regions, each of the Internet sites containing information relevant to businesses, organizations and/or individuals in its country or region.

According to a second aspect of the invention, there is provided an Internet site for facilitating geographically-based searching over the Internet, including:

(a) a database having the names of businesses, organizations and/or individuals;

(b) the database further having a geographical location identifier for each name entry;

wherein each geographical location identifier indicates the precise geographical location at which the business, organization or individual is located.

In one arrangement, each geographical location identifier corresponds to:

(i) a precise point of latitude and longitude where the business, organization or individual in question occupies a small area of land, or

(ii) an area of points of latitude and longitude where the business, organization or individual occupies a larger amount of land.

In another arrangement, the database operates in conjunction with a secondary database of known street addresses and geographical co-ordinates such that,

when a new name is entered in the database, a geographical location identifier is provided for that name by entering a street address for the name, which the secondary database can use to provide geographical co-ordinates for the name.

The Internet site preferably further includes a search engine which allows an Internet user to conduct a search of the database to find all entries matching user-specified criteria located within a user-specified distance from a user-specified point. Thus, for example, a person can use the search engine to locate all grocery stores within a 2 km radius of his or her house, or to locate all furniture stores within a 20 km radius. As a further example, a person visiting an unfamiliar city might use the system to locate the closest hotel to a particular place of business.

It will readily be appreciated that the system can be used for almost any type of geographical or spatial searching and accordingly the invention is not limited to those so far listed. The system may search from any point within any pre-determined distance. For example, the system may search within a specified distance of a particular object such as a road or coastline. The system may also search by drawing an area on the map, preferably with a mouse, and searching that area. Another alternative method of searching is by nominating various points and searching the area contained within those points, these points may be defined by particular objects such as roads.

If the Internet site is programmed with various different types of geographical boundaries such as council boundaries, postal area boundaries and electoral district boundaries, and different geographical features such as streets, shopping centres and public facilities, a user can perform numerous different types of searches such as:

"Find all the scout halls in the municipality of X"

"Find the nearest Post Office"

"Find all the cake shops in X Street"

"Find all the shops that sell X brand shoes in Y shopping centre"

There are numerous different ways in which the method and database system of the invention can be used to generate revenue. Businesses and

organizations can make a payment in order to be listed in the database. Persons undertaking a search can be charged a fee for the search. Alternatively, revenue can be generated through advertising on the search engine site and on search results pages. In order to increase the effectiveness of advertising, the subject matter of advertisements can be varied to accord with the subject matter of searches being made.

According to a third aspect of the invention, there is provided a method of categorising items in order to facilitate information retrieval, including the steps of:

(a) registering in a database the identity of the item;

(b) for each entity, optionally registering further information about the item; and

(c) registering in the database a spatial co-ordinate identifier corresponding to the location of each item wherein each spatial co-ordinate indicates the precise spatial location identifier of the entity at which the item is located.

Preferably, the item in question is defined by co-ordinates specified relative to each one of three dimensions. Alternatively, the item in question may be defined by an area of spatial co-ordinates, each spatial co-ordinate being specified as relative to each one of three dimensions. In a further alternative, the item in question can be defined by a volume of spatial co-ordinates, each spatial co-ordinate being specified as relative to each one of three dimensions.

According to the Invention in a fourth aspect there is provided a method of delivering geographically based advertising over the Internet, including the steps of:

(a) registering in a database one or more goods or services being offered by one or more advertisers;

(b) for each good or service offered by the advertiser, registering an advertiser geographical area indicating the area in which the advertiser wishes to receive customers;

(c) determining an Internet user geographical location identifier, being the precise geographical location of the Internet user;

(d) displaying to the Internet user an advertisement, the advertisement displayed being selected from one or more advertisements for goods or services wherein the geographical location of the Internet user is within the advertiser geographical area corresponding to one or more of the goods or services presented in the advertisement.

Preferably, the advertiser geographical area is specified by precise points of latitude and longitude. The Internet use geographical location identifier may also be specified by a precise point of latitude and longitude.

The Internet user may also supply information including their Internet user geographical location identifier. Alternatively, the party presenting the advertisement may track the Internet user to determine their geographical location and target advertising accordingly.

Brief Description of Drawings

The invention will hereinafter be described in greater detail with reference to the attached drawings which show an example form of the invention. It is to be understood that the particularity of those drawings does not supersede the generality of the preceding description of the invention.

Figure 1 is a flowchart of the process of registering a business, organization or individual (a "subscriber") in the database.

Figure 2 is a flowchart of the search process, in which a person searches the database system according to an embodiment of the present invention.

Detailed Description

An overview of a system according to an embodiment of the invention can be gained by working through the subscriber registration process illustrated in

Figure 1. Firstly, a subscriber chooses to register, and agrees to the terms and conditions. The subscriber is then prompted to enter contact details including items such as company name, contact name, subscriber ID, email address, phone, URL, contact email, nature of business, products and services, economic region, and subscriber references. The subscriber then chooses a login name, passes through a payment process, and logs into a "subscriber's profile page".

The subscriber then creates a profile from a template. The subscriber's profile includes the following elements which can be seen by "visitors":

- Locations for the presentation of logos, drawings or photos
- Information that is vital for the business such as name, address, phone, fax, email, etc.
- Click points that open sub files of information of importance to the business such as products and services; the sub files may contain text or images
- A click point to show the business location on the mapping system
- A facility to leave a message for the subscriber
- A facility to leave an email message
- Other information
- A click point or clickpoints to obtain further information (via hot links)

An Internet user who is examining a subscriber's profile can click on a mapping icon, and the mapping system will bring up the relevant map at the lowest perspective and display the "spike" (the precise location of the subscriber's business). From there the user can pan, scroll or more to a higher elevation.

The user can also search by:

(a) selecting a point and then specifying a distance from that point for that search together with the subject of the search;

(b) selecting any object (for example, a road, river or feature) and nominating a distance from it together with the subject of the search;

(c) drawing an area on the map and searching in that area; or

(d) nominating a series of features, such as roads, railways lines and coastlines, which enclose an area and accordingly searching within the enclosed area.

In response to a search, the system produces a list of successes which can be opened by clicking on them.

- A subscriber may have more than one profile. The subscriber accesses and edits these profiles from a "subscriber's home page", which is a web page at which the subscriber may choose to: Change the password
- Amend the display on the subscriber's profile "frontside" (the part which can be seen by "visitors")
- Locate or relocate the business on the mapping system
- Establish or change search criteria
- Purchase and establish a banner ad on a screen of mapping information
- Purchase and establish a classified ad
- Request information from the library section of the site
- Request future information from the magazine section of the site
- Read information found by library/magazine sections
- Receive messages from visitors; turn feature on and off
- Receive and send email

As part of entering a subscriber profile, the subscriber clicks on an icon which relates to locating the subscriber's "spike" on a map. This icon produces an address template which brings up the appropriate address on the mapping system, and the subscriber has an opportunity to move the "spike" to the exact desired location or relocate the "spike" for any reason.

The "subscriber's home page" and the "subscriber's profile page" are just two elements of a "super site", which includes a number of profiles relating to a particular type of industry. There are a number of super sites, each relating to a different industry. By way of example, one super site may relate to tourism. The elements of a super site include a front page, an about us/products/services page, a search page, a map output page, a refine search page, subscriber's

home pages, subscriber's profile pages, a classifieds section, a magazine section, payment pages and administration pages.

The front page of a super site includes a welcome message, feature items, what's new items and links to all sections of the super site. The search page includes the fields: street number, street name, suburb, state, product/service input box, postcode and distance. Subscribers may enter various searchable words descriptive of their businesses, and users can conduct searches using these key words. Thus, for example, in the tourism super site a subscriber who operates a restaurant may choose to use such key words in relation to their businesses as "restaurant", the restaurant name, "a la carte", "French cuisine", "Diners Club" and "open 7 days".

The map output page includes an initial map image, radial/perspective functionality, proximity input boxes, directional buttons (panning, re-centring), a refine search button, and a search again button. The refine search page enables a user to "drill down" on a street address, change the radial proximity parameters, change the zoom factor, conduct feature searches (e.g. where is the nearest?), and pan or re-centre the map. The map output page also allows a user to click on any point and search within any distance. This allows the user to click on any object and search with a pre-determined distance by clicking on an object and choosing to search within any distance of the object. Alternatively the user can mark out the nominated area to search or nominate a series of features that define an area.

The different super sites are combined into an overall website, which may be distributed across multiple servers and multiple geographical locations and URLs. Each super site preferably relates to a different industry. These can be classified in any suitable way. One suitable classification system which has been devised for use with an embodiment of the invention is as follows:

- Automotive
- Building and Construction
- Communications and Information Technology
- Culture and Recreation

- Education
- Emergency Services and Defence
- Energy
- Food and Beverages
- Government
- Health
- Infrastructure
- Law
- Manufacturing
- Money
- Primary Production
- Real Estate
- Retailing
- Services
- Science and Technology
- Tourism
- Transport, Distribution and Storage

There will of course be overlap between different super sites, and some businesses may be registered in more than one super site. A suitable breakdown of the world's geographical regions is as follows:

- Canada and Alaska
- USA
- Mexico
- Central America/Caribbean
- Northern Latin America
- Brazil
- Southern Latin America
- Pacific Islands
- Australia
- Indonesian Archipelago
- South East Asia
- Indochina

- Far Eastern Asia
- Korean Peninsula
- Japan
- Russia
- Southern Africa
- Central Africa
- North Africa
- Middle East
- Persia and Western Asia
- Indian Subcontinent
- Scandinavia
- Eastern Europe
- Asia Minor and the Caucasus
- Greece and the Balkans
- Italy
- Iberian Peninsula
- France
- British Isles
- The Low Countries
- Germany
- Central Europe

In a preferred implementation, each of the above regions has an Internet site according to the invention (a "Super Site"), including super sites for each of the 21 industry groups identified previously.

The components of the overall website include the super sites, a master configuration module, an administration module, a reporting module, a notification module, a payment module, a map server, and one or more databases.

The master configuration module represents the top layer of the web site configuration. It includes tools for configuring the other modules. The

administration module enables an administrator to: configure a new super site, configure a new customer, grant permissions, configure a new template, configure a new product, configure a new report, configure a new content section, associate a graphics suite by coding image names with a super site code, publish a super site, configure security roles and levels, and view and edit records.

The reporting module allows configuration of reports. Within a super site, this includes reports of subscribers, transactions, products, banners served, classifieds served, and search results.

The notification module enables notification messages to be sent to customers to alert them to such things as due dates for payment of renewals on products. The payment module enables subscribers to pay fees using a credit card number.

The map server graphically displays the positions of selected businesses on a map. The map displays suburb and street information with icons indicating the position of the selected businesses. The map server enables searching by state, suburb, street, region, zipcode or by using a user-defined distance. This user-defined distance can be the radius from any user-defined geographical point, defined by a user drawn area or defined by nominating a series of features which create the area. Each subscriber profile is entitled to have a location marker, indicating to the map server the precise geographical location of the subscriber's business.

The website includes one or more databases which store information about the products, subscribers, transactions and content. The product database includes product tables, profile tables, banners, classifieds, and magazines. The subscriber database includes subscriber details, associated tables with products and transactions, and location-coded details. The transaction database is a repository for all transactional records, with the possible exception of financial transactions if such transactions are conducted through a third-party

secure payment service. The content database includes magazine content, banner ad content, profile content and classified content.

The use of the invention in relation to Internet advertising allows advertising and in particular banner advertising to be targeted to the geographical location of the particular Internet user. The advertiser can track the user to identify their geographical location or alternatively the user may submit their geographical information. This will allow the Internet user to receive advertising which is directly relevant to his geographical area.

The advertiser may specify the exact geographical boundaries to which they wish their Internet advertising to be directed. This has the advantage of making Internet advertising available to small businesses that have a localised customer base. Advertisers can target as broadly as the whole nation or as accurately as the local neighbourhood (to less than a square km) making Internet advertising to these small local advertisers for the first time.

The invention also enables advertisers to target different advertising campaigns to different geographical regions.

Generally, the Invention can be used to locate relevant internet files of information according to either geographical or spatial location.

It is to be understood that various additions, alterations and/or modifications may be made to the parts previously described without departing from the ambit of the invention.

Claims:

1. A method of categorizing and searching for businesses, organizations and individuals in a geographically-based manner over the Internet, including the steps of:
   (a) registering a database the names of businesses, organizations and/or individuals;
   (b) for each name entry, registering a geographical location identifier; the geographical location identifier indicating the precise geographical location at which the corresponding business, organization or individual is located; and
   (c) for each name entry, optionally registering further information such as address, telephone number, and information about the goods or services offered by the business, organization or individual;
   (d) the user nominating a catchment area by reference to one or more geographical points; and
   (e) searching the database to identify name entries within the catchment area nominated by the user.

2. A method according to claim 1 wherein each geographical location identifier corresponds to:
   (i) a precise point of latitude and longitude where the business, organization or individual in question occupies a small area of land, or
   (ii) an area of points of latitude and longitude where the business, organization or individual occupies a larger amount of land.

3. A method according to any preceding claim wherein the database operates in conjunction with a secondary database of known street addresses and geographical co-ordinates such that, when a new name is entered in the database, a geographical location identifier is provided for that name by entering a street address for the name, which the

secondary database can use to provide geographical co-ordinates for the name.

4. A method according to claim 3 wherein there are numerous databases at a number of Internet sites located in different countries or regions, each of the Internet sites containing information relevant to businesses, organizations and/or individuals in its country or region.

5. An Internet site for facilitating geographically-based searching by a user over the Internet, including:
   (a) a database having the names of businesses, organizations and/or individuals;
   (b) the database further having a geographical location identifier for each name entry; each geographical location identifier indicating the precise geographical location at which the business, organization or individual is located;
   wherein the database is searched from the Internet site by having the user nominate a geographical catchment area to allow for searching of businesses, organizations and/or individuals located within the geographical catchment area.

6. An Internet site according to claim 5 wherein each geographical location identifier corresponds to:
   (i) a precise point of latitude and longitude where the business, organization or individual in question occupies a small area of land, or
   (ii) an area of points of latitude and longitude where the business, organization or individual occupies a larger amount of land.

7. An Internet site according to claim 5 wherein the database operates in conjunction with a secondary database of known street addresses and geographical co-ordinates such that, when a new name is entered in the database, a geographical

location identifier is provided for that name by entering a street address for the name, which the secondary database can use to provide geographical co-ordinates for the name.

8. An Internet site according to claim 5 further including a search engine which allows an Internet user to conduct a search of the database to find all entries matching user-specified criteria located within a user-specified distance from a user-specified point.

9. A method of categorizing items in order to facilitate information retrieval by a user, including the steps of:
   (a) registering in a database the identity of the item;
   (b) for each item, optionally registering further information about the item; and
   (c) registering in the database a spatial co-ordinate identifier corresponding to the location of each item wherein each spatial co-ordinate indicates the precise spatial location identifier of the entity at which the item is located;
   (d) the user nominating a geographical catchment area by reference to one or more geographical points;
   wherein when the database is searched by the user, the search is conducted on a sub-set of the database which consists of items located within the geographical catchment area.

10. A method according to claim 9 wherein when the item in question is defined by co-ordinates specified relative to each one of three dimensions.

11. A method according to claim 9 wherein when the item in question is defined by an area of spatial co-ordinates, each spatial co-ordinate being specified as relative to each one of three dimensions.

12. A method according to claim 9 wherein the item in question is defined by a volume of spatial co-ordinates, each spatial co-ordinate being specified as relative to each one of three dimensions.

13. A method of delivering geographically based advertising over the Internet, including the steps of:

(a) registering in a database one or more goods or services being offered by one or more advertisers;

(b) for each good or service offered by the advertiser, registering an advertiser geographical area indicating the area in which the advertiser wishes to receive customers;

(c) determining a geographical location identifier from the user, being the precise geographical location of the Internet user;

(d) displaying to the Internet user an advertisement, the advertisement displayed being selected from one or more advertisements for goods or services wherein the geographical location of the Internet user is within the advertiser geographical area corresponding to one or more of the goods or services presented in the advertisement.

14. A method according to claim 13 wherein the advertiser geographical area is specified by precise points of latitude and longitude.

15. A method according to claim 13 or 14 wherein the geographical location identifier is specified by a precise point of latitude and longitude.

16. A method according to any one of claim 13 to 15 wherein the Internet user supplies information including their Internet user geographical location identifier.