Title: USER INTERFACE TO PROVIDE PLURALITY OF INTER-RELATED GEO-CONTENT

Abstract: The user is provided groupings of location based services that each include at least one content item or service that is syntactically related to a corresponding grouping category and at least one content item or service that is not syntactically related to a corresponding grouping category. A selection of one of the groupings of location based services is received from the user. The user is provided filters that are used to select further groupings that separate the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category.
USER INTERFACE TO PROVIDE PLURALITY OF INTER-RELATED GEO-CONTENT

FIELD OF THE PRESENT SYSTEM:
The present system relates to at least one of a method, user interface and apparatus for providing a plurality of inter-related geo-content in response to a query.

BACKGROUND OF THE PRESENT SYSTEM:
Many querying systems exist wherein a user may provide a query for submittal to a search engine. Typically, the search engine will parse a query and provide results to the user based on the parsed query. Search engines have also evolved wherein queries may be limited based on location information, such as a zip code. With some search engines, results may be provided in a form of a map with indications provided on the map wherein search results, such as business locations provided in response to the query, are indicated on the map.

Many search engines are suitable for any query that may be provided in that each will search a large number of data sources and thereby, may provide search results that are not subject limited. Some types of search engines are purposefully subject limited to provide search results that are also subject limited. For example, a given search engine may be limited to real estate inquiries and any query provided, will only result in responses that are directed to the subject limitation, such as a listing of available real estate or home values in a given area.

A problem exists in prior search engines in that search results are limited to the search terms provided as the query and the scope of the search engines available subject matter. For example, in a case wherein a user is interested in real estate within an identified geography, a user may typically submit a query to a subject limited search engine, wherein the results provided will be related to the parsed query within the subject limitations of the search engine, however, no additional related
information, such as school test scores, percentages of high school students attending college, etc., that may be of interest to the user, will be provided. A similar search on a general search engine may provide many more results based on the words used for the query provided, but again will not provide any results based on related topics that are likely of interest to the user that is interested in the real estate. Accordingly, in prior systems, the user is forced to submit multiple queries to identify results that are not only related to the original search terms but that also semantically identify related topics of interest.

Systems exist for notifying user of location based services (LBS). In operation, the notification services are provided much like a typical search engine however, the results of the search are limited to services and service providers. An ability to limit the results to given geographic areas greatly increases the ease of the use of these systems. The results of a search may be provided on a map to give an indication wherein the service and service providers are located.

None of these prior systems provides a system, method, user interface and device to provide a plurality of inter-related geo-content in response to a query that goes beyond a simple direct relationship between query terms and the search results.

**SUMMARY OF THE PRESENT SYSTEM:**

It is an object of the present system to overcome disadvantages and/or make improvements in the prior art.

The present system includes a system, method, device and interface for providing a plurality of inter-related geo-content in response to a user query that goes beyond simply identifying search terms in query results.

In accordance with the present system, a system, method, device and interface of providing a location based services to a user is provided. The user is provided a plurality of groupings
of location based services, wherein each of the plurality of groupings includes at least one content item or service that is syntactically related to a corresponding grouping category and at least one content item or service that is not syntactically related to a corresponding grouping category. A selection of one of the plurality of groupings of location based services is received from the user. The user is provided a plurality of filters related to the selected one of the plurality of groupings of location based services. The plurality of filters are configured to select further groupings of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category. The further groupings are groupings that separate the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category into different further groupings.

In one embodiment, a selection of at least one of the plurality of filters is received from the user. At least one of the further groupings is rendered based on the selected at least one of the plurality of filters. In a further embodiment, each of the at least one content item or service contained within the at least one of the further groupings includes corresponding location information. Rendering may include rendering the at least one of the further groupings within a map-based graphical user interface, wherein each of the at least one content item or service is rendered within the map-based graphical user interface based on the corresponding location information.

Receiving from the user the selection of at least one of the plurality of filters may include receiving from the user a geo-boundary, wherein content items or services having corresponding location information within the geo-boundary are rendered and
content items or services having corresponding location information outside the geo-boundary are not rendered. In an embodiment, a change in the geo-boundary may be received from the user. The rendering may be changed based on the changed geo-boundary, wherein content items or services having corresponding location information within the changed geo-boundary are rendered and content items or services having corresponding location information outside the changed geo-boundary are not rendered.

Rendering at least one of the further groupings may include retrieving from at least one of a plurality of content providers the at least one content item or service in response to the received selection from the user. Indications may be received from a plurality of content providers of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category. The indications may include meta-data that identifies for each of the one content item or service that is syntactically related to a corresponding grouping category, a grouping of location based services that are not syntactically related to the corresponding grouping category. The indications may include the plurality of filters.

The plurality of groupings of location based services may be part of a larger pool of groupings of location based services. Receiving from the user the selection of at least one of the plurality of filters may include receiving a keyword from the user. The plurality of groupings of location based services provided to the user may be selected based on the keyword. The plurality of groupings of location based services may be part of a larger pool of groupings of location based services. Receiving from the user may include receiving location information from the user. The plurality of groupings of location based services provided to the user may be selected based on the location information.
BRIEF DESCRIPTION OF THE DRAWINGS:

The invention is explained in further detail, and by way of example, with reference to the accompanying drawings wherein:

FIG. 1 shows a system in accordance with an embodiment of the present system;

FIG. 2 shows illustrative process flow diagrams in accordance with an embodiment of the present system;

FIGs. 3A, 3B, 3C show a graphical user interface (GUI) in accordance with an embodiment of the present system;

FIGs. 4A, 4B, 4C show a graphical user interface (GUI) in accordance with an embodiment of the present system;

FIG. 5 shows illustrative process flow diagrams in accordance with an embodiment of the present system; and

FIG. 6 shows a system in accordance with an embodiment of the present system.

DETAILED DESCRIPTION OF THE PRESENT SYSTEM:

The following are descriptions of illustrative embodiments that when taken in conjunction with the following drawings will demonstrate the above noted features and advantages, as well as further ones. In the following description, for purposes of explanation rather than limitation, illustrative details are set forth such as architecture, interfaces, techniques, element attributes, etc. However, it will be apparent to those of ordinary skill in the art that other embodiments that depart from these details would still be understood to be within the scope of the appended claims. Moreover, for the purpose of clarity, detailed descriptions of well known devices, circuits, tools, techniques and methods are omitted so as not to obscure the description of the present system. It should be expressly understood that the drawings are included for illustrative purposes and do not represent the scope of the present system.
In the accompanying drawings, like reference numbers in different drawings may designate similar elements.

For purposes of simplifying a description of the present system, the terms "operatively coupled", "coupled" and formatives thereof as utilized herein refer to a connection between devices and/or portions thereof that enables operation in accordance with the present system. For example, an operative coupling may include one or more of a wired connection and/or a wireless connection between two or more devices that enables a one and/or two-way communication path between the devices and/or portions thereof. For example, an operative coupling may include a wired and/or wireless coupling to enable communication between a content server and one or more user devices. A further operative coupling, in accordance with the present system may include one or more couplings between two or more user devices, such as via a network source, such as the content server, in accordance with an embodiment of the present system. An operative coupling may also relate to an interaction between program portions and thereby may not describe a physical connection so much as an interaction based coupling.

The term rendering and formatives thereof as utilized herein refer to providing content, such as digital media, such that it may be perceived by at least one user sense, such as a sense of sight and/or a sense of hearing. For example, the present system may render a user interface on a display device so that it may be seen and interacted with by a user.

The system, device(s), method, user interface, etc., described herein address problems in prior art systems. In accordance with an embodiment of the present system, a system and user interface provides a plurality of inter-related geo-content in response to a query. The geo-content is rendered to the user in a user interface that enables filtering of the geo-content to categories, should this filtering be desired by the user.
Significantly, in accordance with the present system, the results to a user query are provided as indications on a user interface including a map rendering with indications of the query results provided on the map rendering. In this way, a simple to utilize geobrowser is provided wherein a user is enabled to explore the search results within a mapped display of the search results. In accordance with the present system, the results provided are not limited by a simple textual parsing of the query.

In accordance with an embodiment of the present system, a user is provided with a general listing of content/services that are available in relation to an identified location and area surrounding the location. This general listing is herein termed geo-channels. Each of the geo-channels may represent a general category of available content/services such as related to real estate, events, news, travel, sports, etc. Each of the geo-channels may operate as a query for retrieving content/services for display on a user device in a form of a map-based graphical user interface.

In accordance with the present system, the content/services related to each of the geo-channels is not simply related to a defined subject as in prior systems. In the present system, each of the geo-channels includes defined content/service elements and other content/services that need not be syntactically related to the geo-channel, but may be of interest to a user that is interacting with a particular category of content, interacting with particular content and/or interacting with a particular service (e.g., LBS). In one embodiment of the present system, content and/or a service that is published from a content publisher may include associated identifying information, such as metadata, that relates not only to the published content/service, such as to the subject of the published content/service, but also identifies related subjects. In this way, queries based on the subject of the published content/service, will also produce the
content/services of the related subjects. Accordingly, the geo-channels provide a simplified system, method, etc., of providing access to content/services that extends beyond prior systems since content/services that are provided in response to a geo-channel selection includes the related content/services. In this way, the related content/services may be provided as layers of the geo-channel which may be separately rendered or filtered from rendering as further described herein.

A graphical user interface (GUI) may be provided in accordance with an embodiment of the present system by an application running on a processor, such as part of a computer system of a user device and/or as provided by a network connected device, such as a web-based server. The visual environment may be displayed by the processor on a display device and a user may be provided with an input device to submit queries and receive query results. GUI's render visual and textual images which describe various visual metaphors of an operating system, an application, etc., implemented on the processor/computer including rendering on a display device.

In operation, a user typically moves a user-controlled object, such as a cursor or pointer, across a computer screen and onto other displayed objects or screen regions, and then inputs a command, such as a selection of a geo-channel and/or other query, to execute a given selection or operation, such as a search for content related to the geo-channel, query, etc. Other applications or visual environments also may provide user-controlled objects such as a cursor for selection and manipulation of depicted objects in a multi-dimensional (e.g., two-dimensional) space.

The user interaction with and manipulation of the computer environment is achieved using any of a variety of types of human-processor interface devices that are operationally coupled to the processor controlling the displayed environment. A common interface device for a user interface (UI), such as a graphical
user interface (GUI) is a mouse, trackball, keyboard, touch-sensitive display, etc. For example, a mouse may be moved by a user in a planar workspace to move a visual object, such as a cursor, depicted on a two-dimensional display surface in a direct mapping between the position of the user manipulation and the depicted position of the cursor. This is typically known as position control, where the motion of the depicted object directly correlates to motion of the user manipulation.

An example of such a GUI in accordance with an embodiment of the present system is a GUI that may be provided by a computer program that may be user invoked, such as to enable a user to provide a query and receive results to the query within a rendered visualization depicting a map. In accordance with a further embodiment, the user may be enabled within a visual environment, such as the GUI, to select different layers of content/services for filtering the results of the query.

For example, the GUI may present a typical UI including a windowing environment and as such, may include menu items, pull-down menu items, pop-up windows, etc., that are typical of those provided in a windowing environment, such as may be represented within a Windows™ Operating System GUI as provided by Microsoft Corporation and/or an OS X™ Operating System GUI, such as provided on an iPhone™, MacBook™, iMac™, etc., as provided by Apple, Inc., and/or another operating system. The objects and sections of the GUI may be navigated utilizing a user input device, such as a mouse, trackball, finger, and/or other suitable user input. Further, the user input may be utilized for making selections within the GUI such as by selection of menu items, window items, radio buttons, pop-up windows, for example, in response to a mouse-over operation, and other common interaction paradigms as understood by a person of ordinary skill in the art.

Similar interfaces may be provided by a device having a touch sensitive screen that is operated on by an input device such as a finger of a user or other input device such as a
stylus. In this environment, a cursor may or may not be provided since location of selection is directly determined by the location of interaction with the touch sensitive screen. Although the GUI utilized for supporting touch sensitive inputs may be somewhat different than a GUI that is utilized for supporting, for example, a computer mouse input, however, for purposes of the present system, the operation is similar. Accordingly, for purposes of simplifying the foregoing description, the interaction discussed is intended to apply to either of these systems or others that may be suitably applied.

FIG. 1 shows a system 100 in accordance with an embodiment of the present system. The system 100 includes a user device 180, a geo-server 120 that receives queries from the user device 120 and provides results from a plurality of content providers 110. The user device 180 includes a user interface (UI) engine 182 for example in a form of an application present on the user device. The UI engine 182 may include a mapping application, such as Google Maps, Yahoo, telemap, etc. as well as a portion for interacting with the present system. The geo-server 120 includes a service dispatcher 122, a content dispatcher 124, a semantic portion 128, a neighborhood engine 126, a user interface (UI) engine 132, a mapping engine 134, a geo-web layering portion 136, a device profile 138, and a service registry 142.

The service dispatcher 122 is operably coupled to and provided for interfacing with the user device 122. The content dispatcher 124 is operably coupled to and provided for interacting with the plurality of content providers 110. The semantic portion 128 is operably coupled to and provided for identifying content from the plurality of content providers 110 that is related to a query provided by the user. The neighborhood engine 126 is operably coupled to and provided for filtering content provided by the semantic portion 128 that is geographically relevant content for a given user.
The user interface (UI) engine 132 may be utilized when the user is interacting with the Geo-server 120 via a web-browser and accordingly, a UI engine may not be present on the user device. The mapping engine 134 provides the filtered content to the user device 180 in a form that may be rendered within the mapping application present on the user device 180. In one embodiment of the present system, the geo-web layering portion 136 may be utilized for providing the content from the plurality of content providers 110 as a plurality of layers of information to facilitate both rendering of the content within the UI of the user device 180 and to facilitate a layered filtering of the rendered content. Further details of an operation of the present system are provided referring to FIG. 2.

FIG. 2 shows an illustrative process flow diagram for content providers publishing content/services, indications of which may be rendered on the user device in accordance with an embodiment of the present system. FIG. 2 also includes an illustrative process flow diagram for invocation of the present system by the user. In accordance with an embodiment of the present system, content providers first register with the geo-server to enable content/service retrieval and to ensure that content/service indications provided in response to a query are provided from an authorized content provider. As should be readily appreciated, although the term content provider is utilized herein to simplify the following discussion and to refer to the provider of the content/services, the term content provider may also be understood to refer to the provider of services which publishes indications of the services and/or provides the services, such as location based services (LBS).

During registration of the content provider, the content provider makes a request to create an account with the geo-server and may provide contact information, such as an email address, content provider name, etc. The content dispatcher authorizes the registration of the content provider and responds to the
registration request by generating a license key which may be sent to the content provider via an email or other preferably electronic system. The license key may be utilized by an authorized content provider to identify itself and to identify the content provider's services while publishing content to the geo-server.

In the process of publishing the content/services, the content provider may submit its license key along with its content/services. In operation, the content provider communicates with the content dispatcher which, though accessing the service registry, first authenticates the content provider through use of the license key and thereafter, validates the content format as per content standards. The format specification that is allowable may be provided to the content provider. For example, the standard format may be RSS, GeoRSS or any XML format providing the location component. A component may be provided (e.g., a portion of the content dispatcher) which will convert the content provider content and reformat the content provider format to a standard format for the geo-server. In general, although different content/services may be provided by one or more of the content providers, a unified format for all content/services facilitates the providing of the content/services though the user interface in accordance with the present system.

In one embodiment of the present system, the content providers provide indications of the content/services to the geo-server in place of the actual content/service. In this embodiment, when a user query is received, the geo-server will retrieve the content/service directly from the content provider as opposed to storing a copy of the content/service. In this way, storage requirements placed on the geo-server are greatly reduced while ensuring that the user receives the most up to date content/service since it is directly retrieved from the content provider.
In addition, content providers may provide additional information while publishing content/services to the geo-server including meta-data, tags, category (or categories) of the content/services, an application end-point uniform resource locator (URL) identifying where the content/service may be accessed, searchability indication from the content provider to indicate whether the content/service is searchable, and filters that are applicable to the content/service. These parameters that the content provider provides may affect the user interface on the device. For example, if a content provider is publishing certain content, such as Real Estate listings the "Searchability" indication (e.g., Searchability flag) is ON, the UI on the user device (e.g., mobile telephone) will have the 'Search' feature when this content (e.g., in a form of a geo-channel) is consumed by the user.

The meta-data may be used to identify content/services that a user may be interested in and that are related to a particular content/service, such as one currently rendered to the user. For example, meta-data may be provided indicating content/services that are related to a currently rendered real-estate content/service, wherein the meta-data identifies related content/services and/or categories of content/services. Further, meta-data may be utilized to identify that other content/services, such as school content/services related to the location of the real-estate content/service. Tags may provide additional information such as related to semantics of the content/service, identifying information such as author, and/or publisher, etc. Category information may identify the type of content such as video, news, audio, etc.

Application end-point URL is the content/service end point where the content/service is located, for example on a server of the content provider. The geo-server may use this end point to make a request to the content provider, for example based on a user request, to populate dynamic content on a map based UI for
particular content/services. In accordance with an embodiment of the present system, a dynamic mechanism may be provided that allows access to a variety of content, for example, related to a particular service. With an embodiment of the present system, since the content formatting and delivery may be performed by the geo-server, it is very easy to integrate new content into the system. For example, in one embodiment of the present system, the geo-server merely stores an indication of the content/service, such as the content/service name, available filters for the content/service and the service provider end point. In this embodiment, the content/service is not stored at the geo-server. In this way, in a case wherein the content/service is updated by the content provider, there is no need to update the geo-server unless, for example, other elements such as the end-point, available filters, etc., that are associated with the content/service, also changes. In retrieving the content/service in response to a user query, the geo-server accesses the content provider directly utilizing the content provider endpoint, so that updated content/services are always provided in response to the user query.

In publishing the content/service to the geo-server, the content provider may provide an identification of filters for the content/service. In operation, a user is provided with these filters when the user is looking at particular content/services, such as provided by a geo-channel in accordance the present system. Through use of the filters, the user may choose specific categories of content that may be of interest including related content/services in accordance with the present system. For example, content/services related to Events (e.g., an events geo-channel) may be filtered (e.g., selectively rendered) as technology, sports, education events, etc. by a suitable selection within the GUI.

In accordance with an embodiment of the present system, content providers may publish content/services, for example, by
providing location-based service content, using a widget interface. In this embodiment, the widget interface may validate the content/service that the provider wants to publish and automate the submittal of the content/service to the content dispatcher. This embodiment alleviates the burden related to content/service validation that may be placed on the geo-server and simplifies content/service submittal for the content provider. Importantly, the content/service submittal by the content provider includes location information (e.g., latitude and longitude) that is utilized by the present system for locating the content/service indication in a geobrowser interface when the content/service indication is provided to a user. Content/services that are provided without the location information are typically not accepted by the geo-server unless, there is some mechanism available for determining a location related to the content. As may be readily appreciated, the geo-server may support various interfaces including RSS, Geo RSS, XML, KML, etc.

Returning to FIG. 2, in a case wherein the content provider is an authorized content provider, the service registry is updated with the content/service name, available filters for the content/service and the content provider end point. An acknowledgement is thereafter sent back to the service provider to acknowledge that the content/service name, etc., is received and stored to the geo-server.

After content/services are published to the geo-server, a user may perform a query of the geo-server, for example, in a form of a service query. Depending on the interface of the user device selected by the user, either the UI engine on the user device or the UI engine of the geo-server provides for the rendering of elements of the present system provided to the user device. In a case wherein the user is utilizing a web-interface, such as a web browser, for querying the geo-server, the UI engine of the geo-server provides for the rendering of the elements. In
a case wherein the user is utilizing an application dedicated to
the current system and/or adaptable to the current system, such
as a mapping program, for querying the geo-server, the UI engine
of the user device provides for the rendering of the elements.

Regardless of which UI engine is utilized for initiating
rendering of the UI on the user device, the user provides
user/client information, location information and may provide a
query, for example in a form of a keyword through interaction
with the rendered UI. The location information is utilized to
identify content/services that are related to a location, neighborhood, city, etc., identified by the location information. The size of the area that is considered related to the location information may be set by the user and/or may be provided by the geo-server. In one embodiment, the query may be simply a request
for content/services that are geographically related to the
location information. In another embodiment, the query may include a keyword that may be utilized to limit query results to a particular content/service that is desired by the user.

The service dispatcher, utilizing the location information
and/or the keyword supplied by the user, may check the service
registry to determine what content/service providers, may be
available around the location and/or that are related to the
keyword. The service dispatcher returns to the user an
indication that content/services are available that are related
to the location and/or the keyword and also provides an
identification of content providers that have published
content/services to the geo-server.

The user may then provide a content/service invocation by
selecting an indicated content/service including a geo-boundary
(an area around the location information) used to limit responses
to content/services that are related to locations within the geo-
boundary. The service dispatcher checks the service registry to
retrieve filters (e.g., filters including events, news, weather,
real estate listing, parks, etc.) that are associated with the
selected content/service. The retrieved filters are returned to the user device as well as an indication of content/service types that are available. As may be readily appreciated, different filters may be provided by the content provider that indicate different content/services that are related to given content/services but that may not be syntactically related.

The content/service invocation generates a service request from the service dispatcher to the plurality of service providers for content/services that are related to the service request. The service request includes a service name determined from the provided service information selected by the user, location and perimeter information determined from the geo-boundary, and a date range utilized to limit responses to the service request to content/services that are related and/or available for the date range. The date range may be provided by the user as a portion of the content/service invocation and/or may be based on a user profile stored on the user device and/or the geo-server.

One or more of the plurality of service providers provides a response to the content/service request, herein termed geo-data. In one embodiment, the response may be in a form of XML-based language schema, such as Keyhole Markup Language (KML), to facilitate mapping of the service responses within the UI rendered on the user device. The service responses are received by the geo-web layering portion of the geo-server which also receives any filters (client filters) selected by the user. The geo-web layering portion processes the geo-data including the provided responses from the content providers in accordance with any filters, content type, etc., provided by the user to identify content/services that correspond to the content/service request and each of the filters, content type, etc. The identified content/services are provided to the mapping engine to determine mapping including types/colors of indications for the identified content/services to render on the user device and locations of
the indications within the UI and particularly within a map that is rendered as a portion of the UI on the user device.

In addition, the semantic portion of the geo-server analyzes semantics of the selected content/service to identify related geo services/channels with respect to the user selected content/service. The semantic portion follows semantically defined rules to determine related content/services. The semantic portion may utilize metadata, tags, etc., that are provided by the content providers for published content/services to identify content/services that are related to the selected content/service. It must be noted that the semantic portion extends the selected content/service to include additional content/services that are different than the selected content/service but that are contextually related to the selected content/service as described herein.

For example, in a case wherein the selected content/service includes real estate content/services (e.g., real estate listing), the user may be provided, by the contextual related content/service determined by the semantics portion, with an ability to render crime information, schools performance index, transportation, etc., that are relevant to the location and perimeter information of the selected content/service. The contextual related content/services may be rendered within the user device UI as an additional layer of content/services so that the user may decide to enable or disable the rendering of one or more portions of the contextual related content/services.

For example, in a case wherein the user is interested in seeing real estate related content/services available/offered for a particular location-area, the present system is enabled to display all available houses in the particular area. In addition, an embodiment of the present system may analyze the user initial interest in real estate content/services and provide other relevant content/services that may be of interested to the user. In this case, the present system, for example, provided by
the semantic portion of the geo-server, may propose related content/services such as crime information, performance of the schools, and prior home sales information for the particular area. In a case wherein a user selects any one or more of the proposed content/services, the system will overlay/superimpose the proposed content/services on the existing real estate/home availability interface (e.g., the GUI 300). In accordance with the present system, the semantic portion may analyze the user initial interest (e.g., real estate) and provide contextually related services (e.g., crime information, school performance index, prior home sales information) that may be overlaid on the initial user selected content/service (e.g., homes for sale). In this way, the system provides a single interface for two or more typically disparate content/services.

The semantic portion may also make use of user behavioral information to identify related services. For example, the geo-server may maintain a user profile as a portion of a device/user profile which includes information related to past selections by the user and information related to the user device and mapping application (e.g., local or web-based) utilized by the user on the user device. For example, in past selections the user may have decided to render and/or interact with video and/or weather content/services. Accordingly, based on the user profile which may record information related to past interactions of the user with the geo-server, in a new interaction with event related content/services, the semantic portion may provide related videos for past events and/or weather information for future events as an additional layer of content/services rendered within the map UI. This profile of past interactions of the user provides a historical record (e.g., a prior attention profile) of user preferences and may be utilized in accordance with the present system to refine a presentation of content/services by the present system.
Further, the semantic portion may utilize a user's previous content/service interactions to identify related content/services from other users that have similarly interacted with the content/services. For example, a current user that selects real estate content/services may be determined as similar to a prior user that interacted with real estate content/services and that also selected food outlets as a portion of the content/service rendered within the UI of the prior user. Accordingly, the geo-server in accordance with the an embodiment of the present system may provide food outlets as one of the layers of contextually related services that may be rendered within the UI of the current user. In any event, the semantic portion provides contextually related services to the user device via the service dispatcher, as a layer of the content/service response returned to the user.

The content/service response is provided to the user device in a form of a map-centric UI that includes indications (e.g., icons and/or pictorial/textual indications) of available content/services. The present system including the geo-server may support all kind of mapping solutions such as Google maps, Telemat, Yahoo, Mapquest, etc. Abstraction layering provided by the mapping engine may be designed to enable population of a rendered map with indications of content/services provided by the geo-server regardless of the mapping solution utilized by the user. For example, the present system may utilize an open-source solution such as a Factory based interface which may allow dynamic plugging of new mapping solutions. The geo-server may select and configure the map interface and layering of content/services based on the user device type as indicated in the device/user profile. A factory based design interface may provide a suitable implementation for all maps layering, navigation and content/service distribution methodologies. In one embodiment of the present system, the look, feel and supported features and limitations may differ based on the
mapping application utilized by the user including corresponding map interfaces. In accordance with an embodiment of the present system, the layering of indications of content/services within the map-based UI is implemented to be readily portable to support different browsers and mobile device platforms (e.g., mobile phone platform). For example, the layering of indications of content/services may be provided in an XML-format that is received by a JAVA-applet within the UI engine of the user device or the geo-server.

FIGs. 3A, 3B, 3C show a graphical user interface (GUI) 300 in accordance with an embodiment of the present system. The GUI 300 includes a map-based interface that in one embodiment, enables overlaying of dynamic data, such as content/services provided by a content provider.

In the GUI 300, a user may have already performed a selection of service information for determining the service name provided to the content providers. In addition, the user may have also selected a key word for use in determining the service name. For example, the user may have selected service information related to events (hereinafter, "Event service info") and further provided a keyword "technology" as a portion of a content/service invocation. The GUI 300 may be provided to the user as the service response to such a content/service invocation.

The GUI 300 includes an indication 310 indicating that Event service info is requested by the user. As shown, the GUI 300 includes indications, such as icons, representing layers of content/services that may be selected by the user. These icons are illustratively shown rendered in two different portions of the GUI 300 including a rendered map portion 320 and a navigation portion 330. For example, a news icon 322 and weather icon 324 is provided in the rendered map portion 320, and a news icon 332 and weather icon 334 is provided in the navigation portion 330. In this way, together with all technology events related to a
given location, the GUI 300 in accordance with an embodiment of the present system also provides an overlay of related news and weather information for the geo location.

In addition, the overlay of related news and weather information may be provided with regard to a specific event selected by the user. The content/services rendered within a GUI in accordance with an embodiment of the present system, may be searchable based on user interest. For example if the user wanted to retrieve news videos related to "LinuxWorld Expo", the query may be performed for the selected content/service. In FIG. 3A, the particular event, namely "LinuxWorld Expo" is provided as a first layer 340 of content/services rendered within the GUI 300. Since in accordance with an embodiment of the present system, the content/service is provided as layers, for example, corresponding to different categories of content/services, different layers of related content/services may be selected for rendering within the GUI 300.

In FIG. 3B, the user has selected either of the news icon 322 or the news icon 332. In response to the user selection, news information related to the selected content/service is provided as a second layer 350 of content/services rendered within the GUI 300. In FIG. 3C, the user has selected either of the weather icon 324 or the weather icon 334. In response to the user selection, weather information related to the selected content/service is provided as a further second layer 360 of content/services rendered within the GUI 300.

In accordance with the present system, content providers may register to the geo-server to offer content/services. Since the content providers also identify the content/service categories that the content/service provider belong to, one aspect of the present system is to generate "geo-channels" regrouping the different content providers by the categories of content providers.
In accordance with an embodiment of the present system, the mapping interface in a form of a geo-browser, provides a plurality of geo-channels to perform as queries. For example, such geo-channels may include news, events, weather, hotels, etc. In accordance with an embodiment of the present system, the menu of geo-channels may even be configured according to the user past interactions with the system (e.g., for example as stored as a portion of the device/user profile). The results of a query may be displayed within a map UI related to a current location of the user device or based on a location selected (e.g., input) by the user. In accordance with a further embodiment of the present system, user may search within a geo-channel based on tags, for example using keywords. For example, within a geo-channel, a user may supply a keyword "video", to retrieve all videos of the content/service and of related content/services.

Content/services may also be filtered based on one or more time parameters to identify a time range related to the selected content/service that should be provided to the user. For example, in a case wherein the user specifies a date range or one is inferred from past user behavior (e.g., the historical user profile), content/services that do not correspond to the date range will not be retrieved in response to a query from the user. For upcoming events, the associated geo-content (e.g., content/services) may be news/press releases from the specific event along with any multi-media information that may be available for that event.

In accordance with the present system, the user may choose to overlay the retrieved content/services centered on the current location of the user device or another user selected location with a default or user selectable geo-boundary around the centered location. For example, in one embodiment of the present system, the user may select a geo-boundary to zoom-in/zoom-out within the map based GUI. Based on the user selected filters of geo-channel (e.g., events), the appropriate events information
shall be displayed on the geo-map. In accordance with a further embodiment, the user may be enabled to select multiple filters for a specified geo-channel. In this way, the user is provided an option to select the multiple geo-channels (e.g., Events, News, Weather etc.). In either event, based on the user selection, the map based UI is overlaid with corresponding content/services and the user is enabled to see related content/services, such as news, videos, weather, etc., to the corresponding events (e.g., as determined by the semantic portion) by selecting the sub-layers of geo-channels.

The indications provided within the GUI may be selected by the user to render the content/service related to the indications. For example, selection of the weather icon 324, may result in rendering of a weather related video on the user device. As may be readily appreciated, the content/service indications contained within the GUI 300 may be utilized for accessing the corresponding content/service.

Elements such as user preferences, geo-boundaries, etc., may be selected within a profile as may be provided by the user by selection of a profile icon 370. The profile may also include an ability to update a status message of the user. Other user's within the network may be enabled to see the user status message similar as an instant messenger user status (e.g., available, busy, off-line, etc.). As may be readily appreciated, other elements of the GUI 300 and interaction with the geo-server may also be selected/adjusted by the user through selection of the profile icon 370.

FIGs. 4A, 4B, 4C show a graphical user interface (GUI) 400 in accordance with an embodiment of the present system that is similar to the GUI 300 shown in FIGs. 3A, 3B, 3C. The GUI 400 includes a map-based interface and geo-channels 490 as described herein. The GUI 400 includes a search area 436 that may be utilized to provide keywords for reducing the content/elements rendered and/or provided as geo-channels, to only
content/services and/or geo-channels that are syntactically related to the key-word and/or that are related to one or more of a content/service that is syntactically related to the keyword. In operation, a user may select an "event" geo-channel as indicated by the event indication 410. As shown in FIG. 4B, in this embodiment, the geo-channels are now replaced with filters 420 (e.g., related channels) for the event geo-channel. In a case wherein the user decides to select a given event/service (e.g., left-click an indication of the given content/service), a pop-up window 422 may be provided that renders information relevant to the given event/service. Additional information 430 may also be provided as selectable indications should the user desire to render one or more of the additional information 430. In this embodiment, after the given event/service is selected by the user, the filters 420 are now selectable to select further content/services related to the already selected content/service. As shown in FIG. 3C, in this way, a weather indication 440 is provided which depicts weather information that is relevant for the previously selected content/service. In the example, shown, the weather indication is rendered that is related to the selected event, namely Widget Summit 2008.

FIG. 5 shows an illustrative process flow diagram for a user to change filters in accordance with an embodiment of the present system and an illustrative process flow diagram for adding a new service layer.

As discussed above, filters are utilized within the geo-channels to provide a focus on specific portions of given geo-channels. For example, a geo-channel related to real estate may include filters for past sales, present sales, school ratings, percentages of high school students attending college, crime, etc. In a case wherein the user desires to apply a given one or more of the filters to the geo-channel, the user may submit the service name identifying the geo-channel, along with the selected filter, to the service dispatcher. As indicated, to enable the
filter to be applied, the GUI should be set to refresh the map so that updates to the map provided by the geo-server will be rendered on the user device. This option and other options related to the GUI may be set by the user through interaction with settings of the GUI, for example, by interaction with a menu indication 380 as shown in FIG. 3A.

In accordance with an embodiment of the present system, selection of the menu indication 380 may initiate a window including menu options such as an option for changing settings of the GUI as may be readily appreciated by a person of ordinary skill in the art. In operation, after user selection of one or more of the filters, the user submits the selected filter(s), including the service name associated with the filters, to the service dispatcher. The service dispatcher forwards the selected filter(s) to the geo-web layering portion which applies the filters to the geo-data such as any user profile information including historical user interactions with the present system, to identify geo-data corresponding to the selected filter(s) as modified by the user historical data. The corresponding geo-data is provided to the mapping engine to determine marks, colors, etc., for indications of the corresponding geo-data that will be applied to the map rendered on the user device as the user selected layer. The geo-web layering portion returns data corresponding to the map with the user selected layer which is returned to the user device for rendering of the user selected layer.

Returning to FIG. 5, the illustrative process flow diagram for adding a new service layer shown is similar in processes to the service invocation process flow with the exception that by setting a "Super Impose / Overlay flag" = ON, the service response is superimposed over elements (e.g., added to the rendered elements) of the prior rendered content/services as opposed to replacing the prior rendered content/services.
Through interaction with the present system, a user is enabled to select geo-channels and one or more layers of content/services related to a user content/service invocation. The geo-channels may be provided to the user as an immediate response to the user service invocation as shown in FIG. 2. In accordance with an embodiment of the present system, through use of geo-channels, content providers may be regrouped by categories of content providers as opposed to a grouping merely based on the content/service. In operation, a content provider may be registered according to listed categories that this content provider belongs to (e.g., weather, sports, events, theater, hotels, etc.). The content providers are thereafter regrouped based on the categories of the service providers, and provided to the user as "geo-channels". The geo-channels act as queries sorted out by the content provider categories. Selection of further layers is received as a query within a selected geo-channel. Prior systems typically rely upon indexations based on the content/service (e.g., webpage content) and not on categories of the content providers.

In prior systems, one has to send multiple queries to compile local results in different categories of content, such as related to apartments, schools, crime records, etc. In accordance with the present system, geo-channels may be provided to the user that includes content/services based on the analysis of the semantic portion as well as based on the categories provided by the content providers. In addition, the user is provided a second level approach which consists in a second query reusing the results from the first query. For example, a user may query an event geo-channel for the 94114 zip code. In accordance with an embodiment of the present system, a list of corresponding content/services may be displayed within a map-based GUI of this zip code.

Significantly, the integration of the second layer (overlay) may be vertical wherein the second layer (e.g., videos) acts as a
filter of the results of the first layer. In this way, the results may be further refined according to some user designated criteria which leads to fewer content/services being provided within the map-based GUI. In a further embodiment, the integration of the second layer (overlay) may be horizontal, wherein, for example, a menu of other geo-channels is offered to the user wherein the menu is based, for instance, on a semantic component applied to the user input and/or user’s past use and/or the neighborhood currently explored. In this embodiment, the second layer uses at least the geo-boundary data (or some other criteria) from the first layer although further content/services are provided that need not be depicted as a portion of the first layer.

In prior systems, a user is required to go to different web applications to collect info about seemingly disparate topics, such as real estate, schools, crime, etc., and therefore, any correlation of the topics must be performed by the user. In accordance with the present system, different content/services are superimposed into a single interface (overlay).

FIG. 6 shows a system 600 in accordance with an embodiment of the present system. The system 600 includes a device 690 (e.g., user device, geo-server, etc.) that has a processor 610 operationally coupled to a memory 620, a rendering device 630, such as one or more of a display, speaker, etc., a user input device 670 and an connection 680 operationally coupled to the user device 690. The connection 680 may be an operable connection between the device 690, as a user device, and another device that has similar elements as the device 690, such as a geo-server. The connection 680 may also be an operable connection between the device 690, as a geo-server, and one or more content providers.

The memory 620 may be any type of device for storing application data as well as other data, such as geo-data including geo-channel data, user historical data, such as a user
profile, layering data, identifying one or more layers of content/services, etc. The application data and other data are received by the processor 610 for configuring the processor 610 to perform operation acts in accordance with the present system. The operation acts include controlling at least one of the rendering device 630 to render a GUI (e.g., GUI 300) and/or to render content/services. The user input 670 may include a keyboard, mouse, trackball or other devices, including touch sensitive displays, which may be stand alone or be a part of a system, such as part of a personal computer (e.g., desktop computer, laptop computer, etc.) personal digital assistant, mobile phone, converged device, or other rendering device for communicating with the processor 610 via any type of link, such as a wired or wireless link. The user input device 670 is operable for interacting with the processor 610 including interaction within a paradigm of a GUI and/or other elements of the present system, such as to enable web browsing, content/service selection, such as provided by left and right clicking on an indication of content/services, query submittal, geo-channel selection, a mouse-over, pop-up menu, etc., such as provided by user interaction with a computer mouse, etc., as may be readily appreciated by a person of ordinary skill in the art.

In accordance with an embodiment of the present system, the rendering device 630 may operate as a touch sensitive display for communicating with the processors 610 (e.g., providing selection of a web browser, a geo-channel, filters, etc.) and thereby, the rendering device 630 may also operate as a user input device. In this way, a user may interact with the processor 610 including interaction within a paradigm of a UI, such as to operation of the present system, device and method. Clearly the user device 690, the processor 610, memory 620, rendering device 630 and/or user input device 670 may all or partly be portions of a computer system or other device, and/or be embedded in a portable device, such as a mobile telephone, personal computer (PC), personal
digital assistant (PDA), converged device such as a smart telephone, etc.

The system, device and method described herein address problems in prior art systems. In accordance with an embodiment of the present system, the device 690, corresponding user interfaces and other portions of the system 600 are provided for interacting between a user device and a geo-browser and between the geo-browser and one or more content providers in accordance with the present system.

The methods of the present system are particularly suited to be carried out by a computer software program, such program containing modules corresponding to one or more of the individual steps or acts described and/or envisioned by the present system, such as a semantic portion, UI engine, geo-web layering portion, service dispatcher, content dispatcher, device/user profile, service registry, etc. Such program may of course be embodied in a computer-readable medium, such as an integrated chip, a peripheral device or memory, such as the memory 620 or other memory coupled to the processor 610.

The computer-readable medium and/or memory 620 may be any recordable medium (e.g., RAM, ROM, removable memory, CD-ROM, hard drives, DVD, floppy disks or memory cards) or may be a transmission medium utilizing one or more of radio frequency (RF) coupling, Bluetooth coupling, infrared coupling, etc. Any medium known or developed that can store and/or transmit information suitable for use with a computer system may be used as the computer-readable medium and/or memory 620.

Additional memories may also be used. These memories configure processor 610 to implement the methods, operational acts, and functions disclosed herein. The operation acts may include controlling the rendering device 630 to render elements in a form of a UI and/or controlling the rendering device 630 to render other information in accordance with the present system.
Moreover, the term "memory" should be construed broadly enough to encompass any information able to be read from or written to an address in the addressable space accessed by a processor. With this definition, information on a network is still within memory 620, for instance, because the processor 610 may retrieve the information from the network for operation in accordance with the present system. For example, a portion of the memory as understood herein may reside as a portion of the content providers, geo-server, and/or the user device.

The processor 610 is capable of providing control signals and/or performing operations in response to input signals from the user input device 670 and executing instructions stored in the memory 620. The processor 610 may be an application-specific or general-use integrated circuit(s). Further, the processor 610 may be a dedicated processor for performing in accordance with the present system or may be a general-purpose processor wherein only one of many functions operates for performing in accordance with the present system. The processor 610 may operate utilizing a program portion, multiple program segments, or may be a hardware device utilizing a dedicated or multi-purpose integrated circuit.

Finally, the above discussion is intended to be merely illustrative of the present system and should not be construed as limiting the appended claims to any particular embodiment or group of embodiments. Thus, while the present system has been described with reference to exemplary embodiments, including user interfaces, it should also be appreciated that numerous modifications and alternative embodiments may be devised by those having ordinary skill in the art without departing from the broader and intended spirit and scope of the present system as set forth in the claims that follow. Further, while exemplary user interfaces are provided to facilitate an understanding of the present system, other user interfaces may be provided and/or elements of one user interface may be combined with another of
the user interfaces in accordance with further embodiments of the present system.

The section headings included herein are intended to facilitate a review but are not intended to limit the scope of the present system. Accordingly, the specification and drawings are to be regarded in an illustrative manner and are not intended to limit the scope of the appended claims.

In interpreting the appended claims, it should be understood that:

a) the word "comprising" does not exclude the presence of other elements or acts than those listed in a given claim;
b) the word "a" or "an" preceding an element does not exclude the presence of a plurality of such elements;
c) any reference signs in the claims do not limit their scope;
d) several "means" may be represented by the same item or hardware or software implemented structure or function;
e) any of the disclosed elements may be comprised of hardware portions (e.g., including discrete and integrated electronic circuitry), software portions (e.g., computer programming), and any combination thereof;
f) hardware portions may be comprised of one or both of analog and digital portions;
g) any of the disclosed devices or portions thereof may be combined together or separated into further portions unless specifically stated otherwise;
h) no specific sequence of acts or steps is intended to be required unless specifically indicated; and
i) the term "plurality of" an element includes two or more of the claimed element, and does not imply any particular range of number of elements; that is, a plurality of elements may be as few as two elements, and may include an immeasurable number of elements.
What is claimed is:

1. A method of providing a location based services to a user comprising acts of:
   providing to the user a plurality of groupings of location based services, wherein each of the plurality of groupings includes at least one content item or service that is syntactically related to a corresponding grouping category and at least one content item or service that is not syntactically related to a corresponding grouping category;
   receiving from the user a selection of one of the plurality of groupings of location based services; and
   providing to the user a plurality of filters related to the selected one of the plurality of groupings of location based services, wherein the plurality of filters are configured to select further groupings of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category, wherein the further groupings are groupings that separate the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category into different further groupings.

2. The method of claim 1, comprising acts of:
   receiving from the user a selection of at least one of the plurality of filters; and
   rendering at least one of the further groupings based on the selected at least one of the plurality of filters.

3. The method of claim 2, wherein each of the at least one content item or service contained within the at least one of the
further groupings includes corresponding location information, wherein the act of rendering comprises an act of rendering the at least one of the further groupings within a map-based graphical user interface, wherein each of the at least one content item or service is rendered within the map-based graphical user interface based on the corresponding location information.

4. The method of claim 3, wherein the act of receiving from the user comprises an act of receiving from the user a geo-boundary, wherein content items or services having corresponding location information within the geo-boundary are rendered and content items or services having corresponding location information outside the geo-boundary are not rendered.

5. The method of claim 4, comprising acts of:
   receiving from the user a change in the geo-boundary; and
   changing the rendering based on the changed geo-boundary, wherein content items or services having corresponding location information within the changed geo-boundary are rendered and content items or services having corresponding location information outside the changed geo-boundary are not rendered.

6. The method of claim 2, wherein the act of rendering at least one of the further groupings comprises an act of retrieving from at least one of a plurality of content providers the at least one content item or service in response to the received selection from the user.

7. The method of claim 1, comprising an act of receiving indications from a plurality of content providers of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category, wherein the indications include meta-data that
identifies for each of the one content item or service that is syntactically related to a corresponding grouping category, a grouping of location based services that are not syntactically related to the corresponding grouping category.

8. The method of claim 7, wherein the indications include the plurality of filters.

9. The method of claim 1, wherein the plurality of groupings of location based services are part of a larger pool of groupings of location based services, wherein the act of receiving from the user comprises an act of receiving a keyword from the user, wherein the plurality of groupings of location based services provided to the user are selected based on the keyword.

10. The method of claim 1, wherein the plurality of groupings of location based services are part of a larger pool of groupings of location based services, wherein the act of receiving from the user comprises an act of receiving a location information from the user, wherein the plurality of groupings of location based services provided to the user are selected based on the location information.

11. A computer program stored on a computer readable memory medium, the computer program configured for providing a location based services to a user, the computer program comprising:

- a program portion configured to provide to the user a plurality of groupings of location based services, wherein each of the plurality of groupings includes at least one content item or service that is syntactically related to a corresponding grouping category and at least one content item or service that is not syntactically related to a corresponding grouping category;
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a program portion configured to receive from the user a selection of one of the plurality of groupings of location based services; and

a program portion configured to provide to the user a plurality of filters related to the selected one of the plurality of groupings of location based services, wherein the plurality of filters are configured to select further groupings of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category, wherein the further groupings are groupings that separate the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category into different further groupings.

12. The computer program of claim 11, comprising:

a program portion configured to receive from the user a selection of at least one of the plurality of filters; and

a program portion configured to render at least one of the further groupings based on the selected at least one of the plurality of filters.

13. The computer program of claim 12, wherein each of the at least one content item or service contained within the at least one of the further groupings includes corresponding location information, wherein the program portion configured to render comprises a program portion configured to render the at least one of the further groupings within a map-based graphical user interface, wherein each of the at least one content item or service is rendered within the map-based graphical user interface based on the corresponding location information.
14. The computer program of claim 13, wherein the program portion configured to receive from the user a selection of at least one of the plurality of filters comprises a program portion configured to receive from the user a geo-boundary, wherein content items or services having corresponding location information within the geo-boundary are rendered and content items or services having corresponding location information outside the geo-boundary are not rendered.

15. The computer program of claim 14, comprising:
   a program portion configured to receive from the user a change in the geo-boundary; and
   a program portion configured to change the rendering based on the changed geo-boundary, wherein content items or services having corresponding location information within the changed geo-boundary are rendered and content items or services having corresponding location information outside the changed geo-boundary are not rendered.

16. The computer program of claim 12, wherein the program portion configured to render at least one of the further groupings comprises a program portion configured to retrieve from at least one of a plurality of content providers the at least one content item or service in response to the received selection from the user.

17. The computer program of claim 11, comprising a program portion configured to receive indications from a plurality of content providers of the at least one content item or service that is syntactically related to a corresponding grouping category and the at least one content item or service that is not syntactically related to a corresponding grouping category, wherein the indications include meta-data that identifies for each of the one content item or service that is syntactically
related to a corresponding grouping category, a grouping of location based services that are not syntactically related to the corresponding grouping category.

18. The computer program of claim 17, wherein the indications include the plurality of filters.

19. The computer program of claim 11, wherein the plurality of groupings of location based services are part of a larger pool of groupings of location based services, wherein the program portion configured to receive from the user comprises a program portion configured to receive a keyword from the user, wherein the plurality of groupings of location based services provided to the user are selected based on the keyword.

20. The computer program of claim 11, wherein the plurality of groupings of location based services are part of a larger pool of groupings of location based services, wherein the a program portion configured to receive from the user comprises a program portion configured to receive a location information from the user, wherein the plurality of groupings of location based services provided to the user are selected based on the location information.
FIG. 5A
FIG. 5B
**A. CLASSIFICATION OF SUBJECT MATTER**

INV. G06F17/30 G09B29/00

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G09B G06F

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

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

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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See patent family annex

1 Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"a" document member of the same patent family

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Authorized officer:

Herry, Tzvetanka
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