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METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

BACKGROUND

[0001] Service providers and device manufacturers (e.g., wireless, cellular, etc.) are continually challenged to deliver value and convenience to consumers by, for example, providing compelling network services and relevant content. Often, such network and content services rely on the context of the users accessing the network services or the devices by which the users access the network services. Determining the context becomes inadequate when multiple contexts and/or multiple users' actions need to be analyzed over a period of time—particularly when the context is determined in conjunction with a mobile device that has limited processing power and/or bandwidth. However, there still exists a need to have rich, accurate datasets that span different context-aware situations to allow applications that utilize the datasets to be useful for multiple contexts and/or multiple users and provide access to such datasets to mobile devices in a practical manner. As such, device manufacturers and service providers face significant technical challenges to providing rich, situational-aware, context-sensitive datasets in a mobile environment.

SOME EXAMPLE EMBODIMENTS

[0002] Therefore, there is a need for an approach for providing an ordering metric for a multi-dimensional contextual query to provide context-aware querying, retrieval and presentation of results on, for example, a mobile interface.

[0003] According to one embodiment, a method comprises determining a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The method also comprises causing, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results. The method further comprises determining at least one ordering metric for

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000002

the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

[0004] According to another embodiment, an apparatus comprises at least one processor, and at least one memory including computer program code for one or more computer programs, the at least one memory and the computer program code configured to, with the at least one processor, cause, at least in part, the apparatus to determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The apparatus is also caused, at least in part, to execute the multi-dimensional query on at least one context-sensitive database to generate one or more results. The apparatus is further caused to determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

[0005] According to another embodiment, a computer-readable storage medium carries one or more sequences of one or more instructions which, when executed by one or more processors, cause, at least in part, an apparatus to determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The apparatus is also caused, at least in part, to execute the multi-dimensional query on at least one context-sensitive database to generate one or more results. The apparatus is further caused to determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

[0006] According to another embodiment, an apparatus comprises means for determining a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The apparatus also comprises means for causing, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results. The apparatus further comprises means for determining at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000003

[0007] In addition, for various example embodiments of the invention, the following is applicable: a method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on (or derived at least in part from) any one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0008] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform any one or any combination of network or service provider methods (or processes) disclosed in this application.

[0009] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on data and/or information resulting from one or any combination of methods or processes disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0010] For various example embodiments of the invention, the following is also applicable: a method comprising creating and/or modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based at least in part on data and/or information resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0011] In various example embodiments, the methods (or processes) can be accomplished on the service provider side or on the mobile device side or in any shared way between service provider and mobile device with actions being performed on both sides.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000004

[0012] For various example embodiments, the following is applicable: An apparatus comprising means for performing the method of any of originally filed claims 1-10, 21-30, and 46-48.

[0013] Still other aspects, features, and advantages of the invention are readily apparent from the following detailed description, simply by illustrating a number of particular embodiments and implementations, including the best mode contemplated for carrying out the invention. The invention is also capable of other and different embodiments, and its several details can be modified in various obvious respects, all without departing from the spirit and scope of the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The embodiments of the invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings:

[0015] FIG. 1 is a diagram of a system capable of providing an ordering metric for a multi-dimensional contextual query, according to one embodiment;

[0016] FIG. 2 is a diagram of the components of an ordering platform, according to one embodiment;

[0017] FIG. 3 is a flowchart of a process for providing an ordering metric for a multi-dimensional contextual query, according to one embodiment;

[0018] FIGs. 4A-4E are diagrams of user interfaces utilized in the process of FIG. 3, according to various embodiments;

[0019] FIG. 5 is a diagram of hardware that can be used to implement an embodiment of the invention;

[0020] FIG. 6 is a diagram of a chip set that can be used to implement an embodiment of the invention; and

[0021] FIG. 7 is a diagram of a mobile terminal (e.g., handset) that can be used to implement an embodiment of the invention.

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DESCRIPTION OF SOME EMBODIMENTS

[0022] Examples of a method, apparatus, and computer program for providing an ordering metric for a multi-dimensional contextual query are disclosed. In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the embodiments of the invention. It is apparent, however, to one skilled in the art that the embodiments of the invention may be practiced without these specific details or with an equivalent arrangement. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the embodiments of the invention.

[0023] Although various embodiments are described with respect to context-aware databases storing points of interest, it is contemplated that the approach described herein may be used with other context-aware databases storing any type of contextually based information.

[0024] FIG. 1 is a diagram of a system capable of providing an ordering metric for a multi-dimensional contextual query, according to one embodiment. As discussed above, services and/or content provided over a network to users' devices often rely on the current context of the users and/or the devices. When multiple contexts and/or multiple users' actions need to be analyzed over a period of time, adapting the applications to use the contexts and/or actions becomes inadequate. Although situation awareness can correlate specific contexts and user actions to specific contextual situations, using such situation awareness has not been incorporated into context-aware databases. Thus, there still exists a need to have rich, accurate datasets that span different context-aware situations to allow applications that utilize the datasets to be useful for multiple contexts and/or multiple users.

[0025] To address this problem, a system 100 of FIG. 1 introduces the capability to enrich and enhance situational-aware, context-sensitive databases using mechanisms on, for example, a mobile device. The system 100 also has the framework for allowing the mobile user to provide additional information concerning relevant attributes for a data entity in a context-aware database. The system 100 also introduces context-based attribute ordering in the interface of, for example, a mobile device to provide more fluid and less intensive context-aware querying, retrieval and presentation of contextual attributes of objects stored in databases.

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[0026] As shown in FIG. 1, the system 100 comprises user equipment (UE) 101a-101n (collectively referred to as UE 101) having connectivity to an ordering platform 103 (discussed in detail below) via a communication network 105. The UE 101 include one or more executable applications 111a-111n (collectively referred to as applications 111) that include, for example, one or more mapping applications, messaging applications, calendar applications, context applications, sensor applications, etc. In communication with the UE 101 (e.g., within the UE 101, outside the UE 101) are one or more sensors 117a-117n (collectively referred to as sensors 117) that acquire information regarding the context of the user and/or the UE 101. The sensors 117 can collect any type of information depending on the type of sensor. For example, the sensors 117 can constitute accelerometers, gyroscopes, brightness sensors, moisture sensors, etc. that collect information regarding acceleration, light and water vapor of the UE 101 and the surrounding environment.

[0027] In communication with the ordering platform 103 and the UE 101 via the communication network 105 are databases 115a-115n (collectively referred to as databases 115). The databases 115 can be 2-dimensional, relational databases or multi-dimensional (e.g., 3-dimensional, N-dimensional, etc.) databases that are organized into hierarchies that specify an aggregation level and granularity of viewing data.

[0028] The databases store objects and information concerning the objects, such as object contextual attributes. The object contextual attributes correspond to the context of the objects, such as, for example, the geographic location of the objects (e.g., address, city, country, etc.), the type of object (e.g., restaurants, schools, parks, and playgrounds), and all other possible types of contextual information related to the objects. By way of example, for an object such as a park, the additional contextual attributes can include whether the park has a playground, whether the park has restrooms, whether the restrooms are clean, whether the park has food concessions, whether the food concessions have a wide range of choices, whether the park has a parking lot or street parking, whether access to the park is free, etc. Each one of these contextual attributes can be further defined by the accuracy, the precision and the resolution of the contextual attributes. For example, the contextual attributes regarding whether the restrooms are clean and/or whether the food concessions have a wide range of choices can have additional attributes indicating the

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accuracy, the precision and the resolution of the cleanliness of the concessions or the range of choices.

[0029] Attributes representing the accuracy, the precision and the resolution can be provided by the provider of the system 100, by the users of the system 100, or a combination thereof. For example, initially the values can be provided by the provider of the system 100 and can be modified, updated, or removed by the users of the system 100. The system 100 can also combine attributes of any one or more of the accuracy, the precision and the resolution into one, singular attribute. For instance, if the information about the cleanliness of the restrooms is both accurate and precise, a single attribute may correspond to "very clean." If the information about the cleanliness is accurate but not precise, the attribute may correspond to a range, such as "not clean – clean." In other instances, if the information regarding the cleanliness of the restroom is based on parts of the restroom, the system 100 may indicate the resolution of the information by providing an overall attribute of the cleanliness of the restroom, and also provide discrete attributes for the cleanliness of, for example, the sink, the toilet, the towels etc. within the restroom.

[0030] For multi-dimensional databases, each dimension is defined over a dimensional schema, which is a set of dimensional attributes. By way of example, one multidimensional schema can be user preferences attributes. The dimensional attributes of user preferences are, for example, users, location based preferences, context based preferences, behavior based preferences, etc. In this example, the user dimensional attribute is terminal and belongs to the first category level, the location based preferences belongs to the second category level, the context based preferences belongs to the third category level, the behavior based preferences belongs to the fourth category level, etc. By way of further example, each of these dimensional attributes can have further nested multi-dimensional attributes. For example, the location based preferences can include current location based preferences, nearby location based preferences, far location based preferences, etc. where each of these specific location based preferences are representative of a smaller granularity of the location.

[0031] The system 100 also includes a service platform 109 that provides one or more services 107a-107n (collectively known as services 107) to one or more users and/or user

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devices. The services 107 can include, for example, location based services, mapping information services, social networking services, etc. In one embodiment, the service platform 109 includes a service 107b that can convert a 2-dimensional, relational database into a multi-dimensional database for use with the multi-dimensional query of the system 100 according to well-known conversion techniques.

[0032] Also included within the system 100 is one or more content providers 113a-113n (collectively referred to as content providers 113) that can provide content to one or more services 107 of the service platform 109, one or more UE 101, one or more databases 115 and/or the ordering platform 103. By way of example, as the information regarding the objects stored in the databases 115 changes, the content providers 113 can update the information within the databases. When new objects are created or removed, such as when a new point of interest is created or a new point of interest is closed, the content providers 113 can update the new information within the databases 115.

[0033] By way of example, the communication network 105 of the system 100 includes one or more networks such as a data network, a wireless network, a telephony network, or any combination thereof. It is contemplated that the data network may be any local area network (LAN), metropolitan area network (MAN), wide area network (WAN), a public data network (e.g., the Internet), short range wireless network, or any other suitable packet-switched network, such as a commercially owned, proprietary packet-switched network, e.g., a proprietary cable or fiber-optic network, and the like, or any combination thereof. In addition, the wireless network may be, for example, a cellular network and may employ various technologies including enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS), etc., as well as any other suitable wireless medium, e.g., worldwide interoperability for microwave access (WiMAX), Long Term Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), wireless LAN (WLAN), Bluetooth®, Internet Protocol (IP) data casting, satellite, mobile ad-hoc network (MANET), and the like, or any combination thereof.

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[0034] The UE 101 is any type of mobile terminal, fixed terminal, or portable terminal including a mobile handset, station, unit, device, multimedia computer, multimedia tablet, Internet node, communicator, desktop computer, laptop computer, notebook computer, netbook computer, tablet computer, personal communication system (PCS) device, personal navigation device, personal digital assistants (PDAs), audio/video player, digital camera/camcorder, positioning device, television receiver, radio broadcast receiver, electronic book device, game device, or any combination thereof, including the accessories and peripherals of these devices, or any combination thereof. It is also contemplated that the UE 101 can support any type of interface to the user (such as "wearable" circuitry, etc.).

[0035] By way of example, the UE 101, the ordering platform 103, the service platform 109, the content providers 113 and the databases 115 communicate with each other and other components of the communication network 105 using well known, new and/or still developing protocols. In this context, a protocol includes a set of rules defining how the network nodes within the communication network 105 interact with each other based on information sent over the communication links. The protocols are effective at different layers of operation within each node, from generating and receiving physical signals of various types, to selecting a link for transferring those signals, to the format of information indicated by those signals, to identifying which software application executing on a computer system sends or receives the information. The conceptually different layers of protocols for exchanging information over a network are described in the Open Systems Interconnection (OSI) Reference Model.

[0036] Communications between the network nodes are typically effected by exchanging discrete packets of data. Each packet typically comprises (1) header information associated with a particular protocol, and (2) payload information that follows the header information and contains information that may be processed independently of that particular protocol. In some protocols, the packet includes (3) trailer information following the payload and indicating the end of the payload information. The header includes information such as the source of the packet, its destination, the length of the payload, and other properties used by the protocol. Often, the data in the payload for the particular protocol includes a header and payload for a different protocol associated with a different, higher layer of the OSI Reference Model. The header for a particular protocol typically indicates a type for the next protocol contained in its

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000010

payload. The higher layer protocol is said to be encapsulated in the lower layer protocol. The headers included in a packet traversing multiple heterogeneous networks, such as the Internet, typically include a physical (layer 1) header, a data-link (layer 2) header, an internetwork (layer 3) header and a transport (layer 4) header, and various application (layer 5, layer 6 and layer 7) headers as defined by the OSI Reference Model.

[0037] FIG. 2 is a diagram of the components of the ordering platform 103, according to one embodiment. By way of example, the ordering platform 103 includes one or more components for providing an ordering metric for a multi-dimensional contextual query. It is contemplated that the functions of these components may be combined in one or more components or performed by other components of equivalent functionality. For example, the functions of these components may be embodied in one or more applications 111 executed on a UE 101. Alternatively, the functions of these components can be embodied in one or more modules of the UE 101, or one or more services 107 on the service platform 109.

[0038] In this embodiment, the ordering platform 103 includes a persona module 201, a context module 203, a query module 205, an ordering metric module 207, an analyzer module 209, and a user interface module 211.

[0039] The persona module 201 determines one or more personas associated with a user of a UE 101 and/or a UE 101. The persona module 201 determines the one or more personas by, for example, a user or users of the UE 101 entering the information regarding the personas.

[0040] The personas represent the possible different combinations of users that can be associated with a specific UE 101. By way of example, a persona can represent the members of a family that are associated with the UE 101. The persona can also represent the members of a group of friends that are associated with the UE 101. The personas allow for the creation of situations associated with the UE 101 that correlate to user contextual attributes that form the multi-dimensional queries, in addition to, for example, context information, to generate a list of results from one or more databases 115 that can later be ordered according to an ordering metric.

[0041] In one embodiment, when a UE 101 first interfaces with the ordering platform 103, the persona module 201 determines a complete persona associated with the UE 101. By way of example, the complete persona includes representations of the type (e.g., gender, age group,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000011

disability, relationships, etc.) and quantity of the users that could possibly be associated with the UE 101. Such examples include one male parent, one female parent, and two infant daughters; one female parent, one teenage boy, and one infant boy; one disabled friend and a non-disabled friend, etc. The complete persona allows the ordering platform 103 to determine all possible personas that could be associated with the UE 101 based on the possible users associated with the UE 101. Thus, the complete persona allows the ordering platform 103 to determine all of the possible user contextual attributes that could be associated with the UE 101 based on the possible users associated with the UE 101.

[0042] In one embodiment, the persona module 201 determines one or more personas associated with users of a UE 101 at the time of querying and/or ordering of the one or more results of a multi-dimensional query. The persona module 201 determines the specific users that are associated with the UE 101, and, therefore, associated with the query and/or the ordering metric, and creates the multi-dimensional query based, at least in part, on the user contextual attributes associated with the persona. By way of example, certain user contextual attributes are associated with male parents, female parents, non-parent adults, teenagers, young children, infants, friends, disabled individuals, non-disabled individuals, etc. By indicating the number and type (e.g., gender, age group, disability, relationships, etc.) of users associated with the UE 101 at the time of the query and/or ordering of the one or more results, the ordering platform 103 automatically generates persona information and associates the persona information with user contextual attributes. By doing so, the persona module 201 allows the ordering platform 103 to have situational awareness over the users that are associated with the UE 101 and who are querying the databases 115.

[0043] The context module 203 determines the context associated with the user of the UE 101 and/or the UE 101 that is used to create the multi-dimensional query and/or used to create the ordering metric. The context may comprise, for example, the current location of the user, a future location of the user based on one or more mapping applications 111 running on the UE 101, a current or future appointment based on one or more calendar applications 111 running on the UE 101, etc. The context module 203 can determine the context from, for example, one or more applications 111 running on the UE 101, one or more modules of the UE 101, one or more sensors 117 associated with the UE 101, one or more services 107 associated with the UE 101, or

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000012

any combination thereof. The context module 203 can also determine the context associated with the users and/or the UE 101 based on interaction information at a user interface of the UE 101. For example, the UE 101 may include user interfaces that allow the users of the UE 101 to enter context regarding the users and/or the UE 101.

[0044] In one embodiment, the context module 203 continuously, periodically, or a combination thereof, determines the context information of the user and/or the UE 101 before and after submitting the multi-dimensional query for creating and updating the ordering metric, as discussed below.

[0045] The query module 205 creates the multi-dimensional query based on, for example, one or more of the personas and the context acquired by the persona module 201 and he context module 203. The multi-dimensional query can also be based on, for example, one or more dimensions that are specific by a user of the UE 101.

[0046] In one embodiment, one dimension can include a contextual dimension for comparing one or more user contextual attributes to one or more object contextual attributes of one or more objects stored in the databases 115. By way of example, the contextual dimension can represent a normalized value of 0 to 1 that defines the most ideally matched object contextual attribute compared to a user contextual attribute. For example, if the context is location, a value of one is the most preferred location of the user and a value of zero is the least preferred location of the user. Thus, if the user contextual attribute for location is a specific latitude and longitude, or a specific street address, and an object has an object contextual attribute with the same latitude and longitude, or street address, the user contextual attribute and the object contextual attribute would have a normalized relation of one, being the most ideally matched.

[0047] In one embodiment, one dimension can include a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes. The contextual relation dimension specifies weighting information, priority information, or a combination thereof of the one or more user contextual attributes, the one or more object contextual attributes, or a combination thereof. Such relations include, for example, an equivalence relation (Q), a total ordering relation (T), and a partial ordering relation (P). In the case of the equivalence relation Q, the results that comply with the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000013

user contextual attributes, the one or more object contextual attributes, or a combination thereof are ordered without any special ordering. In the case of the total ordering relation T, the results are sorted based on the contextual dimension discussed above according to the rank of the user contextual attributes, the one or more object contextual attributes, or a combination thereof. In the case of the partial ordering relation P, the results are sorted based on a partial ordering of the contextual dimension discussed above based on the rank of the user contextual attributes, the one or more object contextual attributes, or a combination thereof.

[0048] In one embodiment, one dimension can include an inclusion dimension for determining whether to include respective ones of the one or more results of the multi-dimensional query in a list presented to the user on the user's device. By way of example, the inclusion dimension determines whether objects that include object contextual attributes that do not conform to the user contextual attributes are included or excluded in a list of objects presented to the user. The inclusion attribute can be, for example, unlisted excluded (X), where the objects that include object contextual attributes that do not conform to the user contextual attributes are excluded from the list, and unlisted included (N), where the objects that include object contextual attributes that do not conform to the user contextual attributes are included in the list but come last. The inclusion dimension can be used, for example, to exclude objects and or object information that is unsupported by a mobile device or that is too large to be transmitted over a network to the mobile device.

[0049] The query module 205 also executes the multi-dimensional query on the one of more databases 115.

[0050] The ordering metric module 207 creates the ordering metric that is used to order the results of the multi-dimensional query. The ordering metric module 207 determines the ordering metric based, at least in part, on one or more of the personas, one or more contexts, one or more of the user contextual attributes, one or more of the object contextual attributes, and one or more dimensions of the multi-dimensional query. In one embodiment, upon generating a list of results representing objects with corresponding object contextual attributes from the databases 115 based on the multi-dimensional query, the ordering metric module 207 generates an ordering metric to order the objects according to the object contextual attributes in comparison to the one

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000014

or more of the personas, the one or more contexts, the one or more of the user contextual attributes, and the one or more dimensions of the multi-dimensional query. By way of example, the ordering metric orders the objects according to the object contextual attributes in relation to the user contextual attributes according to the contextual dimension and an equivalence relation Q for the contextual relation dimension. The ordering metric module 207 also continuously, periodically, or a combination thereof, monitors for changes in the one or more of the personas, the one or more contexts, the one or more of the user contextual attributes, the one or more of the object contextual attributes, and the one or more dimensions of the multi-dimensional query to reorder the objects based on a new ordering metric. Thus, by way of example, rather than creating a new multi-dimensional query and executing the multi-dimensional query at the databases 115 every time one of the personas, contexts, user contextual attributes, and/or object contextual attributes changes, the ordering platform rather merely updates the ordering metric and reorders the list of result objects with the corresponding object contextual attributes.

[0051] The analyzer module 209 determines the accuracy, the precision, and the resolution of the object contextual attributes stored in the databases 115 for the objects presented as results in response to the multi-dimensional query. The accuracy of the object contextual attributes represents the degree of closeness of the object contextual attribute to the actual (true) value. The precision of the object contextual attributes represents the degree of reproducibility of the measurement of the accuracy. The resolution of the object contextual attributes represents the degree of change that is detected. By way of example, some object contextual attributes are yes or no, such as whether a point of interest includes restrooms, parking, or are handicapped accessible. Such contextual attributes should have high degrees of accuracy and precision because there is only one objective answer (e.g., either yes or no). However, some object contextual attributes can be represented by a normalized value between 0 and 1, such as whether the restrooms are clean, whether the parking spaces can fit a full-sized automobile, whether a restaurant is family friendly, etc. Thus, the analyzer module 209 determines the accuracy, the precision, and the resolution values stored in the databases 115 corresponding to the objects and the object contextual attributes. In one embodiment, the databases 115 already contain the normalized and/or yes/no attributes corresponding to the object contextual attributes. Thus, the analyzer module 209 simply loads the information from the databases 115 and presents the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000015

information to the user along with the objects. In one embodiment, the databases 115 have multiple, raw indications of the accuracy, the precision, and the resolution of the object contextual attributes and the analyzer module 209 determines a normalized value for the raw indications. The analyzer module 209 can handle various types of values, ranging from yes/no, to normalized values, to non-normalized values, such as text string descriptions of the object contextual attributes.

[0052] In the case where the analyzer module 209 determines the value, the analyzer module 209 determines the accuracy, the precision, and the resolution of the object contextual attributes based on such values (e.g., yes/no, 0-1) stored in the databases 115 associated with the object contextual attributes. The analyzer module 209 determines the actual values based on a wide range of values according to a weighted sum, a weighted average, or a combination thereof of the actual values stored in the databases 115. The analyzer module 209 also interfaces with the user interface module 211 (discussed below) to present the determined values of the accuracy, the precision, and the resolution of the object contextual attributes to the user when the objects are presented as results of the multi-dimensional query.

[0053] The analyzer module 209 also receives information from the user, the user of the UE 101, one or more sensors associated with the UE 101, or a combination thereof to further update the values of the accuracy, the precision, and the resolution of the object contextual attributes. By way of example, if a restroom of a restaurant currently has a value of 0.8 associated with the cleanliness attribute based on two reviews or ratings and a user currently rates the cleanliness according as a 0.4 using the user interface of the UE 101, the analyzer module 209 updates the value of the cleanliness of the restroom as a value of 0.66 at the database 115.

[0054] The user interface module 211 provides the user interfaces for interfacing with the ordering platform 103. In one embodiment, where the ordering platform 103 is a separate element of the system 100, the user interface module 211 interfaces with one or more applications 111 running on the UE 101 or one or more hardware module of the UE 101 to provide the user interface on the UE 101 to interface with the ordering platform 103. In one embodiment, where the functions of the ordering platform 103 are embodied in one or more applications 111 running on the UE 101 or in one or more hardware modules of the UE 101, the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000016

user interface module 211 interfaces with one or more other hardware modules of the UE 101 to provide the user interface for manipulating the ordering platform 103.

[0055] FIG. 3 is a flowchart of a process 300 for providing an ordering metric for a multi-dimensional contextual query, according to one embodiment. In one embodiment, the ordering platform 103 performs the process 300 and is implemented in, for instance, a chip set including a processor and a memory as shown in FIG. 6.

[0056] In step 301, the ordering platform 103 determines one or more personas associated with a device (e.g., the UE 101). As discussed above, the personas include, for example, the quantity and type of users that are associated with a device. By way of example, one device is associated with a family that includes a husband, a wife, and five children. In one embodiment, the persona can further be defined by the gender and age group of the children. For example, the five children may include one adult (e.g., over the age of eighteen) female, one teenage (e.g., the ages of thirteen to seventeen) male, one male child (e.g., the ages of two to twelve), and two infant (e.g., younger than two) females. In one embodiment, there may be no distinction between parents and children. For example, the above family would be represented by seven individuals, including one adult male, two adult females, one teenage male, one child male, and two infant females.

[0057] Based on the personas, the ordering platform 103 associates the device with one or more situations that are associated with one or more user contextual attributes and/or contexts associated with the members that comprise the persona. For example, by associating a persona of a device with an infant, the ordering platform 103 can associate the device with situations involving infants and user contextual attributes related to infants, such as whether a restaurant has an infant changing room or table in the restroom, whether a location is infant friendly, etc. By associating a persona of a device with an infant and a mother, the ordering platform can associate the device situations involving an infant and the mother of the infant, such as whether a restaurant allows public breast feeding, whether a restaurant has private seating for mothers with infants, etc. By automatically associated the users and/or the device with the personas and related user contextual attributes, the ordering platform 103 is able to determine and handle a wider range of context information based on situational awareness.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000017

[0058] In one embodiment, step 301 is performed each time the device interacts with the ordering platform 103 for providing an ordering metric for ordering results of a multi-dimensional contextual query. For example, a first time a device interacts with the ordering platform 103, the user of the device sets up a persona, which is later deleted after ending the interactions with the ordering platform 103. The second time the user interacts with the ordering platform 103, the user is requested to provide information for the persona representing the individuals associated with the device for that particular query. In one embodiment, step 301 is performed to create a default persona that is used each time a multi-dimensional query is issued for determining results of a context-aware database and providing an ordering metric for ordering the results. When the user of the device desires to receive results for a persona other than the default persona, the user is able to temporarily change the persona to a different persona.

[0059] In step 303, the ordering platform 103 determines one or more contexts associated with the user of the device and/or the device. The contexts can be related to or further define user contextual attributes associated with the persona setup in step 301 or can be independent of the persona. For example, the contexts can include the current location of the device, a future location of the device based on an application 111a running on the device (e.g., a navigation application with an active route guidance), the current time, a future time based on an application 111b running on the device (e.g., a calendar application with an active or future appointment), etc. The contexts are acquired from any source within the system 100, such as from one or more applications 111 running on the device, one or more sensors 117 associated with the device, one or more services 107 on the service platform 109, and/or one or more content providers 113.

[0060] In step 305, the ordering platform 103 creates a multi-dimensional query based on the persona and contexts generated from steps 301 and 303 above. The multi-dimensional contextual query includes the situational information associated with the persona from step 301 and includes the context information acquired in step 303. The multi-dimensional query can be of N dimensions.

[0061] As discussed above, one dimension can include a contextual dimension for comparing one or more user contextual attributes to one or more object contextual attributes. Further, one dimension can include a contextual relation dimension for evaluating one or more relations

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000018

among the one or more user contextual attributes and the one or more object contextual attributes. The contextual relation dimension specifies weighting information, priority information, or a combination thereof of the one or more user contextual attributes, the one or more object contextual attributes, or a combination thereof. One dimension can include an inclusion dimension for determining whether to include respective ones of the one or more results of the multi-dimensional query in a list presented to the user on the user's device. One dimension can include the semantic task that the user is involved in, such as finding a restaurant to eat at with the entire family.

[0062] In step 307, the ordering platform 103 executes the multi-dimensional query on at least one context-sensitive database 115a to generate one or more results corresponding to object within the databases 115 with their corresponding object contextual attributes. In step 309, the ordering platform 103 determines at least one ordering metric for ordering the one or more results at the device. As discussed above, the ordering metric can be based on a current persona associated with the device, current context information associated with the device, one or more user contextual attributes, one or more object contextual attributes, and/or the multi-dimensional query. The ordering metric can also be based on interaction information at a user interface of the device according to a user modifying any of the above parameters that can modify the ordering metric. By way of example, the user can interact with the device to change the persona information associate with the users of the device from including an infant to not including an infant. Thus, the ordering metric is then based on a persona that does not include an infant and is able to order the results of the multi-dimensional query differently according to the new persona.

[0063] In step 311, the ordering platform 103 orders the results of the query based on the at least one ordering metric. The results are ordered based on the object contextual attributes for each of the objects according to the at least one ordering metric. As discussed above, the at least one ordering metric is based, at least in part, on the current persona by ordering object contextual attributes of the one or more results based on the quantity and type of users associated with the device. By way of example, where the users associated with the device include an infant, the at least one ordering metric is focused towards points of interests associated with infants. The at least one ordering metric is based, at least in part, on the current context associated with the device by ordering the object contextual attributes of the one or more results based on the current

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000019

context. By way of example, where objects include object contextual attributes concerning hours of operation (e.g., hours a restaurant is open, hours for a sale at a store, hours a park is open), the at least one ordering metric orders the objects according to the object contextual attributes that most closely match the current time or a future time. The at least one ordering metric can also be based, at least in part, on the dimensions of the multi-dimensional query. As discussed above, the dimensions of the multi-dimensional contextual query can include a contextual dimension for comparing the one or more of user contextual attributes and the one or more object contextual attributes, a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and an inclusion dimension for determining whether to include respective ones of the one or more results in a result list. The multi-dimensional query can also include a dimension including the semantic task that the user is involved in. By way of example, if the user is looking for a particular type of restaurant, the ordering metric can include information regarding the particular type of restaurant to rank objects associated with the particular type of restaurant higher than other restaurants.

[0064] In step 313, the ordering platform 103 presents accuracy, precision, and/or resolution information regarding the object contextual attributes of the one or more object results of the query. In one embodiment, the ordering platform 103 presents the accuracy, the precision, and/or the resolution information regarding any number of the results of the one or more results. In one embodiment, the ordering platform 103 presents the accuracy, the precision, and/or the resolution information for only a selected one or more of the results of the query.

[0065] As discussed above, the accuracy, the precision, and the resolution of the object contextual attributes are stored in the databases 115. The accuracy, the precision, and the resolution of the object contextual attributes are based on such binary values as yes/no or normalized continuous range values such as between 0 and 1. The ordering platform 103 presents the determined values of the accuracy, the precision, and the resolution of the object contextual attributes to the user when the objects are presented as results of the multi-dimensional query.

[0066] In step 315, the ordering platform 103 verifies the accuracy, the precision, and/or the resolution of the information regarding the object contextual attributes based on information

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000020

inputted from the user. By way of example, a user visiting a restaurant who visits the restroom may wish to leave a review regarding the cleanliness of the restaurant. The ordering platform 103 allows the user to enter values regarding the cleanliness of the restroom, such as yes or no, or a normalized value from 0 to 1 (or 1 to 10, etc.) representing various degrees of cleanliness. The ordering platform 103 also allows the user of the device to enter text string values such as, "The worst restroom I have seen to date" to allow for more specificity regarding the object contextual attribute of cleanliness of the restroom. The ordering platform 103 also allows the user of the device to specify more detailed reviews of, for example, restrooms by reviewing parts of the restroom, such as the sink, the toilet, the towels, the floor, etc. Upon the user entering a review of one or more of the object contextual attributes, the ordering platform 103 updates the accuracy, the precision, and/or the resolution of the object contextual attribute based on, for example, a weighted sun, a weighted average, or any other method to update the information and add to the information stored within the databases 115. Thus, the process 300 allows users to add to the situational-aware, context-sensitive information stored within the databases.

[0067] In one embodiment, after step 315, the process 300 proceeds back to step 309 based on an indication that any one of the persona, the context, the user contextual attributes, the object contextual attributes, and/or the dimensions have changed indicating that a new ordering metric is created. In this situation, the new ordering metric newly orders the results of the multi-dimensional query without having to query the databases 115 again. This saves time and resources because the information is already at the mobile device. Alternatively, after step 315, the process 300 proceeds back to step 301 for the entire process to be run again in the event that the user wants to create a new multi-dimensional query and determine a new list of results.

[0068] FIGs. 4A-4E are diagrams of user interfaces utilized in the processes of FIG. 3, according to various embodiments. FIG. 4A illustrates a user interface 401a of a device 400 (e.g., a UE 101) based on an initial setup of an application 111a interfacing with the ordering platform 103. As discussed above, the user interface 401a includes inputs 403 that allow a user to indicate, for example, the gender, type and quantity of individuals associated with the device 400 to setup the persona associated with the device. By way of example, the persona associated with the device 400 includes one adult male parent, one adult female parent, an adult female non-

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000021

parent, one teenage male, one child male, and two infant females. The user interface 401a is illustrated when the user wants update or create a persona.

[0069] FIG. 4B illustrates a user interface 401b of an application 111a running on a device 400 interfacing with the ordering platform 103. The user interface 401b includes one or more indicators 405 that allow a user to begin a query to determine, for examples, points of interest that the user may wish to visit. By way of example, the user may select the "EAT" indicator 405 to find points of interest involving places to eat. Upon selecting one of the indicators 405, the user interface indicates for the ordering platform 103 to execute a multi-dimensional query on the databases 115 to generate a list of results (e.g., objects) that correspond to the persona and context of associated with the user and/or the device.

[0070] FIG. 4C illustrates the user interface 401c of an application 111a running on a device 400 interfacing with the ordering platform 103 including user contextual attributes 407 (and correspondingly object contextual attributes) associated with the determined persona associated with the device 400 that aid the user in finding relevant points of interest. By way of example, if the persona of the user of the device includes a mother with her infant child, the user contextual attributes associated with, for example, parking, a baby room and clean points of interest are determined as the most relevant contextual attributes the user is interested based on the persona. Scrolling down the list of contextual attributes 407 allows the user to select or de-select other contextual attributes, such as, for example, points of interest that are not pricey, points of interest that are open late, and points of interest that have a kids' menu for modify the user contextual attributes associated with the user and/or the device to generate and/or modify the ordering metric.

[0071] FIG. 4D illustrates the user interface 401d of an application 111a running on a device 400 interfacing with the ordering platform 103 illustrating detailed information regarding a selected point of interest. Indicator 409 illustrates the specific information regarding the point of interest, such as the name (e.g., Walker Pizza), address (221 Major St., Chicago, IL), and phone number (e.g., 312-555-8754) of the point of interest. Included within indicator 409 is indicator 411 that allows a user of the device 400 to enter a review for the particular point of interest.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000022

[0072] FIG. 4E illustrates the user interface 401e of an application 111a running on a device 400 interfacing with the ordering platform 103 illustrating the interface for leaving a review of a particular point of interest. By way of example, the user interface 401e includes indicator 413 that includes the object contextual attributes associated with the particular point of interest. As illustrated, a user of the device 400 is allowed to enter reviews of the point of interest based on the particular object contextual attributes by which the point of interest was selected for presentation to the user. In one embodiment, the user can also enter reviews of the object contextual attributes that were not used in selecting the particular object, such as the noise level of a restaurant. As discussed above, the particular point of interest Walker Pizza was selected because the point of interest had object contextual attributes of parking, a baby room, and cleanliness based on the checkmarks of the contextual attributes 407 illustrated in FIG. 4C. Indicators 415, 417 and 419 illustrate exemplary ratings of the point of interest. By way of example, the user of the device 400 can indicate whether an object contextual attribute actually existed based on the inclusion of Y for "yes" or N for "no." The user of the device 400 can also give a numerical value of the object contextual attribute, such as 1-10 representing highly agree (e.g., 1) and highly disagree (e.g., 10) and the different values there between. In one embodiment, the user can also leave text strings regarding the reviews of the object contextual attributes of the point of interest. Based on the above, the ordering platform 103 enters the information entered by the user at the databases 115 to modify the accuracy, the precision and the resolution of the particular object contextual attribute, thus enriching the datasets at the databases 115.

[0073] The processes described herein for providing an ordering metric of a multi-dimensional contextual query may be advantageously implemented via software, hardware, firmware or a combination of software and/or firmware and/or hardware. For example, the processes described herein, may be advantageously implemented via processor(s), Digital Signal Processing (DSP) chip, an Application Specific Integrated Circuit (ASIC), Field Programmable Gate Arrays (FPGAs), etc. Such exemplary hardware for performing the described functions is detailed below.

[0074] FIG. 5 illustrates a computer system 500 upon which an embodiment of the invention may be implemented. Although computer system 500 is depicted with respect to a particular

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000023

device or equipment, it is contemplated that other devices or equipment (e.g., network elements, servers, etc.) within FIG. 5 can deploy the illustrated hardware and components of system 500. Computer system 500 is programmed (e.g., via computer program code or instructions) to provide ordering metric of a multi-dimensional contextual query as described herein and includes a communication mechanism such as a bus 510 for passing information between other internal and external components of the computer system 500. Information (also called data) is represented as a physical expression of a measurable phenomenon, typically electric voltages, but including, in other embodiments, such phenomena as magnetic, electromagnetic, pressure, chemical, biological, molecular, atomic, sub-atomic and quantum interactions. For example, north and south magnetic fields, or a zero and non-zero electric voltage, represent two states (0, 1) of a binary digit (bit). Other phenomena can represent digits of a higher base. A superposition of multiple simultaneous quantum states before measurement represents a quantum bit (qubit). A sequence of one or more digits constitutes digital data that is used to represent a number or code for a character. In some embodiments, information called analog data is represented by a near continuum of measurable values within a particular range. Computer system 500, or a portion thereof, constitutes a means for performing one or more steps of providing an ordering metric of a multi-dimensional contextual query.

[0075] A bus 510 includes one or more parallel conductors of information so that information is transferred quickly among devices coupled to the bus 510. One or more processors 502 for processing information are coupled with the bus 510.

[0076] A processor (or multiple processors) 502 performs a set of operations on information as specified by computer program code related to provide an ordering metric of a multi-dimensional contextual query. The computer program code is a set of instructions or statements providing instructions for the operation of the processor and/or the computer system to perform specified functions. The code, for example, may be written in a computer programming language that is compiled into a native instruction set of the processor. The code may also be written directly using the native instruction set (e.g., machine language). The set of operations include bringing information in from the bus 510 and placing information on the bus 510. The set of operations also typically include comparing two or more units of information, shifting positions of units of information, and combining two or more units of information, such as by

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000024

addition or multiplication or logical operations like OR, exclusive OR (XOR), and AND. Each operation of the set of operations that can be performed by the processor is represented to the processor by information called instructions, such as an operation code of one or more digits. A sequence of operations to be executed by the processor 502, such as a sequence of operation codes, constitute processor instructions, also called computer system instructions or, simply, computer instructions. Processors may be implemented as mechanical, electrical, magnetic, optical, chemical or quantum components, among others, alone or in combination.

[0077] Computer system 500 also includes a memory 504 coupled to bus 510. The memory 504, such as a random access memory (RAM) or any other dynamic storage device, stores information including processor instructions for providing an ordering metric of a multi-dimensional contextual query. Dynamic memory allows information stored therein to be changed by the computer system 500. RAM allows a unit of information stored at a location called a memory address to be stored and retrieved independently of information at neighboring addresses. The memory 504 is also used by the processor 502 to store temporary values during execution of processor instructions. The computer system 500 also includes a read only memory (ROM) 506 or any other static storage device coupled to the bus 510 for storing static information, including instructions, that is not changed by the computer system 500. Some memory is composed of volatile storage that loses the information stored thereon when power is lost. Also coupled to bus 510 is a non-volatile (persistent) storage device 508, such as a magnetic disk, optical disk or flash card, for storing information, including instructions, that persists even when the computer system 500 is turned off or otherwise loses power.

[0078] Information, including instructions for providing an ordering metric of a multi-dimensional contextual query, is provided to the bus 510 for use by the processor from an external input device 512, such as a keyboard containing alphanumeric keys operated by a human user, a microphone, an Infrared (IR) remote control, a joystick, a game pad, a stylus pen, a touch screen, or a sensor. A sensor detects conditions in its vicinity and transforms those detections into physical expression compatible with the measurable phenomenon used to represent information in computer system 500. Other external devices coupled to bus 510, used primarily for interacting with humans, include a display device 514, such as a cathode ray tube (CRT), a liquid crystal display (LCD), a light emitting diode (LED) display, an organic LED

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000025

(OLED) display, a plasma screen, or a printer for presenting text or images, and a pointing device 516, such as a mouse, a trackball, cursor direction keys, or a motion sensor, for controlling a position of a small cursor image presented on the display 514 and issuing commands associated with graphical elements presented on the display 514. In some embodiments, for example, in embodiments in which the computer system 500 performs all functions automatically without human input, one or more of external input device 512, display device 514 and pointing device 516 is omitted.

[0079] In the illustrated embodiment, special purpose hardware, such as an application specific integrated circuit (ASIC) 520, is coupled to bus 510. The special purpose hardware is configured to perform operations not performed by processor 502 quickly enough for special purposes. Examples of ASICs include graphics accelerator cards for generating images for display 514, cryptographic boards for encrypting and decrypting messages sent over a network, speech recognition, and interfaces to special external devices, such as robotic arms and medical scanning equipment that repeatedly perform some complex sequence of operations that are more efficiently implemented in hardware.

[0080] Computer system 500 also includes one or more instances of a communications interface 570 coupled to bus 510. Communication interface 570 provides a one-way or two-way communication coupling to a variety of external devices that operate with their own processors, such as printers, scanners and external disks. In general the coupling is with a network link 578 that is connected to a local network 580 to which a variety of external devices with their own processors are connected. For example, communication interface 570 may be a parallel port or a serial port or a universal serial bus (USB) port on a personal computer. In some embodiments, communications interface 570 is an integrated services digital network (ISDN) card or a digital subscriber line (DSL) card or a telephone modem that provides an information communication connection to a corresponding type of telephone line. In some embodiments, a communication interface 570 is a cable modem that converts signals on bus 510 into signals for a communication connection over a coaxial cable or into optical signals for a communication connection over a fiber optic cable. As another example, communications interface 570 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN, such as Ethernet. Wireless links may also be implemented. For wireless links, the communications

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000026

interface 570 sends or receives or both sends and receives electrical, acoustic or electromagnetic signals, including infrared and optical signals, that carry information streams, such as digital data. For example, in wireless handheld devices, such as mobile telephones like cell phones, the communications interface 570 includes a radio band electromagnetic transmitter and receiver called a radio transceiver. In certain embodiments, the communications interface 570 enables connection to the communication network 105 for providing an ordering metric of a multi-dimensional contextual query to the UE 101.

[0081] The term "computer-readable medium" as used herein refers to any medium that participates in providing information to processor 502, including instructions for execution. Such a medium may take many forms, including, but not limited to computer-readable storage medium (e.g., non-volatile media, volatile media), and transmission media. Non-transitory media, such as non-volatile media, include, for example, optical or magnetic disks, such as storage device 508. Volatile media include, for example, dynamic memory 504. Transmission media include, for example, twisted pair cables, coaxial cables, copper wire, fiber optic cables, and carrier waves that travel through space without wires or cables, such as acoustic waves and electromagnetic waves, including radio, optical and infrared waves. Signals include man-made transient variations in amplitude, frequency, phase, polarization or other physical properties transmitted through the transmission media. Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, CDRW, DVD, any other optical medium, punch cards, paper tape, optical mark sheets, any other physical medium with patterns of holes or other optically recognizable indicia, a RAM, a PROM, an EPROM, a FLASH-EPROM, an EEPROM, a flash memory, any other memory chip or cartridge, a carrier wave, or any other medium from which a computer can read. The term computer-readable storage medium is used herein to refer to any computer-readable medium except transmission media.

[0082] Logic encoded in one or more tangible media includes one or both of processor instructions on a computer-readable storage media and special purpose hardware, such as ASIC 520.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000027

[0083] Network link 578 typically provides information communication using transmission media through one or more networks to other devices that use or process the information. For example, network link 578 may provide a connection through local network 580 to a host computer 582 or to equipment 584 operated by an Internet Service Provider (ISP). ISP equipment 584 in turn provides data communication services through the public, world-wide packet-switching communication network of networks now commonly referred to as the Internet 590.

[0084] A computer called a server host 592 connected to the Internet hosts a process that provides a service in response to information received over the Internet. For example, server host 592 hosts a process that provides information representing video data for presentation at display 514. It is contemplated that the components of system 500 can be deployed in various configurations within other computer systems, e.g., host 582 and server 592.

[0085] At least some embodiments of the invention are related to the use of computer system 500 for implementing some or all of the techniques described herein. According to one embodiment of the invention, those techniques are performed by computer system 500 in response to processor 502 executing one or more sequences of one or more processor instructions contained in memory 504. Such instructions, also called computer instructions, software and program code, may be read into memory 504 from another computer-readable medium such as storage device 508 or network link 578. Execution of the sequences of instructions contained in memory 504 causes processor 502 to perform one or more of the method steps described herein. In alternative embodiments, hardware, such as ASIC 520, may be used in place of or in combination with software to implement the invention. Thus, embodiments of the invention are not limited to any specific combination of hardware and software, unless otherwise explicitly stated herein.

[0086] The signals transmitted over network link 578 and other networks through communications interface 570, carry information to and from computer system 500. Computer system 500 can send and receive information, including program code, through the networks 580, 590 among others, through network link 578 and communications interface 570. In an example using the Internet 590, a server host 592 transmits program code for a particular

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000028

application, requested by a message sent from computer 500, through Internet 590, ISP equipment 584, local network 580 and communications interface 570. The received code may be executed by processor 502 as it is received, or may be stored in memory 504 or in storage device 508 or any other non-volatile storage for later execution, or both. In this manner, computer system 500 may obtain application program code in the form of signals on a carrier wave.

[0087] Various forms of computer readable media may be involved in carrying one or more sequence of instructions or data or both to processor 502 for execution. For example, instructions and data may initially be carried on a magnetic disk of a remote computer such as host 582. The remote computer loads the instructions and data into its dynamic memory and sends the instructions and data over a telephone line using a modem. A modem local to the computer system 500 receives the instructions and data on a telephone line and uses an infra-red transmitter to convert the instructions and data to a signal on an infra-red carrier wave serving as the network link 578. An infrared detector serving as communications interface 570 receives the instructions and data carried in the infrared signal and places information representing the instructions and data onto bus 510. Bus 510 carries the information to memory 504 from which processor 502 retrieves and executes the instructions using some of the data sent with the instructions. The instructions and data received in memory 504 may optionally be stored on storage device 508, either before or after execution by the processor 502.

[0088] FIG. 6 illustrates a chip set or chip 600 upon which an embodiment of the invention may be implemented. Chip set 600 is programmed to provide an ordering metric of a multi-dimensional contextual query as described herein and includes, for instance, the processor and memory components described with respect to FIG. 5 incorporated in one or more physical packages (e.g., chips). By way of example, a physical package includes an arrangement of one or more materials, components, and/or wires on a structural assembly (e.g., a baseboard) to provide one or more characteristics such as physical strength, conservation of size, and/or limitation of electrical interaction. It is contemplated that in certain embodiments the chip set 600 can be implemented in a single chip. It is further contemplated that in certain embodiments the chip set or chip 600 can be implemented as a single "system on a chip." It is further contemplated that in certain embodiments a separate ASIC would not be used, for example, and that all relevant functions as disclosed herein would be performed by a processor or processors.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000029

Chip set or chip 600, or a portion thereof, constitutes a means for performing one or more steps of providing user interface navigation information associated with the availability of functions. Chip set or chip 600, or a portion thereof, constitutes a means for performing one or more steps of providing an ordering metric of a multi-dimensional contextual query.

[0089] In one embodiment, the chip set or chip 600 includes a communication mechanism such as a bus 601 for passing information among the components of the chip set 600. A processor 603 has connectivity to the bus 601 to execute instructions and process information stored in, for example, a memory 605. The processor 603 may include one or more processing cores with each core configured to perform independently. A multi-core processor enables multiprocessing within a single physical package. Examples of a multi-core processor include two, four, eight, or greater numbers of processing cores. Alternatively or in addition, the processor 603 may include one or more microprocessors configured in tandem via the bus 601 to enable independent execution of instructions, pipelining, and multithreading. The processor 603 may also be accompanied with one or more specialized components to perform certain processing functions and tasks such as one or more digital signal processors (DSP) 607, or one or more application-specific integrated circuits (ASIC) 609. A DSP 607 typically is configured to process real-world signals (e.g., sound) in real time independently of the processor 603. Similarly, an ASIC 609 can be configured to performed specialized functions not easily performed by a more general purpose processor. Other specialized components to aid in performing the inventive functions described herein may include one or more field programmable gate arrays (FPGA), one or more controllers, or one or more other special-purpose computer chips.

[0090] In one embodiment, the chip set or chip 600 includes merely one or more processors and some software and/or firmware supporting and/or relating to and/or for the one or more processors.

[0091] The processor 603 and accompanying components have connectivity to the memory 605 via the bus 601. The memory 605 includes both dynamic memory (e.g., RAM, magnetic disk, writable optical disk, etc.) and static memory (e.g., ROM, CD-ROM, etc.) for storing executable instructions that when executed perform the inventive steps described herein to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000030

provide an ordering metric of a multi-dimensional contextual query. The memory 605 also stores the data associated with or generated by the execution of the inventive steps.

[0092] FIG. 7 is a diagram of exemplary components of a mobile terminal (e.g., handset) for communications, which is capable of operating in the system of FIG. 1, according to one embodiment. In some embodiments, mobile terminal 701, or a portion thereof, constitutes a means for performing one or more steps of providing an ordering metric of a multi-dimensional contextual query. Generally, a radio receiver is often defined in terms of front-end and back-end characteristics. The front-end of the receiver encompasses all of the Radio Frequency (RF) circuitry whereas the back-end encompasses all of the base-band processing circuitry. As used in this application, the term "circuitry" refers to both: (1) hardware-only implementations (such as implementations in only analog and/or digital circuitry), and (2) to combinations of circuitry and software (and/or firmware) (such as, if applicable to the particular context, to a combination of processor(s), including digital signal processor(s), software, and memory(ies) that work together to cause an apparatus, such as a mobile phone or server, to perform various functions). This definition of "circuitry" applies to all uses of this term in this application, including in any claims. As a further example, as used in this application and if applicable to the particular context, the term "circuitry" would also cover an implementation of merely a processor (or multiple processors) and its (or their) accompanying software/or firmware. The term "circuitry" would also cover if applicable to the particular context, for example, a baseband integrated circuit or applications processor integrated circuit in a mobile phone or a similar integrated circuit in a cellular network device or other network devices.

[0093] Pertinent internal components of the telephone include a Main Control Unit (MCU) 703, a Digital Signal Processor (DSP) 705, and a receiver/transmitter unit including a microphone gain control unit and a speaker gain control unit. A main display unit 707 provides a display to the user in support of various applications and mobile terminal functions that perform or support the steps of providing an ordering metric of a multi-dimensional contextual query. The display 707 includes display circuitry configured to display at least a portion of a user interface of the mobile terminal (e.g., mobile telephone). Additionally, the display 707 and display circuitry are configured to facilitate user control of at least some functions of the mobile terminal. An audio function circuitry 709 includes a microphone 711 and microphone amplifier

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000031

that amplifies the speech signal output from the microphone 711. The amplified speech signal output from the microphone 711 is fed to a coder/decoder (CODEC) 713.

[0094] A radio section 715 amplifies power and converts frequency in order to communicate with a base station, which is included in a mobile communication system, via antenna 717. The power amplifier (PA) 719 and the transmitter/modulation circuitry are operationally responsive to the MCU 703, with an output from the PA 719 coupled to the duplexer 721 or circulator or antenna switch, as known in the art. The PA 719 also couples to a battery interface and power control unit 720.

[0095] In use, a user of mobile terminal 701 speaks into the microphone 711 and his or her voice along with any detected background noise is converted into an analog voltage. The analog voltage is then converted into a digital signal through the Analog to Digital Converter (ADC) 723. The control unit 703 routes the digital signal into the DSP 705 for processing therein, such as speech encoding, channel encoding, encrypting, and interleaving. In one embodiment, the processed voice signals are encoded, by units not separately shown, using a cellular transmission protocol such as enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS), etc., as well as any other suitable wireless medium, e.g., microwave access (WiMAX), Long Term Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), satellite, and the like, or any combination thereof.

[0096] The encoded signals are then routed to an equalizer 725 for compensation of any frequency-dependent impairments that occur during transmission though the air such as phase and amplitude distortion. After equalizing the bit stream, the modulator 727 combines the signal with a RF signal generated in the RF interface 729. The modulator 727 generates a sine wave by way of frequency or phase modulation. In order to prepare the signal for transmission, an up-converter 731 combines the sine wave output from the modulator 727 with another sine wave generated by a synthesizer 733 to achieve the desired frequency of transmission. The signal is then sent through a PA 719 to increase the signal to an appropriate power level. In practical systems, the PA 719 acts as a variable gain amplifier whose gain is controlled by the DSP 705

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000032

from information received from a network base station. The signal is then filtered within the duplexer 721 and optionally sent to an antenna coupler 735 to match impedances to provide maximum power transfer. Finally, the signal is transmitted via antenna 717 to a local base station. An automatic gain control (AGC) can be supplied to control the gain of the final stages of the receiver. The signals may be forwarded from there to a remote telephone which may be another cellular telephone, any other mobile phone or a land-line connected to a Public Switched Telephone Network (PSTN), or other telephony networks.

[0097] Voice signals transmitted to the mobile terminal 701 are received via antenna 717 and immediately amplified by a low noise amplifier (LNA) 737. A down-converter 739 lowers the carrier frequency while the demodulator 741 strips away the RF leaving only a digital bit stream. The signal then goes through the equalizer 725 and is processed by the DSP 705. A Digital to Analog Converter (DAC) 743 converts the signal and the resulting output is transmitted to the user through the speaker 745, all under control of a Main Control Unit (MCU) 703 which can be implemented as a Central Processing Unit (CPU).

[0098] The MCU 703 receives various signals including input signals from the keyboard 747. The keyboard 747 and/or the MCU 703 in combination with other user input components (e.g., the microphone 711) comprise a user interface circuitry for managing user input. The MCU 703 runs a user interface software to facilitate user control of at least some functions of the mobile terminal 701 to provide an ordering metric of a multi-dimensional contextual query. The MCU 703 also delivers a display command and a switch command to the display 707 and to the speech output switching controller, respectively. Further, the MCU 703 exchanges information with the DSP 705 and can access an optionally incorporated SIM card 749 and a memory 751. In addition, the MCU 703 executes various control functions required of the terminal. The DSP 705 may, depending upon the implementation, perform any of a variety of conventional digital processing functions on the voice signals. Additionally, DSP 705 determines the background noise level of the local environment from the signals detected by microphone 711 and sets the gain of microphone 711 to a level selected to compensate for the natural tendency of the user of the mobile terminal 701.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000033

[0099] The CODEC 713 includes the ADC 723 and DAC 743. The memory 751 stores various data including call incoming tone data and is capable of storing other data including music data received via, e.g., the global Internet. The software module could reside in RAM memory, flash memory, registers, or any other form of writable storage medium known in the art. The memory device 751 may be, but not limited to, a single memory, CD, DVD, ROM, RAM, EEPROM, optical storage, magnetic disk storage, flash memory storage, or any other non-volatile storage medium capable of storing digital data.

[0100] An optionally incorporated SIM card 749 carries, for instance, important information, such as the cellular phone number, the carrier supplying service, subscription details, and security information. The SIM card 749 serves primarily to identify the mobile terminal 701 on a radio network. The card 749 also contains a memory for storing a personal telephone number registry, text messages, and user specific mobile terminal settings.

[0101] While the invention has been described in connection with a number of embodiments and implementations, the invention is not so limited but covers various obvious modifications and equivalent arrangements, which fall within the purview of the appended claims. Although features of the invention are expressed in certain combinations among the claims, it is contemplated that these features can be arranged in any combination and order.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000034

CLAIMS

WHAT IS CLAIMED IS:

1. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device..

2. A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

3. A method of claim 2, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000035

4. A method of claim 3, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

5. A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

6. A method of claim 2, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

7. A method of claim 6, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

8. A method of claim 7, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

9. A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000036

a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

10. A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

11. An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

12. An apparatus of claim 11, wherein the apparatus is further caused to:

determine one or more object contextual attributes associated with the one or more results,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000037

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

13. An apparatus of claim 12, wherein the apparatus is further caused to:

determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

14. An apparatus of claim 13, wherein the apparatus is further caused to:

determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

15. An apparatus of claim 14, wherein the apparatus is further caused to:

cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

16. An apparatus of claim 12, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

17. An apparatus of claim 16, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000038

18. An apparatus of claim 17, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

19. An apparatus of claim 11, wherein the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

20. An apparatus of claim 11, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

21. A method comprising:

determining a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

causing, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determining at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

22. A method of claim 21, further comprising:

determining one or more object contextual attributes associated with the one or more results,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000039

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

23. A method of claim 22, further comprising:

determining an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

causing, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

24. A method of claim 23, further comprising:

determining the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

25. A method of claim 24, further comprising:

causing, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

26. A method of claim 22, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

27. A method of claim 26, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000040

28. A method of claim 27, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

29. A method of claim 21, further comprising:

processing and/or facilitating a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

30. A method of claim 21, further comprising:

determining contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

processing and/or facilitating a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

31. An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000041

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

32. An apparatus of claim 31, wherein the apparatus is further caused to:
determine one or more object contextual attributes associated with the one or more results,
wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

33. An apparatus of claim 32, wherein the apparatus is further caused to:
determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and
cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

34. An apparatus of claim 33, wherein the apparatus is further caused to:
determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

35. An apparatus of claim 34, wherein the apparatus is further caused to:
cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

36. An apparatus according to any of claims 32-35, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000042

37. An apparatus of claim 36, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

38. An apparatus of claim 37, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

39. An apparatus according to any of claims 31-38, wherein the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

40. An apparatus according to any of claims 31-39, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

41. An apparatus according to any of claims 31-40, wherein the apparatus is a mobile phone further comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000043

user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and

a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

42. An apparatus comprising means for performing the method according to any of claims 21-30.

43. An apparatus of claim 42, wherein the apparatus is a mobile phone further comprising:

user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and

a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

44. A computer-readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to perform at least the method according to any of claims 21-30.

45. A computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the steps of the method of any of claims 21-30.

46. A method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform the method of any of claims 21-30.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000044

47. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the method of any of claims 21-30.

48. A method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on the method of any of claims 21-30.

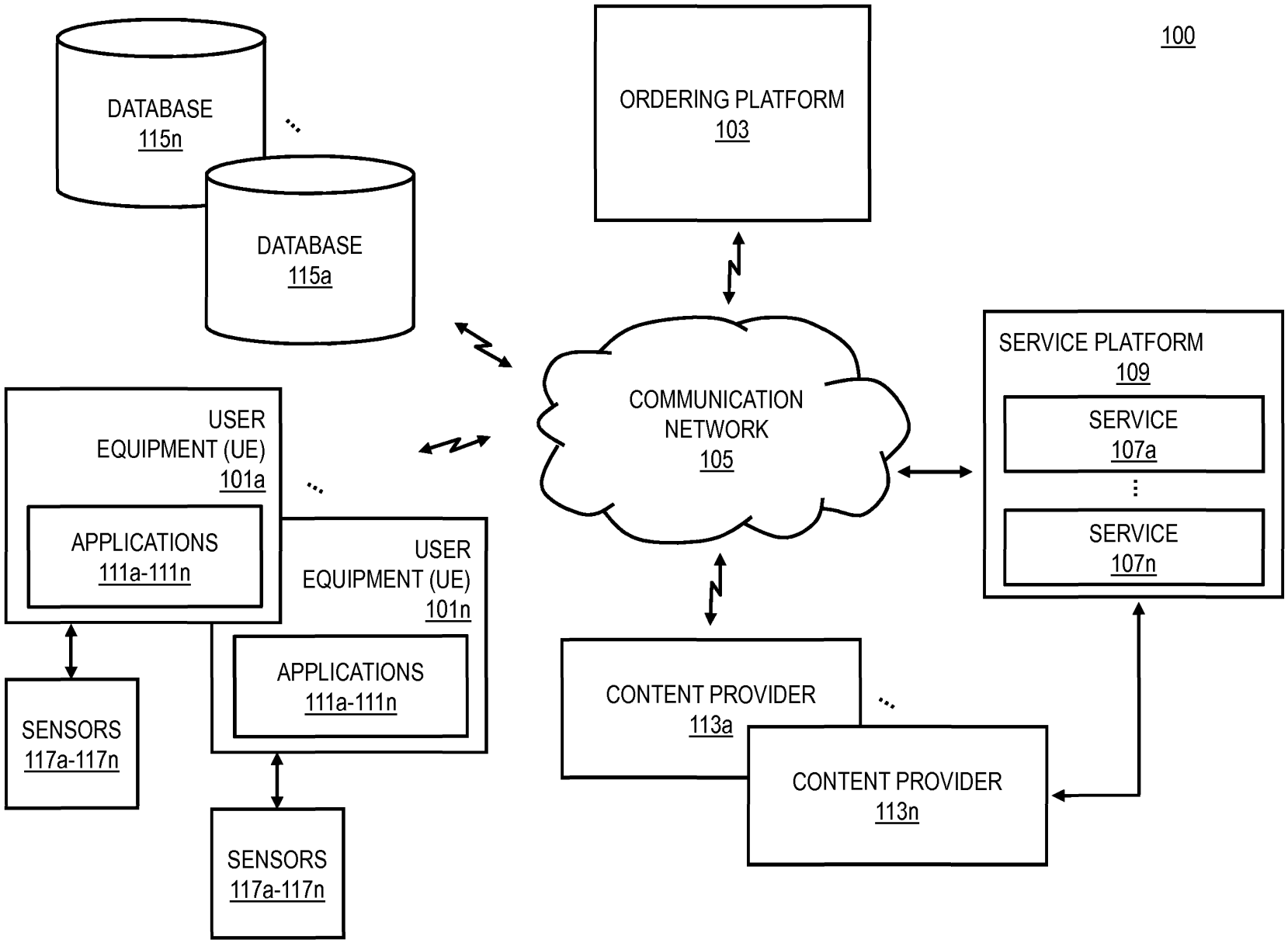
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000045

ABSTRACT OF THE DISCLOSURE

An approach is provided for providing an ordering metric for a multi-dimensional contextual query. An ordering platform determines a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The ordering platform further causes, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results. The ordering platform further determines at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

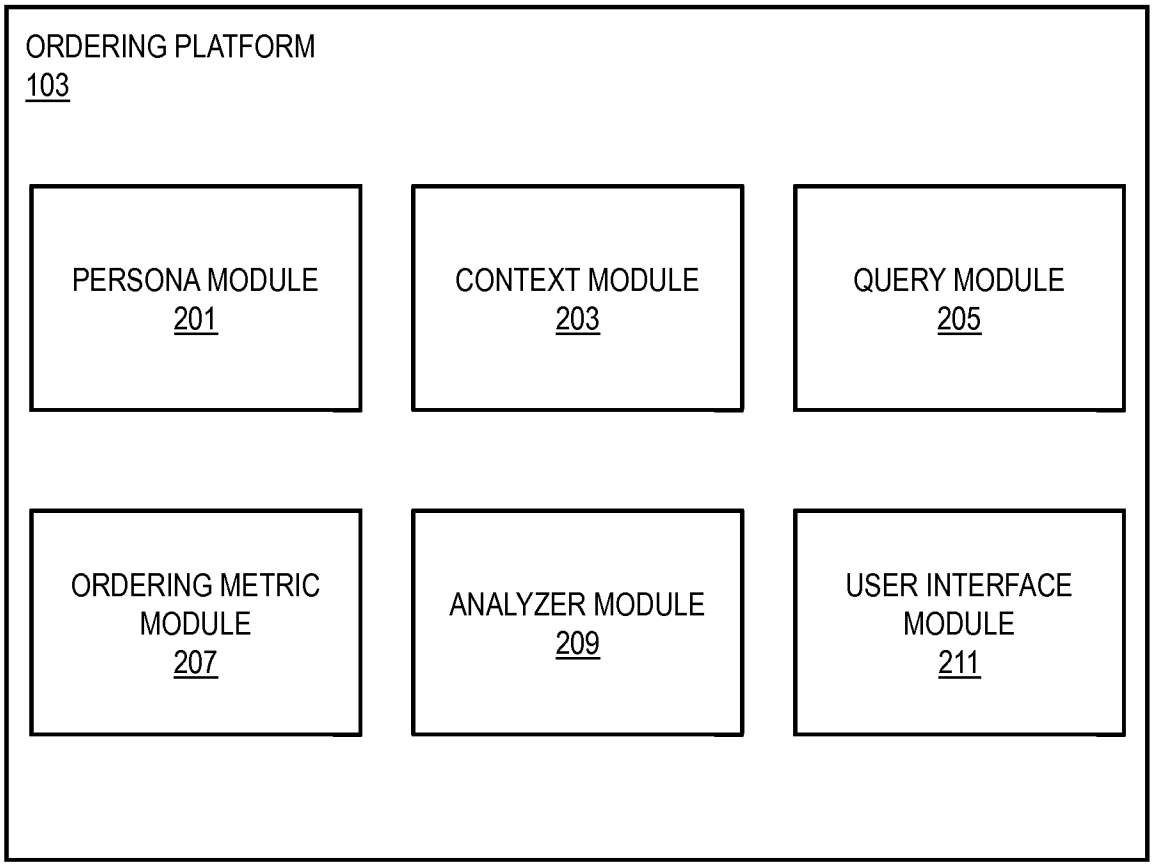
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000046

FIG. 1



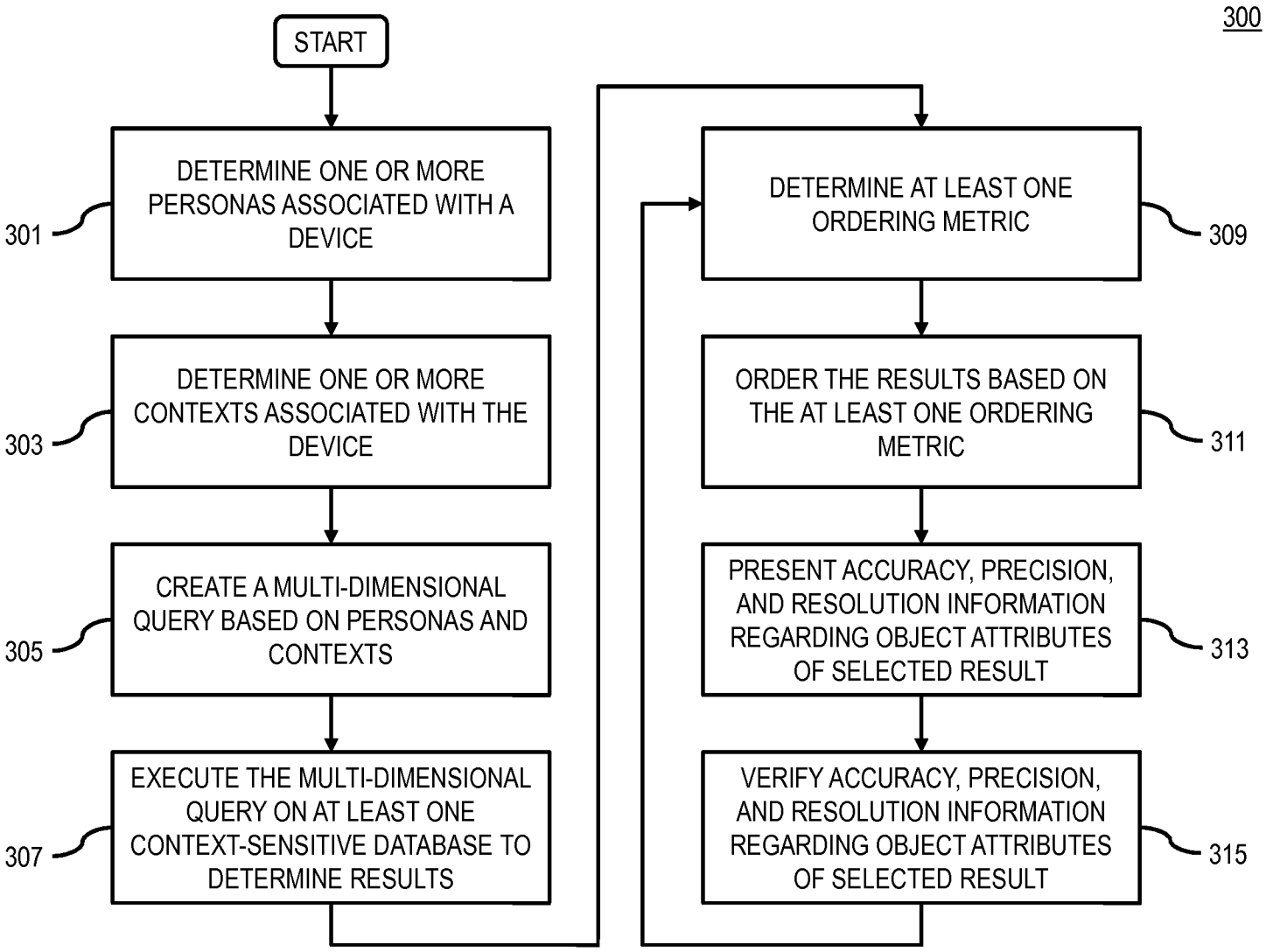
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FIG. 2



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FIG. 3



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000049

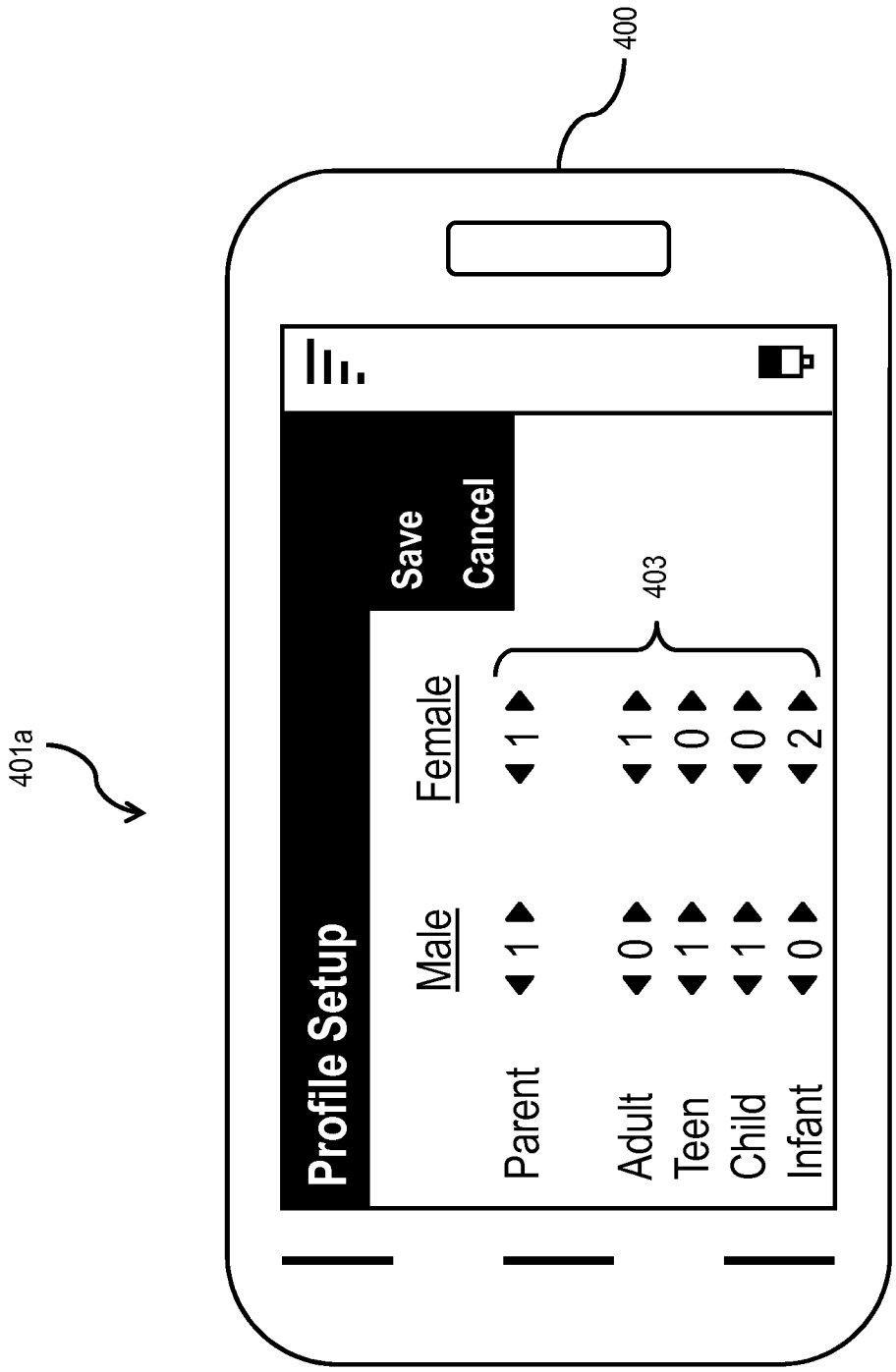


FIG. 4A

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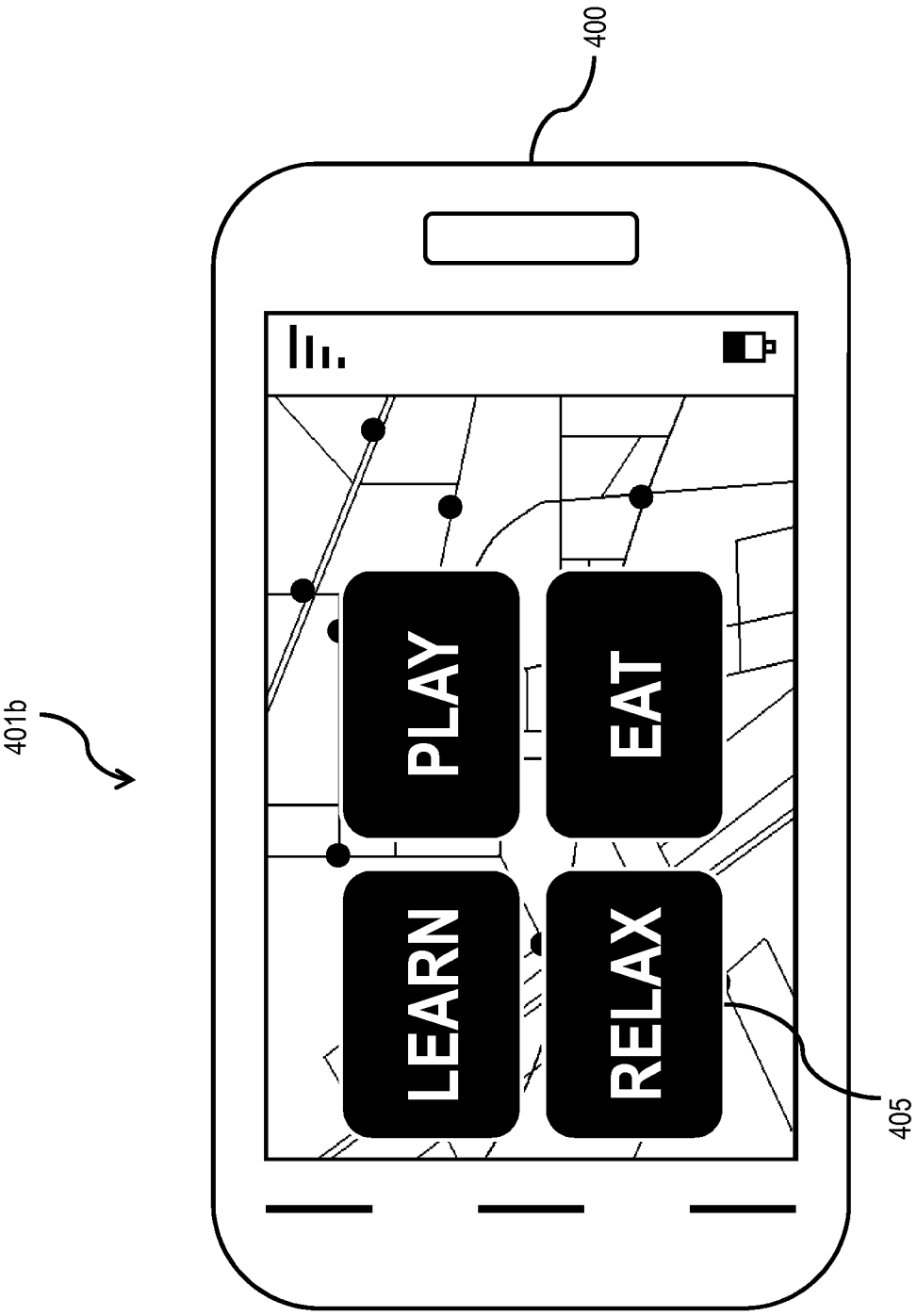


FIG. 4B

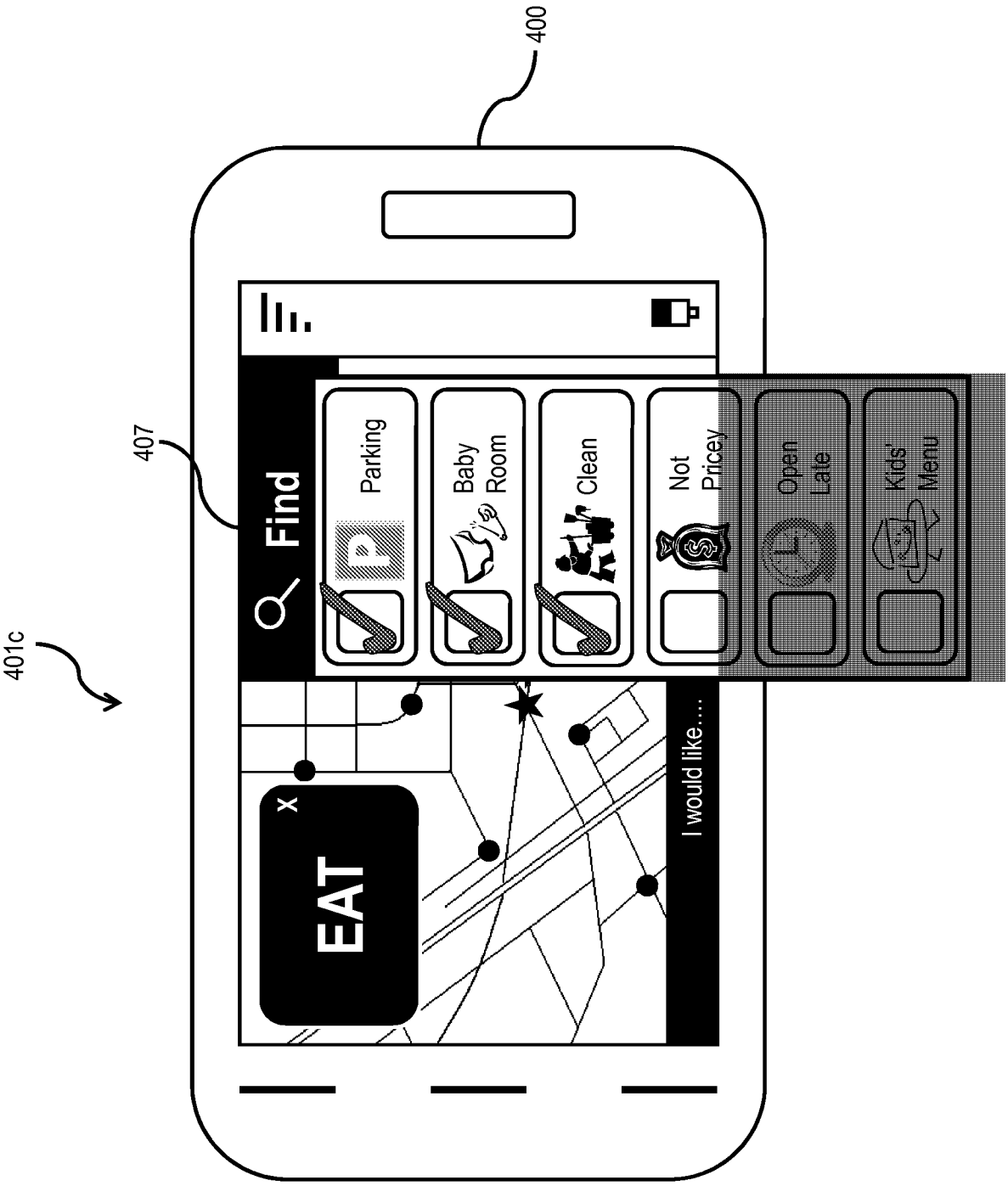

400
407
401c
Find
Parking
Baby Room
Clean
Not Pricey
Open Late
Kids' Menu
EAT
I would like....

FIG. 4C

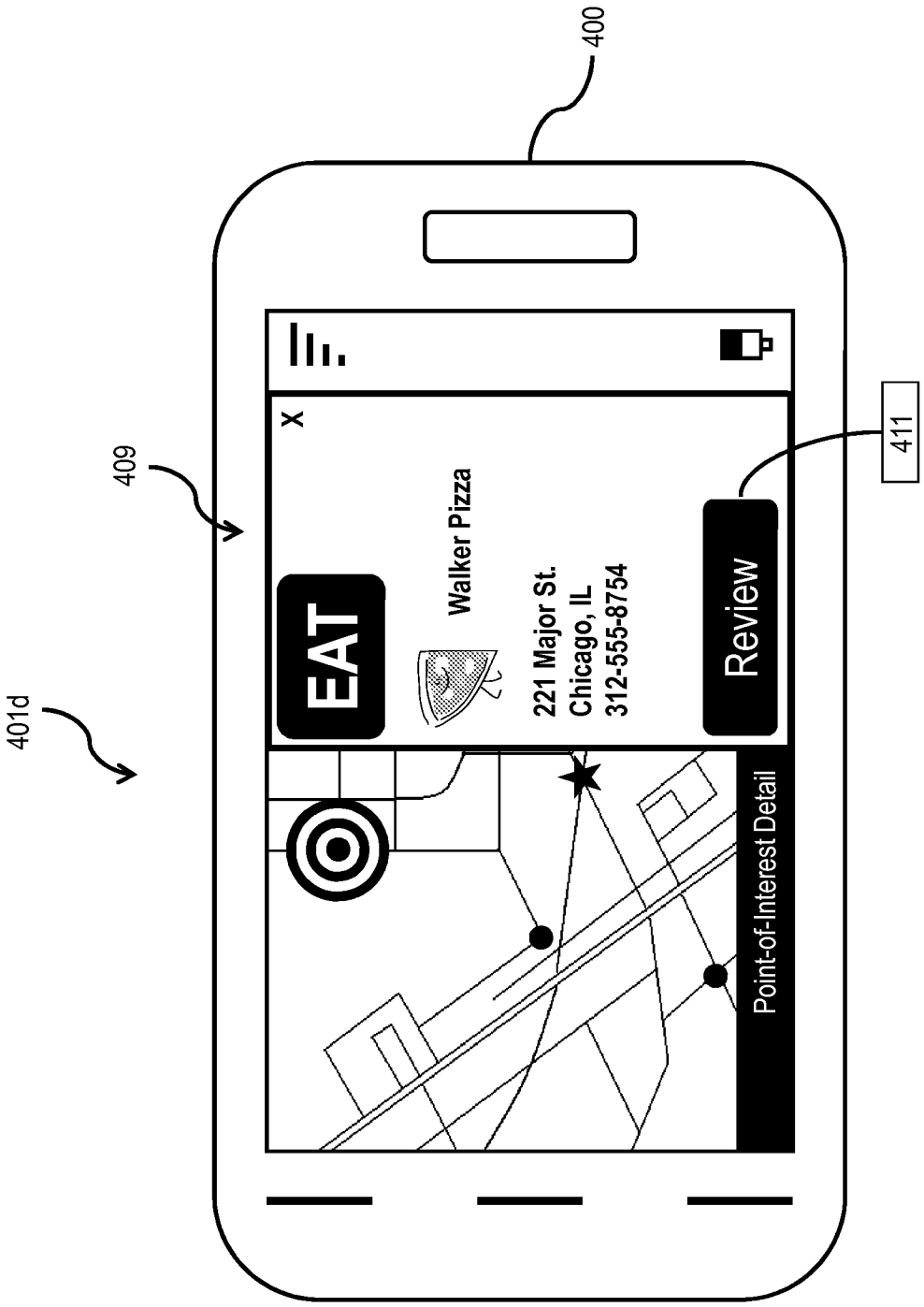
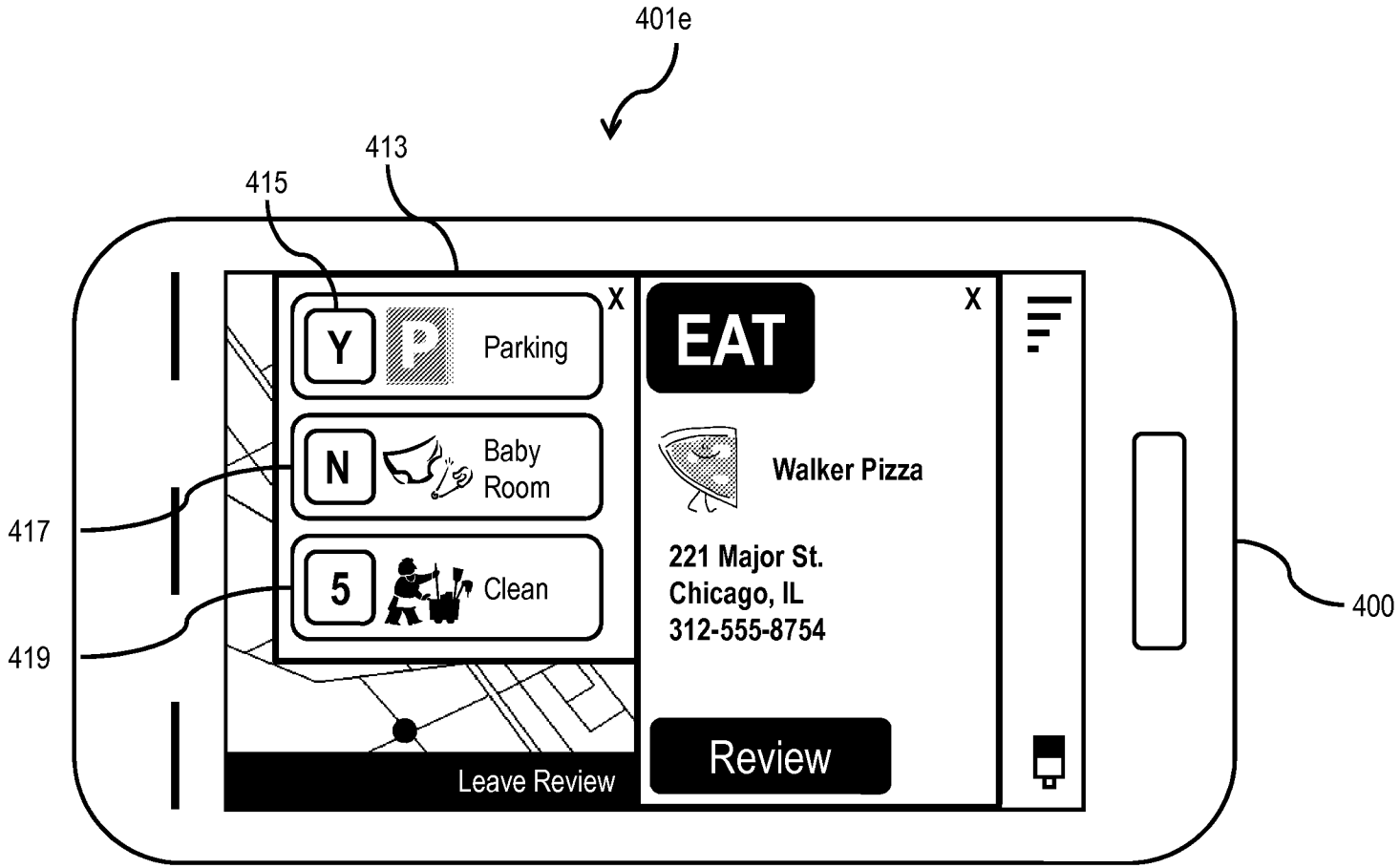


FIG. 4D

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FIG. 4E



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000054

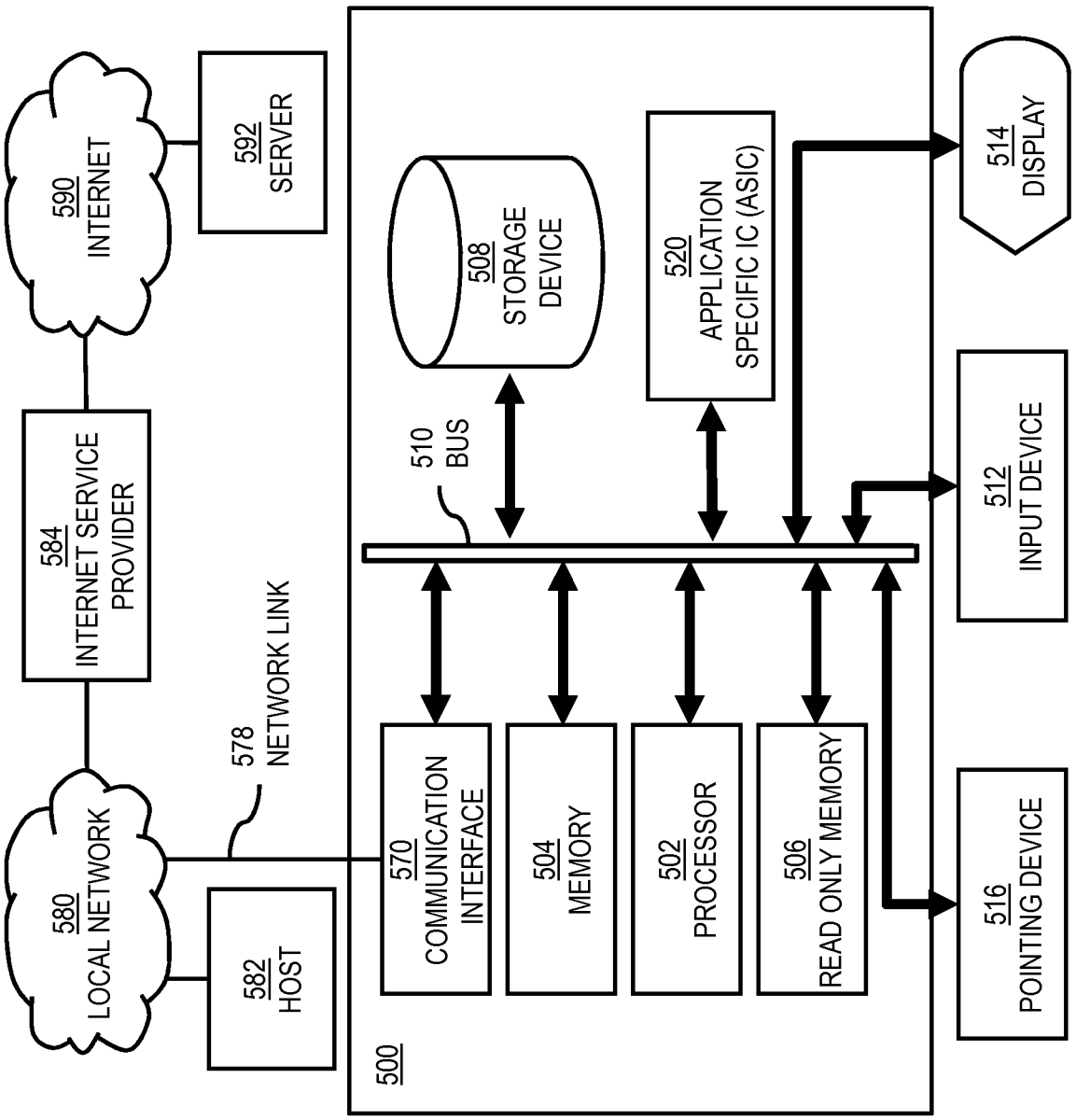
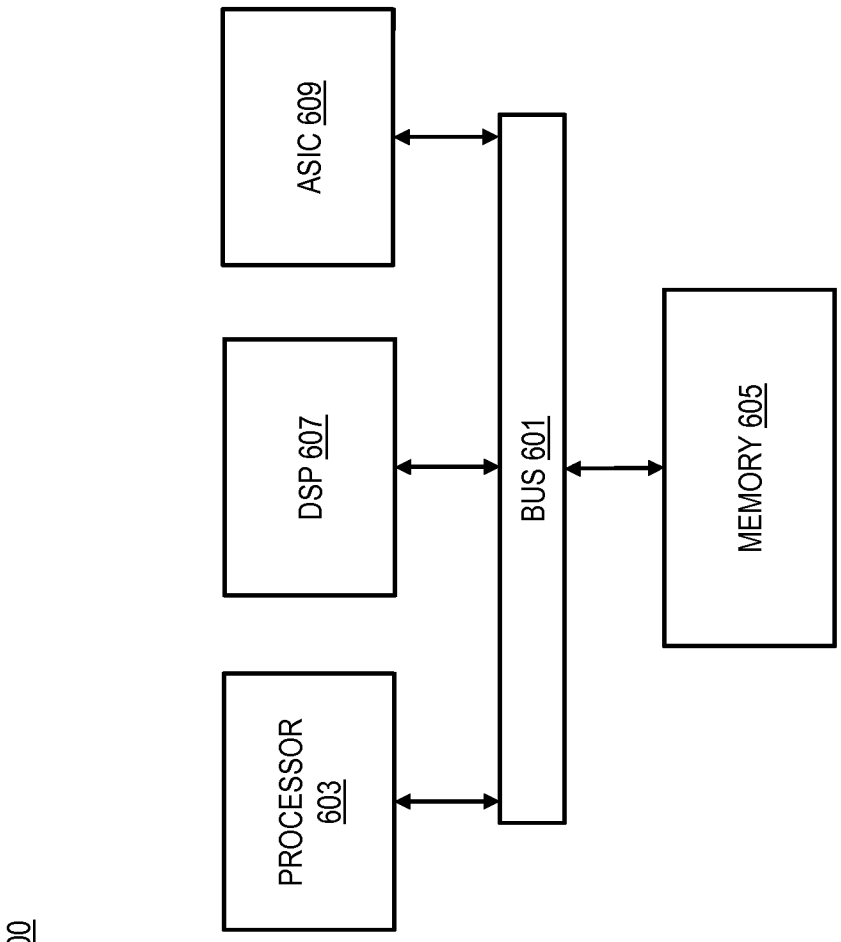

590 INTERNET
592 SERVER
584 INTERNET SERVICE PROVIDER
580 LOCAL NETWORK
582 HOST
578 NETWORK LINK
500
570 COMMUNICATION INTERFACE
504 MEMORY
502 PROCESSOR
506 READ ONLY MEMORY
510 BUS
508 STORAGE DEVICE
520 APPLICATION SPECIFIC IC (ASIC)
514 DISPLAY
512 INPUT DEVICE
516 POINTING DEVICE

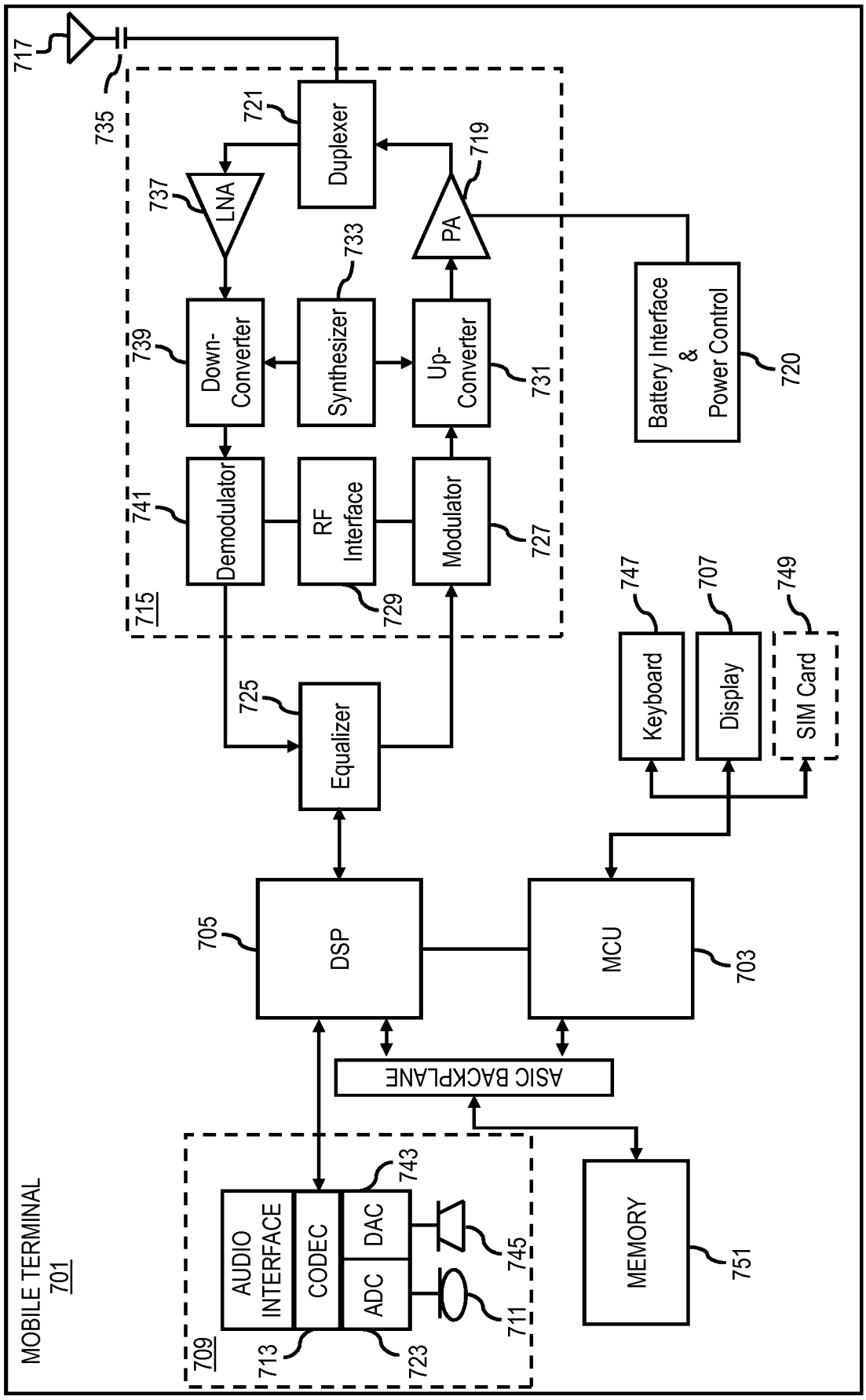
FIG. 5

FIG. 6



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000056

FIG. 7



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000057

Electronic Acknowledgement Receipt

EFS ID:	10416771
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Sarka Harris
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	29-JUN-2011
Filing Date:	
Time Stamp:	17:08:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		NC75185US_P5296US00_FinalSpec_Filed06-29-11.pdf	275748 348db8b7d8f0f29254ec725edeb32e32c3525499	yes	45

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	33
	Claims	34	44
	Abstract	45	45

Warnings:

Information:

2	Drawings-only black and white line drawings	NC75185US_P5296US00_FinalFigs_Filed06-29-11.pdf	348724 1a8c22ba7e641ef861246a120d495569d636ca3f	no	11

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Information:

Total Files Size (in bytes):	624472

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

SCORE Placeholder Sheet for IFW Content

Application Number: 13172425 Document Date: 6/29/2011

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

To access the documents in the SCORE database, refer to instructions developed by SIRA.

At the time of document entry (noted above):

- Examiners may access SCORE content via the eDAN interface.
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- External customers may access SCORE content via the Public and Private PAIR interfaces.

Form Revision Date: February 8, 2006

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/172,425

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	330
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	540
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	120 minus 20 =	* 100			OR	x 52 =	5200
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1				x 220 =	220
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							390
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	6900

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
13172425	

Applicant(s) Vidya Setlur

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1	1					
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Total Indep	4		0		0	
Total Depend	116	↵	0	↵	0	↵
Total Claims	120		0		0	

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/172,425	06/29/2011	1629	0.00		48	4

CONFIRMATION NO. 7264

11764
Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314

FILING RECEIPT



Date Mailed: 07/19/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)
Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 07/11/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/172,425**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000063

Title

METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Preliminary Class

514

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/172,425	06/29/2011		

CONFIRMATION NO. 7264

11764
Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314

FORMALITIES LETTER

OC000000048687664

Date Mailed: 07/19/2011

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
  *Applicant must submit $**330** to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).*
- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
  Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of $**5810** as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $**130** for a non-small entity, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is $**7030** for a non-small entity

- $**330** Statutory basic filing fee.
- $**130** Surcharge.
- The application search fee has not been paid. Applicant must submit $**540** to complete the search fee.

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- The application examination fee has not been paid. Applicant must submit $**220** to complete the examination fee for a non-small entity.
- Total additional claim fee(s) for this application is $**5810**
  - $**220** for **1** independent claims over 3.
  - $**5200** for **100** total claims over 20.
  - $**390** for multiple dependent claim surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tgebre/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000067

To: docket@dcpatent.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Jul 19, 2011 05:39:47 AM

Dear PAIR Customer:

Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13172425	APP.FILE.REC	07/19/2011	
	NTC.MISS.PRT	07/19/2011	

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If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya SETLUR *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Not yet assigned
Filed:	June 29, 2011	Group Art Unit:	1629

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

Dear Sir:

This is in response to a Notice to File Missing Parts of Application under 37 C.F.R. § 1.53(b) dated July 19, 2011. Enclosed is a copy of the following documents and fees to complete the filing requirements of the above-identified application.

_X_ Executed Declaration and Power of Attorney. The above-identified application is the same application which the inventor executed by signing the enclosed declaration.

_X_ Statutory basic filing fee, search fee, examination fee for _X_ Utility ___ Design

___ Additional claim fees = $_____

_X_ Missing Parts Surcharge = $130.00

___ A Petition for Extension of Time for reply to Notice of Missing Parts is attached.

___ One month = $130.00 ___ Four months = $1,730.00

___ Two months = $490.00 ___ Five months = $2,350.00

___ Three months = $1,110.00

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully submitted,

DITTHAVONG MORI & STEINER, P.C.

September 19, 2011
Date

/Phouphanomketh Ditthavong/
Phouphanomketh Ditthavong
Attorney/Agent for Applicant(s)
Reg. No. 44658

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000069

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya SETLUR *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Not yet assigned
Filed:	June 29, 2011	Group Art Unit:	1629

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Dear Sir:

Prior to consideration of the above-identified application, please amend the application based on the following.

AMENDMENT AND PRESENTATION OF CLAIMS 2

REMARKS 8

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AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims.

1. (Original) A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device..

2. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

3. (Original) A method of claim 2, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000071

a determination of an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

4. (Original) A method of claim 3, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

5. (Original) A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

6. (Original) A method of claim 2, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

7. (Original) A method of claim 6, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating

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one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

8. (Original) A method of claim 7, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

9. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

10. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

11. (Original) An apparatus comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000073

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

12. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine one or more object contextual attributes associated with the one or more results, wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

13. (Original) An apparatus of claim 12, wherein the apparatus is further caused to:

determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

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14. (Original) An apparatus of claim 13, wherein the apparatus is further caused to:

determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

15. (Original) An apparatus of claim 14, wherein the apparatus is further caused to:

cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

16. (Original) An apparatus of claim 12, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

17. (Original) An apparatus of claim 16, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

18. (Original) An apparatus of claim 17, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or

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more user contextual attributes, the one or more object contextual attributes, or combination thereof.

19. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

20. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

21-48. (Canceled)

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REMARKS

By this amendment, claims 1-20 are pending, in which claims 21-48 are canceled without prejudice or disclaimer. No new matter is introduced.

Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (703) 519-9952 so that such issues may be resolved as expeditiously as possible.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

September 19, 2011
Date

/Phouphanomketh Ditthavong/
Phouphanomketh Ditthavong
Attorney/Agent for Applicant(s)
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Tel. (703) 519-9951
Fax (703) 519-9958

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000077

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As below named inventor(s), I (we) hereby declare that:

My (our) residence, post office address(es) and citizenship(s) are as stated below, next to my (our) name(s).

I (we) believe I am (we are) the original, first, and sole (joint) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

the specification of which was filed on June 29, 2011 as United States Application Number 13/172,425 was amended on _____ (if applicable).

I (we) hereby state that I (we) have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above.

I (we) acknowledge the duty to disclose all information known to me (us) to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 (copy attached).

I (we) hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), on any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I (we) hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

I (we) hereby claim benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I (we) acknowledge the duty to disclose all information known to me (us) to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 (copy attached) which became available between the filing date of the prior application and the national or PCT International filing date of this application:

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As named inventor(s), I (we) hereby revoke all powers of attorney previously given and appoint the practitioners associated with the following Customer No.:

Customer Number:
11764

with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

I (we) hereby declare that all statements made herein of my (our) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Send all future correspondence to the attention of Ditthavong Mori & Steiner, P.C., care of the address associated with the following customer number, and direct all telephone calls to the same at (703) 519-9951.

Customer Number:
11764

Full Name of First or Sole Inventor (Given name, FAMILY NAME): Vidya SETLUR

Inventor's Signature Vidya R. Setlur Date July 22, 2011

Residence: ~~Cupertino, CA, USA~~ Portola Valley CA, USA Citizenship United States VS: July 22, 20

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Full Name of Second Joint Inventor (Given name, FAMILY NAME): Agathe BATTESTINI

Inventor's Signature Agathe Battestini Date July 25, 2011

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867 SAN JOSE AVE #6, SAN FRANCISCO

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Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and
(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
(2) It refutes, or is inconsistent with, a position the applicant takes in:
    (i) Opposing an argument of unpatentability relied on by the Office, or
    (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;
(2) Each attorney or agent who prepares or prosecutes the application; and
(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

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Electronic Patent Application Fee Transmittal

Application Number:	13172425
Filing Date:	29-Jun-2011
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	
Filer:	Phouphanomketh Ditthavong/Vilavanh Ditthavong
Attorney Docket Number:	P5296US00

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1220**

Electronic Acknowledgement Receipt

EFS ID:	10977674
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Vilavanh Ditthavong
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	19-SEP-2011
Filing Date:	29-JUN-2011
Time Stamp:	16:30:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1220
RAM confirmation Number	3244
Deposit Account	504213
Authorized User	DITTHAVONG,PHOUPHANOMKETH

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	NC75185US_P5296US00_SupplementalADS.pdf	77616 8e8ff268bdbe024be314bef6c93a1178fe44c2c2	no	3
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2	Applicant Response to Pre-Exam Formalities Notice	NC75185US_P5296US00_ResponsetoNTFMP.pdf	104135 2af101961cc6eac461e2a66dc83d1d96c91ad932	no	1
Warnings:					
Information:					
3		NC75185US_P5296US00_PreliminaryAmendment.pdf	115914 bbc428892819c4df47313b4c5605e2e98fb8c8ad	yes	8

Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	1
Claims	2	7
Applicant Arguments/Remarks Made in an Amendment	8	8

Warnings:					
Information:					
4	Oath or Declaration filed	NC75185US_P5296US00_Declaration.pdf	446896 4aefd57d6252966a2c72e11f462232ddbdd9cc4f	no	3
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	37011 7d754dc837d8818ac4e8854c98d7c221bb0ceb1e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	781572		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

SUPPLEMENTAL APPLICATION DATA SHEET

Application Information

Application Type::	Regular
Subject Matter::	Utility
Title::	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
Attorney Docket Number::	P5296US00
Total Drawing Sheets::	11
Small Entity?::	No

Inventor Information

Inventor One Authority Type::	Inventor
Primary Citizenship Country::	United States
Status::	Full Capacity
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Family Name::	SETLUR
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State or Province of Residence::	CA
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City::	Portola Valley
State or Province::	CA
Country::	United States
Postal or Zip Code::	94028

Inventor Two Authority Type::	Inventor
Primary Citizenship Country::	France
Status::	Full Capacity

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000086

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Correspondence Information

Correspondence Customer Number:: 11764

Representative Information

Representative Customer Number:: 11764

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::

Foreign Priority Information

Country::	Application Number::	Filing Date::	Priority Claimed::

Assignee Information

Assignee Name::	Nokia Corporation
Street::	Keilalahdentie 4
City::	Espoo
Country::	Finland
Postal or Zip Code::	FIN-02150

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000087

Signature:

Signature /Phouphanomketh Ditthavong/ Date (YYYY-MM-DD) 2011-09-19

First Name: Phouphanomketh Last Name: Ditthavong

Registration Number: 44658

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000088

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/172,425

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	380
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	620
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	250
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 60 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 250 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1250

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/172,425	06/29/2011	1629	1220	P5296US00	20	2

CONFIRMATION NO. 7264

UPDATED FILING RECEIPT

11764
Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314

OC000000050028897

Date Mailed: 09/30/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Vidya Setlur, Portola Valley, CA;
Agathe Battestini, San Francisco, CA;

Assignment For Published Patent Application

Nokia Corporation, Espoo, FINLAND

Power of Attorney: The patent practitioners associated with Customer Number 11764

Domestic Priority data as claimed by applicant

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 07/11/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/172,425**

Projected Publication Date: 01/03/2013

Non-Publication Request: No

Early Publication Request: No

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000090

Title

METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Preliminary Class

514

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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NOT GRANTED

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To: docket@dcpatent.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Sep 30, 2011 05:21:26 AM

Dear PAIR Customer:

Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13172425	APP.FILE.REC	09/30/2011	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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Approved for use through 1/31/2007. OMB 0651-0032
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/172,425	Filing Date 06/29/2011	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	09/19/2011	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**0**

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/CATHERINE SMITH/

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PTO/SB/08a (07-09)
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Setlur
Art Unit	2165
Examiner Name	ABEL JALIL, NEVEEN
Attorney Docket Number	P5296US00

U.S. PATENT DOCUMENTS

Examiner initial *	Cite No.	Document Number Number - Kind Code [2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US-2002/0055924 - A1	05-09-2002	Liming, R.	
	2	US-2004/0110515 - A1	06-10-2004	Blumberg et al.	
	3	US-2004/0162830 - A1	08-19-2004	Shirwadkar et al.	
	4	US-2008/0301092 - A1	12-04-2008	Jayanti et al.	
	5	US-2010/0145976 - A1	06-10-2010	Higgins et al.	
	6	US-2010/0241663 - A1	09-23-2010	Huang et al.	
	7	US-2011/0055203 - A1	03-03-2011	Gutt et al.	
	8	US-6693651 -	02-17-2004	Biebesheimer et al.	
	9	US-7853574 -	12-14-2010	Kraenzel et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial *	Cite No. 1	Foreign Patent Document Country [3] Code Number [4] Kind Code (if known) [5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
	10	WO 01/82556 - A2	11-01-2001	Realnames Corp		
	11	WO 01/82562 - A2	11-01-2001	Microsoft Corp		
	12	KR 2007-0061024 - A	06-13-2007	Korea Electronics Telecomm	Eng. Abst. incl	
	13	WO 2010/016989 - A2	02-11-2010	Yahoo! Inc.		

Examiner Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not Considered. Include copy of this form with next communication to applicant. 1. Applicant´s unique citation design number (optional). 2 See Kinds Codes of USPTO patent Documents. at www.uspto.gov or MPEP 901.04. 3. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
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Espacenet

Bibliographic data: KR20070061024 (A) — 2007-06-13

SYSTEM AND METHOD FOR CONTEXT-AWARE SERVICE

Inventor(s):	YOON SEONG IM [KR]; SHIN GYUNG CHUL [KR] +
Applicant(s):	KOREA ELECTRONICS TELECOMM [KR] +

Classification:	**- international:** ***H04Q7/24***
	- European:
Application number:	KR20060033597 20060413
Priority number(s):	KR20050120151 20051208
Also published as:	KR100743963 (B1)

Abstract of KR20070061024 (A)

A context-awareness service system and method are provided to discover a context-awareness service most suitable for the current state or circumferences of a user and provide it to the user by generating a search query based on user state information. A service storage unit(230) stores service contents. A search query managing unit(244) generates a search query for searching service contents corresponding to state information received from a mobile terminal. A search managing unit(242) searches service contents matched with the search query among the service contents stored in the service storage unit(230). A situation information managing unit(220) re-configures the searched service contents in a service format supported by the mobile terminal. A service controller(210) transmits the re-configured service contents to the mobile terminal.

Last updated: 5.12.2011 Worldwide Database 5.7.31; 92p

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000096

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H04Q 7/24 (2006.01)

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전체 청구항 수 : 총 14 항

(54) 상황인식 서비스 시스템 및 그 방법

(57) 요약

본 발명은 상황인식 서비스 시스템 및 그 방법에 관한 것이다.

이를 위하여 본 발명은, 서비스 컨텐츠를 저장하는 서비스 저장부, 모바일 터미널로부터 수신되는 상태정보에 해당되는 서비스 컨텐츠를 검색하기 위한 검색 질의어를 생성하는 검색 질의어 관리부, 서비스 저장부에 저장된 서비스 컨텐츠 중 검색 질의어에 매칭되는 서비스 컨텐츠를 검색하는 검색 관리부, 검색된 서비스 컨텐츠를 모바일 터미널에서 지원되는 서비스 포맷으로 재구성하는 상황정보 관리부 및 상황정보 관리부에서 재구성된 서비스 컨텐츠를 모바일 터미널로 전송하는 서비스 제어부를 포함하는 상황인식 서비스 시스템을 제공한다.

본 발명에 의하면, 사용자의 상태정보를 기반으로 검색 질의어를 생성하여 이용함으로써 사용자에게 가장 적합한 상황인식 서비스를 발견하여 제공할 수 있음은 물론, 사용자가 서비스 이용 도중 이동을 하는 경우에도 지속적인 서비스를 제공할 수 있다.

대표도

도 3

특허청구의 범위

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000097

청구항 1.

모바일 터미널을 통해 사용자의 상태정보에 적합한 서비스를 제공하는 상황인식 서비스 시스템에 있어서,

서비스 컨텐츠를 저장하는 서비스 저장부;

상기 모바일 터미널로부터 수신되는 상태정보에 해당되는 서비스 컨텐츠를 검색하기 위한 검색 질의어를 생성하는 검색 질의어 관리부;

상기 서비스 저장부에 저장된 서비스 컨텐츠 중 상기 검색 질의어에 매칭되는 서비스 컨텐츠를 검색하는 검색 관리부;

상기 검색된 서비스 컨텐츠를 상기 모바일 터미널에서 지원되는 서비스 포맷으로 재구성하는 상황정보 관리부; 및

상기 상황정보 관리부에서 재구성된 서비스 컨텐츠를 상기 모바일 터미널로 전송하는 서비스 제어부

를 포함하는 상황인식 서비스 시스템.

청구항 2.

제1항에 있어서,

상기 검색 질의어는 상기 모바일 터미널을 통해 수신되는 상기 사용자의 신체정보와 환경정보를 포함하는 상태정보를 기반으로 생성되는 것을 특징으로 하는 상황인식 서비스 시스템.

청구항 3.

제1항에 있어서,

상기 상황정보 관리부에서 상기 모바일 터미널의 비정상 작동을 감지하면, 상기 서비스 제어부는 상기 모바일 터미널의 비정상 작동을 모바일 터미널 관리자에게 알리고, 상황인식 서비스를 중단하는 것을 특징으로 하는 상황인식 서비스 시스템.

청구항 4.

제1항에 있어서,

상기 검색 관리부에서 상기 사용자가 상기 상태정보에 해당되는 서비스의 이용권한이 없다고 판단하면, 상기 서비스 제어부는 상기 사용자의 상기 서비스의 이용권한이 없음을 상기 모바일 터미널에 알리고, 상황인식 서비스를 중단하는 것을 특징으로 하는 상황인식 서비스 시스템.

청구항 5.

제1항에 있어서,

상기 상황정보 관리부는 검색된 상기 서비스 컨텐츠 중 적어도 하나의 서비스 컨텐츠가 단일 서비스 컨텐츠로는 상기 사용자 상태정보에 적합한 서비스를 제공할 수 없는 경우, 둘 이상의 서비스 컨텐츠를 하나의 서비스 컨텐츠로 조합하는 것을 특징으로 하는 상황인식 서비스 시스템.

청구항 6.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000098

제1항에 있어서,

상기 모바일 터미널은 상기 사용자가 휴대하는 장치이거나 상기 사용자가 이용하는 운송수단인 것을 특징으로 하는 상황인식 서비스 시스템.

청구항 7.

모바일 터미널을 통해 사용자의 상태정보에 적합한 서비스를 제공하는 상황인식 서비스 방법에 있어서,

(a) 상기 상태정보 및 상기 모바일 터미널의 식별정보를 수집하는 단계;

(b) 상기 상태정보에 해당하는 서비스를 검색하기 위한 검색 질의어를 생성하는 단계;

(c) 상기 검색 질의어를 이용하여 상기 상태정보에 해당되는 서비스 컨텐츠를 검색하는 단계; 및

(d) 상기 검색된 서비스 컨텐츠를 상기 식별정보에 기초하여 상기 모바일 터미널에서 지원되는 서비스 포맷으로 재구성한 후, 상기 모바일 터미널로 전송하는 단계

를 포함하는 상황인식 서비스 방법.

청구항 8.

제7항에 있어서,

상기 (a) 단계와 상기 (b) 단계 사이에,

(i) 수집된 상기 식별정보를 이용하여 상기 모바일 터미널이 정상작동 중인지 판단하는 단계;

(ii) 상기 모바일 터미널이 정상작동 중이면, 상기 상태정보에 적합한 서비스의 이용권한이 상기 사용자에게 있는지를 판단하는 단계; 및

(iii) 상기 서비스의 이용권한이 상기 사용자에게 있으면, 상기 (b) 단계를 진행하는 단계

를 더 포함하는 상황인식 서비스 방법.

청구항 9.

제8항에 있어서,

상기 (i) 단계에서,

판단 결과, 상기 모바일 터미널이 비정상 작동중이면,

모바일 터미널 관리자에게 상기 판단 결과를 통보하고, 서비스를 종료하는 것을 특징으로 하는 상황인식 서비스 방법.

청구항 10.

제8항에 있어서,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000099

상기 (ii) 단계에서,

판단 결과, 상기 사용자가 상기 서비스의 이용권한이 없으면,

상기 모바일 터미널에 상기 판단 결과를 통보하고, 서비스를 종료하는 것을 특징으로 하는 상황인식 서비스 방법.

청구항 11.

제7항에 있어서,

상기 (b) 단계는,

(b1) 상기 상태정보에 해당하는 검색 질의어가 존재하는지 검색하는 단계; 및

(b2) 상기 검색 질의어가 존재하지 않으면, 상기 상태정보에 해당하는 검색질의어를 생성하는 단계

를 포함하는 상황인식 서비스 방법.

청구항 12.

제7항에 있어서,

상기 (c) 단계는,

(c1) 상기 검색 질의어에 해당하는 서비스 컨텐츠 목록이 존재하는지 판단하는 단계; 및

(c2) 상기 서비스 컨텐츠 목록이 존재하면, 상기 서비스 컨텐츠 목록과 매칭되는 서비스 컨텐츠를 검색하는 단계

를 포함하는 상황인식 서비스 방법.

청구항 13.

제12항에 있어서,

상기 (c1) 단계에서,

상기 판단 결과, 상기 서비스 컨텐츠 목록이 존재하지 않으면, 추가 서비스 컨텐츠를 보유하는 컨텐츠 서버에 상기 검색 질의어에 해당하는 서비스 컨텐츠의 검색을 요청하는 것을 특징으로 하는 상황인식 서비스 방법.

청구항 14.

제7항에 있어서,

상기 (c) 단계와 상기 (d) 단계 사이에서,

검색된 상기 서비스 컨텐츠 중 적어도 하나의 서비스 컨텐츠가 단일 서비스 컨텐츠로는 상기 상태정보에 적합한 서비스를 제공할 수 없는 경우, 둘 이상의 서비스 컨텐츠를 하나의 서비스 컨텐츠로 조합하는 단계

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를 더 포함하는 상황인식 서비스 방법.

명세서

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 상황인식 서비스 시스템 및 그 방법에 관한 것이다. 더욱 상세하게는, 이동 중에도 지속적으로 사용자의 상태정보를 수집하고, 그에 해당하는 서비스를 제공하는 상황인식 서비스 시스템 및 그 방법에 관한 것이다.

상황 인식(Context Awareness) 서비스는 유비쿼터스(Ubiquitous) 컴퓨팅을 이용한 맞춤형 서비스 중 대표적인 것이다. 유비쿼터스(Ubiquitous) 컴퓨팅은 장소(Anywhere)나 시간(Any time) 또는 장치(Any device)에 전혀 구애 받지 않는 자유로운 네트워크의 이용을 지향하는 미래 정보 사회의 핵심 패러다임이다.

유비쿼터스 컴퓨팅은 인간 생활을 둘러싼 모든 환경요소를 유선, 혹은 무선 네트워크로 연결함으로써 사용자 중심의 개인화된 형태의 다양한 서비스를 제공하는 것이다. 즉, 유비쿼터스 컴퓨팅이란 사용자가 컴퓨터나 네트워크를 의식하지 않는 상태에서 장소에 구애 받지 않고 자유롭게 네트워크에 접속할 수 있는 환경을 의미한다. 이러한 유비쿼터스 컴퓨팅의 구축을 위해서는 실생활에 이용되는 모든 전자기기에 컴퓨팅과 통신 기능이 부가되어야 하는데, 이는 곧 각 기기가 고유한 주소를 가지고 유선, 혹은 무선 네트워크를 통해 광대역 네트워크에 접속된다는 것을 의미한다. 기술의 발전으로 인해 반도체와 이를 내장한 전자기기의 성능은 하루가 다르게 향상되는 반면, 그 가격은 급격히 떨어지고 있으며 무선 인터넷의 보급도 점차 활성화 되어감에 따라 유비쿼터스 컴퓨팅의 구현을 위한 환경이 점차 갖추어져 가고 있다. 유비쿼터스 시대의 개막은 더 이상 미래시점의 특정 사건이 아닌 현실이 되었다. 즉, 집 밖에서 팔목에 찬 시계를 이용하여 집 안의 난방기구의 작동을 원격으로 제어한다거나, 혹은 집 안의 특정 상황을 원격으로 보고 받는 것이 가능하게 되었다.

상황인식 서비스는 '인간은 지능을 가지고 주변 상황정보에 기반하여 서로대화를 나누며 결정을 내린다.'는 사실에 기초한 서비스이다. 즉, 상황인식 서비스란 유비쿼터스 컴퓨팅을 구현하는 전자기기들이 수시로 변화하는 사용자 및 사용자 주변 상황에 대한 정보를 수집하고, 이를 분석함으로써 사용자 별로 맞춤형 서비스를 제공하는 것이다. 이러한, 상황인식 서비스를 구현하기 위해서는 사용자의 기호 및 신체 상태와 같은 다양한 정보를 수집하고, 이를 근거로 사용자의 현재 상황에 가장 적합한 서비스 컨텐츠를 제공할 수 있도록 하는 기술이 요구된다.

이와 관련된 종래 기술로 한국특허출원 2003-0094805 '온톨로지 기반의 애드혹 서비스 검색 시스템 및 방법'(2003.12.22)과 2003년 11월 IEEE MDM(Mobile Data Management)' 04 Proceedings에 게재된 'Towards Pluggable Discovery Frameworks for Mobile and Pervasive Applications'가 있다. 이중, 한국특허출원 2003-0094805는 온톨로지 기반의 검색 질의를 이용하여 서비스를 검색하나 사용자의 주변상황의 판단을 통한 특정 시점의 상황정보 기반 검색 질의어를 통한 서비스 검색을 구현하기 위한 본 발명과는 거리가 있다. 또한, 'Towards Pluggable Discovery Frameworks for Mobile and Pervasive Applications'에 게재된 내용은 사용자의 위치정보와 그 위치정보에 해당하는 장치정보를 이용하는 기술이나 사용자가 서비스 이용 도중 이동을 하는 경우, 이용 중이던 서비스를 지속적으로 제공하기 위한 본 발명과는 거리가 있다.

발명이 이루고자 하는 기술적 과제

이와 같은 문제점을 해결하기 위하여, 본 발명은 이동 중에도 사용자의 상태정보에 적합한 서비스를 지속적으로 제공하는 상황인식 서비스 시스템 및 그 방법을 제공한다.

발명의 구성

이러한 기술적 과제를 달성하기 위하여 본 발명은, 모바일 터미널을 통해 사용자의 상태정보에 적합한 서비스를 제공하는 상황인식 서비스 시스템을 제공한다. 상황인식 서비스 시스템은 서비스 저장부, 검색 질의어 관리부, 검색 관리부, 상황정보 관리부 및 서비스 제어부를 포함한다. 서비스 저장부는 서비스 컨텐츠를 저장하고, 검색 질의어 관리부는 모바일 터미

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널로부터 수신되는 상태정보에 해당되는 서비스 컨텐츠를 검색하기 위한 검색 질의어를 생성한다. 검색 관리부는 서비스 저장부에 저장된 서비스 컨텐츠 중 검색 질의어에 매칭되는 서비스 컨텐츠를 검색하고, 상황정보 관리부는 검색된 서비스 컨텐츠를 모바일 터미널에서 지원되는 서비스 포맷으로 재구성한다. 서비스 제어부는 상황정보 관리부에서 재구성된 서비스 컨텐츠를 모바일 터미널로 전송한다.

또한, 제2의 기술적 과제를 달성하기 위하여 본 발명은, 모바일 터미널을 통해 사용자의 상태정보에 적합한 서비스를 제공하는 상황인식 서비스 방법을 제공한다. 상황인식 서비스 시스템의 서비스 방법은 상태정보 및 모바일 터미널의 식별정보를 수집하는 단계, 상태정보에 해당하는 서비스를 검색하기 위한 검색 질의어를 생성하는 단계, 검색 질의어를 이용하여 상태정보에 해당되는 서비스 컨텐츠를 검색하는 단계 및 검색된 서비스 컨텐츠를 식별정보에 기초하여 모바일 터미널에서 지원되는 서비스 포맷으로 재구성한 후, 상기 모바일 터미널로 전송하는 단계를 포함 한다.

아래에서는 첨부한 도면을 참고로 하여 본 발명의 실시예에 대하여 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자가 용이하게 실시할 수 있도록 상세히 설명한다. 그러나 본 발명은 여러 가지 상이한 형태로 구현될 수 있으며 여기에서 설명하는 실시예에 한정되지 않는다. 그리고 도면에서 본 발명을 명확하게 설명하기 위해서 설명과 관계없는 부분은 생략하였으며, 명세서 전체를 통하여 유사한 부분에 대해서는 유사한 도면 부호를 붙였다.

또한 어떤 부분이 어떤 구성 요소를 "포함"한다고 할 때, 이는 특별히 반대되는 기재가 없는 한 다른 구성요소를 제외하는 것이 아니라 다른 구성요소를 더 포함할 수 있는 것을 의미한다.

또한, 본 명세서에서 기재한 모듈(Module)이란 용어는 특정한 기능이나 동작을 처리하는 하나의 단위를 의미하며, 이는 하드웨어나 소프트웨어 또는 하드웨어 및 소프트웨어의 결합으로 구현할 수 있다.

도 1은 본 발명의 실시예에 따른 네트워크의 구성도이다.

도 1에 도시한 바와 같이, 본 발명의 실시예에 따른 네트워크는 모바일 터미널(100), 상황인식 서비스 시스템(200) 및 컨텐츠 서버(300)를 포함한다.

모바일 터미널(100)은 사용자가 현재 위치한 환경에서 상황인식 서비스 시스템(200)과의 사용자 인터페이스를 제공하기 위한 것이다. 모바일 터미널(100)은 사용자 인식기능을 갖추고, 사용자가 휴대하여 이동할 수 있는 장치나 로봇, 자동차를 포함하는 운송수단 혹은 사용자 단말일 수 있다. 사용자는 모바일 터미널(100)을 통해 서비스에 로그온 한다. 이때 사용자의 서비스 로그온은 사용자 인식기능을 갖춘 장치나 로봇, 자동차를 포함하는 운송수단 혹은 사용자 단말이 사용자의 음성을 감지하거나 전원이 켜지거나 또는 사용자에 의해 장치, 로봇, 자동차를 포함하는 운송수단 혹은 단말의 특정 기능키가 푸쉬됨으로써 이루어진다. 이때, 모바일 터미널(100)은 WPAN(Wireless Personal Area Network) 모듈을 이용하여 서비스에 로그온하는 사용자를 인식하도록 구현될 수 있다.

모바일 터미널(100)은 사용자의 신체상태와 관련된 정보를 수집하기 위한 다수의 센서를 구비하며, 사용자의 서비스 로그온이 이루어지면 다수의 센서를 이용하여 사용자의 신체상태와 사용자의 신체에 영향을 끼칠 수 있는 요인들을 수집한다. 이때, 사용자의 신체상태와 관련된 정보는 사용자의 혈압이나 맥박, 체온 및 분당 호흡수와 같은 사용자의 신체정보는 물론, 일정시간 동안의 사용자의 보행수와 같은 사용자의 활동정보와 사용자 주변의 소음이나 먼지, 기온, 습도 및 밝고 어두운 정도를 나타내는 명도와 같은 사용자의 환경정보 및 사용자의 생년월일, 성별, 직업, 사용자가 선호하는 서비스 장르 및 사용자의 유료 서비스 가입여부를 포함하는 사용자 개인정보를 통칭하는 것이다. 이하, 설명의 편의를 위해 사용자의 신체정보와 사용자의 활동정보, 사용자의 환경정보 및 사용자 개인정보를 상태정보라고 칭한다. 모바일 터미널(100)은 위에 나열한 상태정보를 모두 수집할 수도 있고, 나열한 상태정보 중 일부만을 수집할 수도 있다. 상태정보의 수집을 위해 모바일 터미널(100)은 수집하려는 상태정보에 해당되는 센서들을 구비하여야 하며, 이들 센서에 수집되는 상태정보는 상황인식 서비스 시스템(200)으로 전송된다. 한편, 모바일 터미널(100)의 원활한 상태정보의 수집을 위하여 사용자는 자신의 신체나 자신이 착용하는 의복에 상태정보 감지모듈을 부착하여야 한다. 이때, 상태정보 감지모듈은 복수의 센서와 이들 센서를 통해 수집되는 상태정보를 모바일 터미널(100)로 전송하기 위한 통신모듈을 포함한다. 앞서 언급한 상태정보 중 사용자의 신체정보와 사용자의 활동정보는 사용자와 일정거리 이상 이격된 센서로는 감지가 불가능한 정보들이므로, 이들 정보를 수집하기 위하여 사용자의 상태정보 감지모듈 이용은 필수적이다. 한편, 모바일 터미널(100)은 상태정보 감지모듈을 통해 감지되는 상태정보의 수집을 위해 WPAN(Wireless Personal Area Network) 모듈을 사용할 수 있다.

상황인식 서비스 시스템(200)은 모바일 터미널(100)로부터 상태정보는 물론, 모바일 터미널(100)의 서비스 능력과 운용정보를 수집하고, 이에 적합한 서비스 컨텐츠를 검색하여 모바일 터미널(100)을 통해 사용자에게 서비스를 제공한다. 여기에서, 모바일 터미널(100)의 서비스 능력이란 모바일 터미널(100)을 통해 사용자에게 서비스 가능한 서비스 컨텐츠의

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종류나 서비스의 제공방법을 나타내는 정보를 의미하는 것으로, 이는 모바일 터미널(100)을 구성하는 시스템에 따라 달라진다. 모바일 터미널(100)이 사용자 단말인 경우, 상황인식 서비스 시스템(200)은 사용자 단말내에 저장되는, 장치 일련번호(Electronic Serial Number: ESN)나 이동국 식별번호(Mobile Identification Number: MIN)를 읽어들여 단말의 제조사나 단말의 지원 서비스 정보를 손쉽게 알 수 있다. 이를 위해, 상황인식 서비스 시스템(200)은 장치 일련번호나 이동국 식별번호와 부합되는 단말의 정보를 제공하는 서비스 제공자로부터 서비스를 제공받을 수 있다. 이를 통해, 상황인식 서비스 시스템(200)은 사용자 단말을 이용하여 사용자에게 제공 가능한 서비스 컨텐츠의 종류와 그 서비스 방법과 관련된 정보를 수집할 수 있다. 모바일 터미널(100)이 사용자 인식기능을 갖춘 장치나 로봇 혹은 자동차를 포함하는 운송수단 인 경우에도, 앞서 언급한 사용자 단말의 경우와 마찬가지로, 상황인식 서비스 시스템(200)은 일종의 일련번호를 통해 그 장치나 로봇 혹은 자동차를 포함하는 운송수단을 통해 사용자에게 제공할 수 있는 서비스 컨텐츠를 파악할 수 있다.

한편, 모바일 터미널(100)의 운용정보는 모바일 터미널(100)의 구동상태와 모바일 터미널(100)에 내장되는 소프트웨어의 버전을 나타내는 정보를 의미한다. 모바일 터미널(100)의 구동상태는 모바일 터미널(100)의 정상작동 여부를 나타내는 것으로, 모바일 터미널(100)이 전력공급의 중단이나 혹은 내장 배터리의 방전으로 동작불능 상태이거나, 모바일 터미널(100)의 상태정보의 일부나 전체 상태정보의 수집의 중단과 같은 이상상태의 발생을 상황인식 서비스 시스템(200)은 물론 사용자에게 알리기 위해 수집된다. 상황인식 서비스 시스템(200)은 모바일 터미널(100)로부터 이상상태의 발생을 통보 받으면, 진행 중이던 서비스를 중단하고 모바일 터미널(100) 관리자에게 이를 알린다. 모바일 터미널(100)에 내장되는 소프트웨어 버전은 앞서 언급한 모바일 터미널(100)의 서비스 능력과 밀접한 관계가 있다. 동일한 사양의 모바일 터미널(100)일지라도 내장 소프트웨어 버전이 구형 버전이냐, 신형 버전이냐에 따라 모바일 터미널(100)의 서비스 능력은 현격한 차이를 보일 것이기 때문이다. 이하, 설명의 편의를 위해 모바일 터미널(100)의 서비스 능력과 운용정보를 식별정보라고 칭한다.

상황인식 서비스 시스템(200)은 모바일 터미널(100)로부터 상태정보와 식별정보를 수집하고, 이를 분석하여 이에 적합한 서비스 컨텐츠를 제공한다. 상황인식 서비스 시스템(200)은 모바일 터미널(100)이 상태정보와 식별정보의 전송을 시작하면, 이를 수신하여 사용자의 서비스 로그온을 감지한다. 상황인식 서비스 시스템(200)은 상태정보와 식별정보의 수집을 위한 규칙을 설정하여 이를 기반으로 상황정 상태정보와 식별정보를 수집한다. 이때, 수집규칙의 설정은 기본 데이터 포맷의 설정과 수집주기의 설정으로 이루어진다. 상황인식 서비스 시스템(200)은 모바일 터미널(100)으로부터 상태정보와 식별정보의 최초 전송 시 수신되는 데이터의 형태를 기본 데이터 포맷으로 설정하여, 최초 전송 이후의 상태정보 데이터와 식별정보 데이터를 기본 데이터 포맷과 동일한 디코딩 방법을 우선적으로 적용하여 수신 데이터의 처리 속도를 향상시킨다. 한편, 상황인식 서비스 시스템(200)은 복수의 모바일 터미널(100)과 송수신하는 데이터의 양과 상황인식 서비스 시스템(200)의 내부 데이터 처리량을 기반으로 모바일 터미널(100)로부터의 데이터 수집주기를 설정하여 상태정보와 식별정보를 수집한다.

상황인식 서비스 시스템(200)은 수신한 상태정보와 식별정보에 해당하는 서비스 컨텐츠를 검색하기 전에 먼저 수신한 상태정보와 식별정보를 분석한다. 상황인식 서비스 시스템(200)은 상태정보를 분석하여 사용자의 성별이나 나이 또는 사용자의 유료 서비스 가입여부를 파악하고, 이를 기반으로 사용자의 서비스 이용권한을 판단한다. 사용자가 미성년자인 경우, 상태정보에 해당하는 서비스 컨텐츠가 성인용 컨텐츠 이거나, 남성 혹은 여성의 특정 성에 국한되는 컨텐츠라서 사용자에게 해당되지 않는다거나 혹은 상태정보에 매칭되는 서비스 컨텐츠가 유료로 제공되는 서비스 컨텐츠인데 사용자는 유료 서비스에 가입하지 않은 경우 등의 각각의 경우가 존재할 수 있다. 상황인식 서비스 시스템(200)은 이들 각각의 경우가 발생함에 따라 서비스 컨텐츠의 검색범위를 조정하거나 혹은 모바일 터미널(100)을 통해 사용자에게 서비스 컨텐츠의 이용권한이 없음을 통보하고 서비스를 종료한다.

한편, 상황인식 서비스 시스템(200)은 식별정보를 분석하여 모바일 터미널(100)의 이상상태 발생여부를 파악하고, 이에 따라 서비스 컨텐츠의 검색을 진행하거나 서비스 컨텐츠의 검색 없이 모바일 터미널(100) 관리자에게 이를 알리고 서비스를 종료한다.

상황인식 서비스 시스템(200)은 수신한 상태정보와 식별정보 중 상태정보에 해당하는 검색 질의어를 생성하여 사용자에게 적합한 서비스 컨텐츠를 검색하는데, 이때 생성된 검색 질의어에 해당되는 서비스 컨텐츠 목록이 상황인식 서비스 시스템(200) 내에 저장되어 있다면, 이에 매칭되는 서비스 컨텐츠를 검색하여 사용자에게 제공한다. 만약, 검색 질의어에 해당되는 서비스 컨텐츠 목록이 상황인식 서비스 시스템(200) 내에 저장되어 있지 않으면, 컨텐츠 서버(300)로 검색 질의어를 전송하여 필요한 서비스 컨텐츠의 검색을 요청한다.

컨텐츠 서버(300)는 상황인식 서비스 시스템(200)에 필요한 서비스 컨텐츠를 제공하기 위한 것으로, 이동 통신 사업자 혹은 상황인식 서비스 컨텐츠를 전문으로 제공하는 서비스 업체에 의해 운영되는 것일 수 있다. 따라서, 컨텐츠 서버(300)에서 제공하는 서비스 컨텐츠는 모두 유료 컨텐츠일 수 있으며, 이에 따라 상황인식 서비스 시스템(200)은 유료 서비스에 가

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입하지 않은 사용자에게는, 검색 질의어에 해당되는 서비스 컨텐츠 목록이 상황인식 서비스 시스템(200) 내에 저장되어 있지 않더라도 컨텐츠 서버(300)로 서비스 컨텐츠를 요청하지 않고, 해당 서비스 컨텐츠가 존재하지 않는다고 판단하여 이를 사용자에게 통보할 수 있다. 이를 통해, 유료 서비스에 가입한 회원과 무료 서비스만을 이용하는 회원에게 제공하는 서비스의 질을 다르게 할 수 있으며, 결과적으로 유료 서비스를 이용하는 회원의 수를 증가시키게 될 것이다.

컨텐츠 서버(300)는 상황인식 서비스 시스템(200)의 요청에 따라 검색 질의어에 해당하는 서비스 컨텐츠를 검색하고, 검색된 서비스 컨텐츠를 상황인식 서비스 시스템(200)에 전달한다. 만약, 임의의 컨텐츠 서버(300)에 검색 질의어에 해당하는 서비스 컨텐츠가 존재하지 않으면, 상황인식 서비스 시스템(200)은 다수의 컨텐츠 서버(300)를 순차적으로 검색한다. 또한, 임의의 컨텐츠 서버(300)에 검색 질의어에 해당하는 서비스 컨텐츠가 존재하여 상황인식 서비스 시스템(200)이 이를 수신하는 경우에도, 상황인식 서비스 시스템(200)은 다른 컨텐츠 서버(300)에 검색 질의어에 해당하는 서비스 컨텐츠를 추가로 요청하도록 설정될 수 있다. 덧붙여, 상황인식 서비스 시스템(200)은 상황인식 서비스 시스템(200) 내부에서 검색 질의어에 해당하는 서비스 컨텐츠를 발견하는 경우에도 컨텐츠 서버(300)로 서비스 컨텐츠의 제공을 요청하도록 설정될 수 있다. 이는 사용자 상태정보가 동일한 경우에도 상황인식 서비스 시스템(200)이나 각각의 컨텐츠 서버(300)가 저장하는 서비스 컨텐츠의 질이나 내용이 상이할 수 있기 때문이며, 이를 통해 사용자에게 최적의 서비스를 제공하기 위한 것이다.

상황인식 서비스 시스템(200)은 검색된 서비스 컨텐츠를 상태정보와 식별정보에 맞게 조합하고 적응시킨다. 여기에서, 서비스의 조합(Composition)은 검색된 다수의 서비스 컨텐츠 중 적어도 하나의 서비스 컨텐츠가 단일 서비스 컨텐츠로는 상태정보에 적합한 서비스를 제공할 수 없을 때 둘 이상의 서비스 컨텐츠를 하나의 서비스 컨텐츠로 재구성하는 것이며, 서비스의 적응(Adaptation)은 식별정보에 적합하도록 서비스 컨텐츠의 포맷을 변화시키는 것이다. 상황인식 서비스 시스템(200)은 이러한 일련의 과정을 통해 생성된 서비스 컨텐츠를 모바일 터미널(100)로 전송하고, 이로써, 사용자는 자신의 상태정보에 맞는 개인화된 서비스를 제공받게 된다.

상황인식 서비스 시스템(200)은 서비스 컨텐츠의 제공 후에도 모바일 터미널(100)을 통해 서비스 컨텐츠를 제공받은 사용자의 상태정보와 식별정보를 삭제하지 않고 저장한다. 본 발명에서 제시되는 모바일 터미널(100)은 사용자 인식기능을 갖추고, 사용자가 휴대하여 이동할 수 있는 장치나 로봇, 자동차를 포함하는 운송수단 혹은 사용자 단말로써, 이를 통해 사용자는 이동 중에도 지속적인 서비스를 제공받게 된다.

도 2는 본 발명의 실시예에 따른 상황인식 서비스 시스템의 구성도이다.

도 2에 도시한 바와 같이, 상황인식 서비스 시스템(200)은 서비스 제어부(210), 상황정보 관리부(220), 서비스 저장부(230) 및 서비스 검색부(240)를 포함한다.

서비스 제어부(210)는 모바일 터미널(도 1의 100)을 통한 사용자의 서비스 로그온 이후, 상황인식 서비스 시스템(200) 내의 제반 동작을 제어한다. 서비스 제어부(210)는 모바일 터미널(도 1의 100)이 상태정보와 식별정보의 전송을 시작하면, 이를 수신하여 사용자의 서비스 로그온을 감지하고, 상태정보와 식별정보의 수집과 관련된 수집규칙을 설정하여, 설정된 수집규칙에 따라 상태정보와 식별정보를 수집한다. 서비스 제어부(210)는 모바일 터미널(도 1의 100)로부터 수신되는 상태정보와 식별정보를 상황정보 관리부(220)에 전달하고, 상황정보 관리부(220)로부터 식별정보에 대한 분석 결과를 수신하여, 모바일 터미널(도 1의 100)이 정상상태 동작 중이면, 서비스 검색부(240)에 상태정보와 식별정보에 해당하는 서비스 컨텐츠의 검색을 요청한다. 서비스 제어부(210)는 상황정보 관리부(220)가 모바일 터미널(도 1의 100)에서 이상상태가 발생하였음을 알려오면, 이를 모바일 터미널(도 1의 100) 관리자에게 통보하고 서비스를 종료하며, 서비스 검색부(240)로부터 서비스 검색 권한이 없음을 통보 받으면, 이를 모바일 터미널(도 1의 100)로 전송하고 서비스를 종료한다. 한편, 서비스 제어부(210)는 상황정보 관리부(220)로부터 검색된 서비스 컨텐츠를 수신하여, 이를 모바일 터미널(도 1의 100)로 전송한다.

상황정보 관리부(220)는 서비스 제어부(210)가 전달하는 상태정보와 식별정보를 저장하고, 식별정보를 분석하여 오류가 발생한 것이 감지되면 서비스 제어부(210)에 이를 알리고, 오류가 감지되지 않으면 수신한 상태정보를 서비스 검색부(240)로 전달한다. 상황정보 관리부(220)는 서비스 검색부(240)로부터 검색된 서비스 컨텐츠를 수신하면, 이를 상태정보에 맞게 조합하고, 식별정보에 맞게 적응시켜 서비스 제어부(210)로 전달한다.

서비스 저장부(230)는 컨텐츠 서버(도 1의 300)가 제공한 서비스 컨텐츠는 물론, 서비스 검색부(240)에 기제공한 서비스 컨텐츠를 저장한다. 서비스 저장부(230)는 서비스 검색부(240)로부터 검색 질의어와 매칭되는 서비스 컨텐츠 목록을 수신하면, 이에 해당하는 서비스 컨텐츠를 검색하여 상황정보 관리부(220)로 전달한다. 한편, 서비스 저장부는 컨텐츠 서버(도 1의 300)로부터 서비스 컨텐츠를 수신하면, 이를 저장한 후, 서비스 검색부(240)로 전달한다.

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서비스 검색부(240)는 상태정보에 기반한 검색 질의어를 생성하여 이에 해당되는 서비스 컨텐츠를 서비스 저장부(230)나 컨텐츠 서버(도 1의 300)에서 검색하여, 상황정보 관리부(220)에 전달한다. 서비스 검색부(240)는 검색 관리부(242)와 검색 질의어 관리부(244)로 구성된다.

검색 관리부(242)는 상황정보 관리부(220)에 기제공한 서비스 컨텐츠 목록과 컨텐츠 서버(도 1의 300)가 제공한 서비스의 목록을 저장한다. 검색 관리부(242)는 상황정보 관리부(220)로부터 상태정보를 수신하면, 이를 서비스 컨텐츠 검색 요청으로 인식하고, 수신한 상태정보를 이용하여 사용자의 성별, 연령 또는 유료 서비스 가입여부에 따른 서비스 이용 권한을 판단한다. 판단 결과, 서비스 이용 권한이 없으면, 이를 서비스 제어부(210)에 알리고, 서비스 검색 권한이 있으면, 검색 질의어 관리부(244)에 상태정보를 전달한다. 검색 관리부(242)는 검색 질의어 관리부(244)로부터 수신한 검색 질의어에 해당되는 서비스 컨텐츠 목록이 존재하는지를 판단하여, 검색 질의어와 매칭되는 서비스 컨텐츠 목록을 서비스 저장부(230)로 전달하거나 검색 질의어를 컨텐츠 서버(도 1의 300)로 전송한다. 한편, 검색 관리부(242)는 검색된 서비스 컨텐츠를 수신하여 해당 상태정보 및 검색 질의어와 매칭되는 서비스 컨텐츠 목록으로 저장하고, 상황정보 관리부(220)에 전달한다.

검색 질의어 관리부(244)는 검색 관리부(242)로부터 전달받은 상태정보에 해당되는 검색 질의어가 존재하는지를 판단하여, 존재하면 이를 검색 관리부(242)로 전달하고, 존재하지 않으면, 상태정보에 맞게 새로운 검색 질의어를 생성하여 저장한 후, 이를 검색 관리부(242)로 전달한다.

도 3은 본 발명의 실시예에 따른 상황인식 서비스의 흐름도이다. 먼저, 서비스 제어부(210)는 모바일 터미널(도 1의 100)로부터 상태정보와 식별정보의 전송이 시작되면, 이를 사용자의 서비스 로그온으로 감지하여 서비스를 제공하기 위한 일련의 과정을 시작한다(S401). 서비스 제어부(210)는 모바일 터미널(도 1의 100)로부터 수신되는 상태정보와 식별정보의 데이터 형태를 이용하여 기본 데이터 포맷을 설정하고, 복수의 모바일 터미널(100)과 송수신하는 데이터의 양과 상황인식 서비스 시스템(200)의 내부 데이터 처리량을 기반으로 모바일 터미널(도 1의 100)로부터 상태정보와 식별정보를 수집하는 수집주기를 설정하는, 수집규칙의 설정을 실시한다(S402). 서비스 제어부(210)는 수신한 상태정보와 식별정보를 상황정보 관리부(220)로 전달하고(S403), 상황정보 관리부(220)는 수신한 정보를 저장하고(S404), 식별정보를 분석하여, 모바일 터미널(도 1의 100)의 정상작동 여부를 판단한다(S405). 만약, 모바일 터미널(도 1의 100)이 정상적으로 동작하고 있지 않다면, 이를 서비스 제어부(210)에 알리고(S406), 이를 수신한 서비스 제어부(210)는 모바일 터미널(도 1의 100)의 비정상 동작을 모바일 터미널(도 1의 100) 관리자에게 통보하고(S407), 서비스를 종료한다(S408). 한편, 판단 결과, 모바일 터미널(도 1의 100)이 정상상태로 동작하고 있다면, 상황정보 관리부(220)는 서비스 제어부(210)로부터 수신한 상태정보를 서비스 검색부(도 2의 240)의 검색 관리부(242)로 전달한다(S409). 검색 관리부(242)는 상태정보를 수신하면, 이를 분석하여 모바일 터미널(도 1의 100)로 서비스에 로그온한 사용자의 서비스 이용 권한을 판단한다(S410). 만약, 상태정보에 부합되는 서비스가 사용자에게 허가되지 않은 서비스라면, 이 같은 사실을 서비스 제어부(210)에 알리고(S411), 서비스 제어부(210)는 이를 모바일 터미널(도 1의 100)로 통보한 후(S412), 서비스를 종료한다(S413). 한편, 판단 결과, 사용자가 자신의 상태정보에 해당되는 서비스의 이용권한이 있으면, 상황정보 관리부(220)로부터 수신한 상태정보를 검색 질의어 관리부(244)로 전달한다(S414). 검색 질의어 관리부(244)는 수신한 상태정보와 매칭되는 검색 질의어가 존재하는지 검색한다(S415). 검색 질의어 관리부(244)에 상태정보에 해당되는 검색 질의어가 존재하지 않으면, 검색 질의어 관리부(244)는 상태정보에 부합되는 새로운 검색 질의어를 생성하고, 이를 저장한 후(S416), 검색 관리부(242)로 전달한다(S418). 만약, 검색 질의어 관리부(244)에 상태정보에 해당되는 검색 질의어가 존재하면, 새로운 검색 질의어의 생성없이, 검색되는 검색 질의어를 검색 관리부(242)로 전달한다(S418). 검색 관리부(242)는 검색 질의어 관리부(244)로부터 검색 질의어를 수신하면, 이에 해당되는 서비스 컨텐츠 목록이 존재하는지 판단하여(S419), 존재하지 않으면, 컨텐츠 서버(300)로 검색 질의어를 전송하여 해당 서비스 컨텐츠의 제공을 요청하고(S420), 컨텐츠 서버(300)는 수신한 검색 질의어에 해당되는 서비스 컨텐츠를 검색하여(S421), 이를 검색 질의어 관리부(244)로 전송한다(S425). 검색 질의어 관리부(244)는 수신한 서비스 컨텐츠를 저장하고(S426), 이를 검색 관리부(242)로 전달한다(S427). 검색 관리부(242)는 수신한 서비스 컨텐츠에 해당되는 서비스 컨텐츠 목록을 생성하여 저장한 후(S428), 상황정보 관리부(220)로 검색된 서비스 컨텐츠를 전달한다(S429). 한편, 검색 관리부(242)에 검색 질의어에 해당되는 서비스 컨텐츠 목록이 존재하면, 검색 관리부(242)는 해당 서비스 컨텐츠 목록을 서비스 저장부(230)로 전달하고(S422), 서비스 저장부(230)는 수신되는 서비스 컨텐츠 목록에 해당되는 서비스 컨텐츠를 검색하여(S423), 이를 상황정보 관리부(220)로 전달한다(S428). 상황정보 관리부(220)는 서비스 저장부(230) 또는 검색 관리부(242)로부터 수신한 서비스 컨텐츠의 조합이 필요한지 판단하고(S430), 이 결과, 서비스 컨텐츠의 조합이 필요하면, 서비스 컨텐츠의 조합을 실시하여 서비스를 재구성한 후(S431), 식별정보에 맞게 적응시킨다(S433). 만약, 판단 결과, 서비스 컨텐츠의 조합이 필요 없으면, S431 단계를 생략한 채(S432), 서비스 컨텐츠를 식별정보에 맞게 적응시키는 서비스 적응 단계를 실시한다(S433). 상황정보 관리부(220)는 S433 단계를 통해 식별정보에 적응시킨 서비스 컨텐츠를 서비스 제어부(210)로 전달하고(S434), 서비스 제어부(210)는 이를 모바일 터미널(도 1의 100)로 전송한다(S435).

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상기에서는 모바일 터미널(도 1의 100)를 통해 사용자의 건강과 관련된 상태정보를 수집하여 이에 따른 서비스를 제공하는 경우만을 예로써 기술하였으나, 본 발명은 사용자의 건강과 관련되는 서비스의 제공에 국한되는 것은 아니다. 사용자에게 제공하려는 서비스의 종류에 따라 사용자가 착용하는 상태정보 감지모듈에 구비되는 센서나 모바일 터미널(도 1의 100)에 구비되는 센서들을 알맞게 변경하여 해당 상태정보를 수집하면, 사용자의 요구에 따른 폭넓은 서비스 카테고리를 제공할 수 있다. 예로서, 상태정보 감지모듈이나 모바일 터미널(도 1의 100)에 음성감지와 관련된 센서들을 구비하고, 이 센서들을 이용하여 사용자 발성음의 고저 및 사용자 발음의 정확도를 감지하여, 이를 토대로 사용자의 발음교정을 위한 서비스를 제공하는 것이 가능하다.

이상에서 설명한 본 발명의 실시예는 장치 및 방법을 통해서만 구현이 되는 것은 아니며, 본 발명의 실시예의 구성에 대응하는 기능을 실현하는 프로그램 또는 그 프로그램이 기록된 기록 매체를 통해 구현될 수도 있으며, 이러한 구현은 앞서 설명한 실시예의 기재로부터 본 발명이 속하는 기술분야의 전문가라면 쉽게 구현할 수 있는 것이다.

이상에서 본 발명의 실시예에 대하여 상세하게 설명하였지만 본 발명의 권리범위는 이에 한정되는 것은 아니고 다음의 청구범위에서 정의하고 있는 본 발명의 기본 개념을 이용한 당업자의 여러 변형 및 개량 형태 또한 본 발명의 권리범위에 속하는 것이다.

발명의 효과

전술한 구성에 의하여, 사용자의 상태정보를 기반으로 하는 검색 질의어를 생성하여 이용함으로써 사용자의 상태나 주변 환경에 가장 적합한 상황인식 서비스를 발견하여 제공할 수 있음은 물론, 사용자가 서비스 이용 도중 이동을 하는 경우에도 지속적인 서비스를 제공할 수 있다.

도면의 간단한 설명

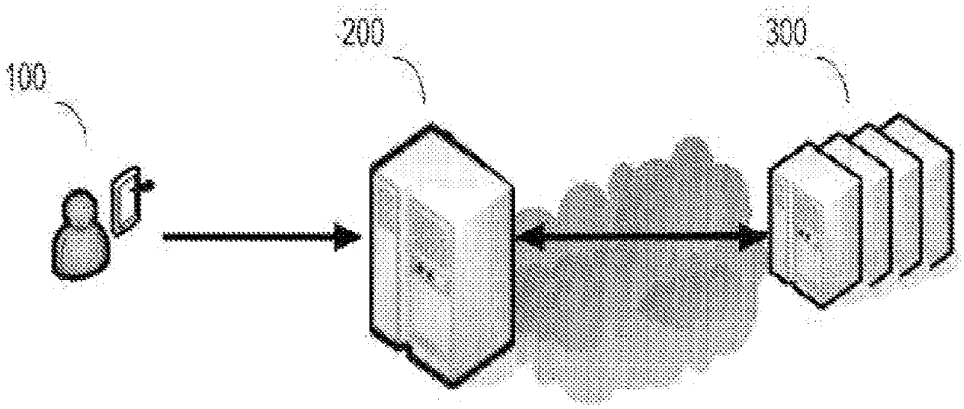
도 1은 본 발명의 실시예에 따른 네트워크의 구성도이다.

도 2는 본 발명의 실시예에 따른 상황인식 서비스 시스템의 구성도이다.

도 3은 본 발명의 실시예에 따른 상황인식 서비스의 흐름도이다.

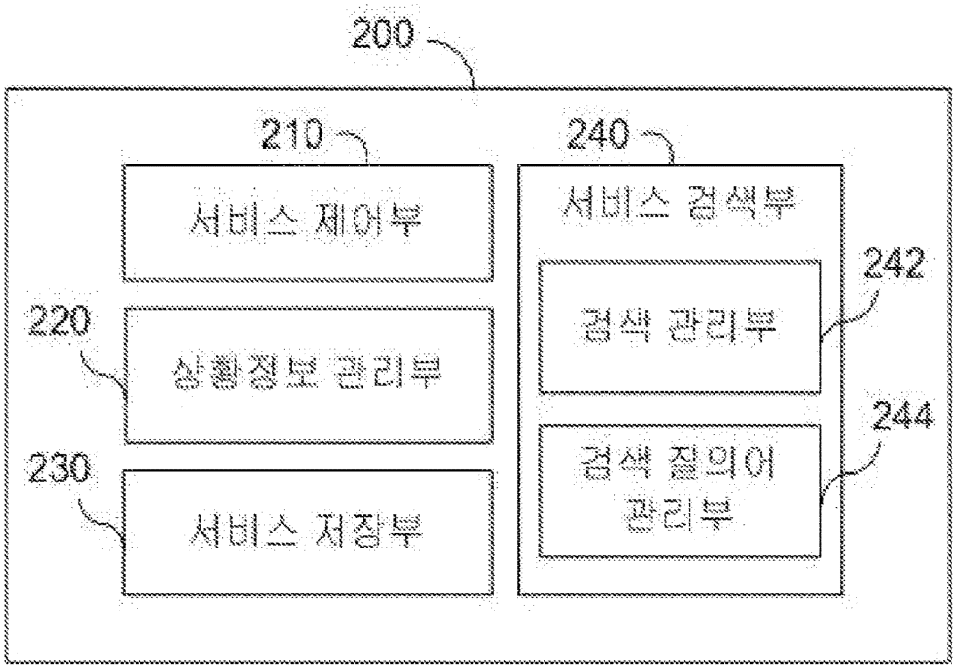
도면

도면1



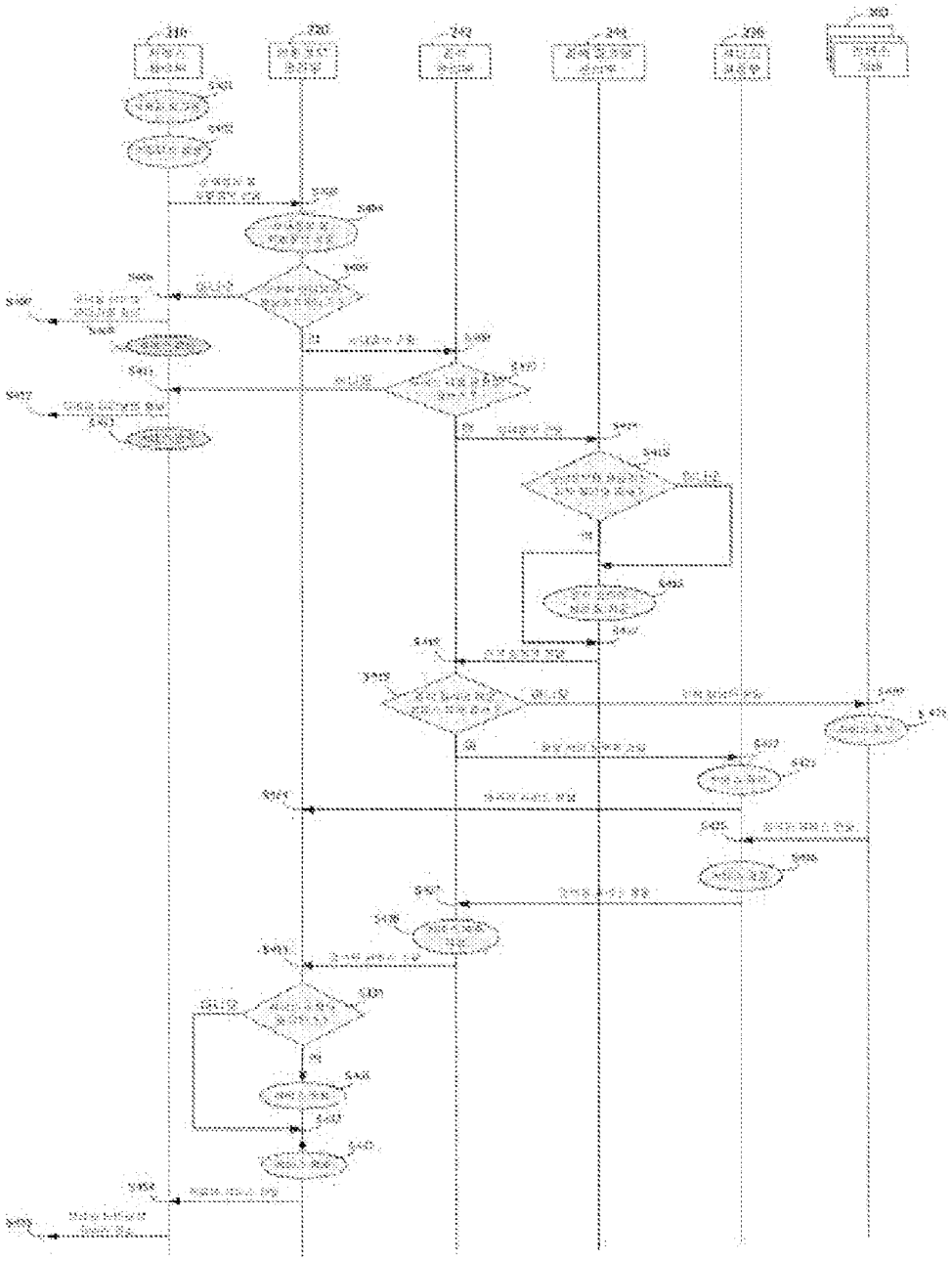
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도면2



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도면3



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(54) Title: SYSTEM AND METHOD FOR ACCESSING NETWORK-BASED RESOURCES VIA A HANDHELD WIRELESS DEVICE

(57) Abstract: A system and method are described that enable users to navigate to a destination site from a WAP phone or a net appliance using only a few key strokes. Embodiments of the invention include a server side database of Internet destinations, wherein destination in the database is identified to the user using a keyword. Examples of keywords used in embodiments of the invention include company names, trademarks, book titles, personal names, document titles or any natural language string capable of being printed and easily memorized by a person. Embodiments of the invention also include a server side navigation engine that indexes the individual words within a name as well as the first letters of a destination's keyword. These indexing features enable the navigation engine to return a list of results even when the query only contains the first few characters of the keyword. Embodiments of the invention include an estimated measure of popularity for each destination within the database. Non-limiting examples of such popularity measures include the number of times a destination has been visited by all users within a given time range, and number of external references to the destination. Some embodiments include popularity measures customized to the specific user. One example of user-centric popularity metric is the number of times the user has visited the destination within a given time range. The navigation engine may return a list of results ordered by decreasing relevance and decreasing popularity.

WO 01/82556 A2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000109

SYSTEM AND METHOD FOR ACCESSING NETWORK-BASED RESOURCES VIA A HANDHELD WIRELESS DEVICE

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to network navigation methods in general and to methods suitable for handheld wireless network appliances in particular.

Description of the Related Art

Handheld, wireless devices such as personal digital assistants (PDA) and smart phones executing a wireless application protocol (WAP) are emerging as an alternative to personal computers (PC) for consumer Internet access. The inherent limitations on the size of a handheld device present a novel challenge to engineer a consumer device that allows easy network navigation to a desired destination.

The current Internet addressing system was established at a time when the primary hardware elements of the user interface comprised a desktop keyboard in combination with a large display monitor. Contemporary handheld devices roughly the size of a human palm were not contemplated in establishing network location standards such as domain names and universal resource locators (URL). URLs and existing navigational tools, such as conventional search engines and directory services, are inappropriate for new handheld devices, as it is infeasible for the user to input the long sequence of typecast characters required by such technologies. As such, the advent of palm sized devices presents a need for a navigation method that enables users to navigate a network using a reduced or minimal number of keystrokes.

SUMMARY OF THE INVENTION

In the domain of non-PC devices, any new navigation system that can enable users to navigate using a minimal number of keystrokes holds a compelling value proposition. The present invention includes a one-key-one-

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click navigation system that enables consumers to navigate to a destination site from a WAP phone or a net appliance using only a few key strokes. This one-key-one-click system includes 3 important components.

The first component comprises a server side database of Internet destinations (mobile Web sites). Each destination in the database is identified to the user using a keyword. Examples of keywords used in embodiments of the invention are company names, trademarks, book titles, personal names, document titles or any natural language string capable of being printed and easily memorized by a person.

The second component comprises a server side navigation engine that indexes the individual words within a name as well as the first letters of a destination's keyword. These indexing features enable the navigation engine to return a list of results even when the query only contains the first few characters of the keyword.

The third component comprises an estimated measure of popularity for each destination within the database. An example of popularity measure supported by embodiments of the invention is the number of times a destination has been visited by all users within a given time range. Another example is the number of external references to the destination, also referred to as the destination's page rank. Embodiments of the invention support many suitable measures of popularity. Some embodiments include popularity measures for the navigation system in which the user can be identified and tracked over time. In such embodiments, the measure of popularity can be customized to the specific user. One example of user-centric popularity metric is the number of times the user has visited the destination within a given time range. Independently of the selected popularity measure, the navigation engine is designed to return a list of results ordered by decreasing relevance and decreasing popularity.

These and other embodiments will be more fully described infra.

BRIEF DESCRIPTION OF THE FIGURES

Fig. 1 illustrates a wireless client device used in an embodiment of the present invention.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000111

Fig. 2 schematically illustrates a network configuration used to connect wireless client devices to resources in embodiments of the present invention.

Fig. 3 comprises a flow chart for providing URIs to clients in embodiments of the invention.

Fig. 4 comprises a flow chart of the selection and ordering of resources according to embodiments of the present invention.

Fig. 5 comprises a flow chart for the processes of measuring the popularity of URIs and returning URIs to clients according to embodiments of the invention.

DETAILED DESCRIPTION

A. System Overview

The present invention includes an addressing system optimized for retrieving networked based resources via a handheld, wireless device. Present addressing systems are inadequate for the new generation of handheld wireless devices. Handheld devices such as cellphones and wireless PDAs have constraints on the length of input strings that a user may reasonably be expected to input. This limitation has not been an issue in PC-based network access, as PC based browsers typically accept a URL, which may be an arbitrarily long string. For instance, to access a URL such as "www. amazon. com", a PC user typically types in the entire string corresponding to the URL.

Amongst the limitations of a handheld device is the restricted number of characters a user can typically input. Figure 1 illustrates a WAP phone, which includes a display 100. The input to the phone 102 is typically a standard numerical key pad, including roughly 12 keys, appended with a cursor key 104 to highlight lines on the display 100. The restricted number of keys, and the manner in which cellular phones are typically used, places strict limits on the number of characters that a user can reasonably be expected to input, rendering it infeasible to type in URL, or even a substantial portion of a URL. The limitation on input is even more pronounced with wireless PDAs, in which input is provided by a user writing with a stylus.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000112

The present invention includes a system and method for allowing a user to identify a network resource by its URI, with a limited number of characters. Novel indexing systems used in the present invention as well as popularity metrics supported by the present invention allow a user to identify a URI with a limited number of keystrokes.

B. Terminology Used

The following terms are used in this application. Some of the terms listed infra are also illustrated in Figures 2-3:

- Query: a set of parameters passed by the client 200 (e.g. handset) to the navigation server 202. The query comprises a query string and a query context. The query string may comprise any text or keystrokes input by a user of the client 200 device. The query context is any direct or indirect contextual information about the user or the query. Non-limiting examples of query context include: the user's preferred language, the user's geographical location, a unique identifier corresponding to the user. If no context information is to be transmitted from the client 200 to the navigation server 202, the query context may be null.
- Resource: an entity (Web page, person, MP3 song,...) on the network that can be uniquely identified by a URI.
- Entry: a parameterized object that describes a resource. The object parameters are also called attributes or properties. Two important entry attributes in the present invention are the keyword and the URI.
- Keyword fragment: one or more letters of a keyword (e.g. ama for amazon).
- Relevance ranking: The relevance of an entry with respect to a query is a function of how closely the given entry matches the query string and context. For instance, if the query context specifies that the user only wants results in French, all the entries in English may be regarded as irrelevant even though their keyword may be similar to the query string. If there is no context, the relevance of an entry to a user query is a direct function of comparing the query string to the entry keyword.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000113

- Exact match: An exact match occurs when all the query parameters (query string and context) are exactly matching the corresponding parameters of an entry. Two parameter values are exactly matching when their normalized values are equal.
- Global versus local measures of popularity: In embodiments of the invention, the query context may provide a mechanism to identify a specific user (e.g. subscriber ID from wireless operator or login ID). In such embodiments, the global measure of popularity may be customized to the specific user. In such cases, the resources visited by the user and the frequency of these visits can be aggregated to build a usage profile specific to that user. Such customized measure is called "local measure of popularity", as opposed to the global popularity measure, which aggregates usage across users.

C. System Architecture

Figure 2 illustrates a network architecture used in embodiments of the present invention. A client 200, such as a handheld wireless device, accesses a Gateway Server 202. The Gateway Server 202 may be WAP server. The Gateway Server 202 accesses a Navigation Server 204, which is primarily responsible for identifying network resources. The Navigation Sever 202 retrieves URIs for network resources from a Resource Database 212.

The Resource Database 212 includes a set of network destinations. In embodiments of the invention, the network destinations include Internet destinations. Each destination in the Resource Database 212 is identified to the user using a keyword. Examples of keywords include, but are not limited to: company names, trademarks, book titles, personal names, document titles, or any natural language string capable of being printed and easily memorized by a person.

The Navigation Server 204 indexes the individual words within a name but also indexes the first letters of a destination's keyword. As such, the navigation engine is capable of returning a list of results even when the query

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000114

only contains the first few characters of the keyword. To illustrate by example, suppose the Resource Database 212 contains the destination

phone.amazon.com

A keyword stored in the corresponding record of the Resource Database 212 may be:

amazon

The Navigation server may index the keyword with the following portions of the string:

a

am

ama

amaz

The Navigation Server 204 is coupled to a Resolution Tracking Server 206, which is responsible for updating the Resolutions Tracking Database 208 with profile information received from the Client 200. The Resolution Tracking Database 208 is coupled to a Popularity Engine 210. The Popularity Engine 210 computes usage popularity from aggregate navigation events and combined popularity based on other measures. The Popularity Engine 210 sends popularity updates to the Resource Database 212, which stores popularity as an attribute of the entry record.

Embodiments of the invention may support many different measures of popularity. An example of popularity measure is the number of times a destination has been visited by all users within a given time range. Another example is the number of external references to the destination, or page rank. Many other measures of popularity will be apparent to those skilled in the art.

An important subclass of popularity measures comprises individualized popularity metrics for users who can be identified and tracked over time. In such cases, the measure of popularity can be customized to the specific user. An example of user-centric popularity may be the number of times the user has visited the destination within a given time range. Other individualized, or local, popularity metrics, will be apparent to those skilled in the art.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000115

The various servers illustrated schematically in Figure 2 and described herein may reside on one or more processors coupled by a LAN. The individual servers do not necessarily reside on individual processors, as one or more of the servers may reside on a single processor in embodiments of the invention. In embodiments of the invention, the Resource Database 212 may be a centralized database, and one or more Navigation Servers 204 may operate on top of read-only replicas of the Resource Database 212. In some such embodiments, changes to the Resource Database 212 may be propagated in real-time to the replica databases.

D. Resource Selection

Figure 3 illustrates a process by which a user may identify and select a network resource from a client device 200. The user enters a keyword or a keyword fragment 300 using a client keypad 102. A query including the keyword or keyword fragment 302 is forwarded to the navigation server 202. In embodiments of the invention, the query may also include context information comprising user specific-information, which may include but is not limited to the language preferred by the user; the user's geographical location; and a unique identifier for the user, such as a login name or other ID.

The Navigation Server 202 determines if the query string is an exact match 304 to a key in the resource database 212. If there is an exact match for the query in the resource database 212, the navigation server 202 forwards 306 the user selection to the Popularity Engine 210 and redirects the client 200 to the corresponding URI 308.

If the query is not an exact match 310, the navigation server computes a result list of entries relating to the query. The result list is ordered by decreasing relevance 312. If the result list is null, i.e., if there are no entries in the resource database 212 corresponding to the query, the navigation server prompts the user to try a different keyword , and the system returns to the initial state 300. If the result list contains exactly one entry, the navigation server returns the result to the user 318; the user selects the entry in the list and accesses the resource 320; the navigation server uses the user's selection to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000116

update global and local measures of popularity 306; and the client is redirected to the resource URI 308.

If the result list 314 contains more than one entry, the navigation server reorders the list using the global or local measure of popularity. The new ordered list of results is returned to the user 324; the user selects one of the entries in the list and accesses the resource 320; the navigation server 204 uses selection to update global and local measures of popularity 306; and the client is redirected to the resource URI 308.

E. Relevance Ranking

Amongst the novel features of the present invention is the method by which the result list is generated 310. The generation of the result list is illustrated in the flowchart of Figure 4. The navigation server 204 constructs a query context vector 400. The query context vector includes the query supplied by the user via the client 200. In some embodiments, the query context vector also includes additional information from the client 200, including but not limited to the language preferred by the user and profile information regarding the user. The query context vector is n-dimensional, wherein n is the number of elements in the vector.

As an example, a four dimensional query context vector may have the following elements:

Keyword	=	**"amazon"**
Language	=	**"en-US"**
Category	=	**"sic: 23"**
Geography	=	**"San Francisco"**

The navigation server 202 proceeds to impose a set of weights to the elements in the query context vector to generate a weighted query context vector 402. The weights applied to the query context vector reflect the relevance ranking criteria used by the service operating the system to establish the resources most relevant to the query and its context. In an embodiment of the invention, a weight vector is used to perform the weighting operation, wherein the weight vector has n scalar elements which map one-to-one to the elements in the n-dimensional query context vector.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000117

For the query context vector presented in the example above, an example of a corresponding weight vector may have the following elements:

Keyword = 0.6
Language = 0.2
Category = 0.1
Geography = 0.1

Other embodiments of the present invention support more general operators for performing the weight operation. In particular, for an n-dimensional query context vector, the weighting operation may be performed by a linear operator, given by a corresponding n by n matrix. In other embodiments, the weight operation may be performed by any non-linear function which maps n-dimensional vectors to n-dimensional vectors.

The Navigation Server 204 proceeds to compute a set of resources from the resource database 212 that are closest to the weighted query context vector 404. The resource records in the resource database may contain the following fields:

ID
Language
Description
Category
Geography
Type
Global Popularity

In an embodiment of the invention, the relevance is computed by taking the normalized dot product of the weighted query context vector with a vector comprising the corresponding fields in the resource records. The Navigation Server 202 then reorders the list of resource records within a predetermined relevance of the query context vector according to their popularity, wherein the popularity is a scalar field in the resource record 406.

F. Constructing Global and Local Measures of Popularity

In embodiments of the invention, global and local measures of popularity are recomputed after a URI is identified for a user 306 308. This

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000118

procedure is illustrated in Figure 5. The navigation server 204 builds a resolution notification message that identifies the user selection 500. In embodiments, the resolution notification message also identifies additional information about the selection process. The message may include a unique identifier for the selected resource, which may be the resource ID; the time of selection; resolution specific information, which may include but is not limited to the origin of the selection, such as an entry point, and the mechanism of selection, such as a clink on a link, a keyword typed in full, partially typed keyword, etc.; and user specific information, such as user location, user identity or profile.

The navigation server 202 proceeds to send a resolution event message 502 to the resolution tracking server 206. In embodiments of the invention, the navigation server 202 and the resolution tracking server 206 reside on different, physically separated processors. In such embodiments, the resolution event message may be sent via a store and forward message. In other embodiments, where the navigation server 202 and the resolution tracking server 206 reside on the same processor, a function call may be used to transmit the resolution event message. In embodiments of the invention, the navigation server 202 tracks acknowledgments from the resolution tracking server 206 asynchronously. The popularity server receives the resolution event message 504 and stores it in a persistent store. In embodiments of the invention, this is acknowledged asynchronously.

The popularity server aggregates the resolution events 506 to compute a measure of popularity for each resource in the resource database 212. In embodiments, the popularity server may also compute a local popularity for each user for the given resource. The popularity server then aggregates all measures of popularity into a combined global popularity which is stored in the corresponding field of the resource record 508.

After sending the resolution event message 502 to the resolution tracking server 206, the navigation server 204 also assesses the best content format for the client and retrieves the URI for the resource corresponding to the best content type 510. The navigation server 204 then returns the best URI 512 to the client 200.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000119

G. Conclusion

The foregoing description of various embodiments of the invention has been presented for purposes of illustration and description. It is not intended to limit the invention to the precise forms disclosed. Many modifications and equivalent arrangements will be apparent.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000120

CLAIMS

What is claimed is:

1. A method of navigating a computer network via a wireless client device, the method comprising:

receiving a user-generated query from the wireless client device, the query including a user-provided string;

sending the wireless device a first plurality of strings, wherein each string in the first plurality of strings is a superset of the user-provided string;

receiving a user-selecting feedback indicating a member from the first plurality of strings;

identifying a URI with the member from the first plurality of strings;

connecting the wireless client device to a resource on the computer network identified by the URI.

2. The method of claim 1 wherein the user-provided string is a substring of the URI.
3. The method of claim 2 wherein the user-provided string is a proper substring of the URI.
4. The method of claim 1 wherein the member from the first plurality of strings is a trade name.
5. The method of claim 1, wherein the query further includes an identifier for a user-selected language.
6. The method of claim 1, wherein the query further includes an identifier for a geographical location of the wireless client device.
7. The method of claim 6, wherein the wireless client device supports GPS, and the identifier for the geographical location is a GPS position.
8. The method of claim 1, wherein the query further includes an identifier for the wireless client device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000121

9. The method of claim 1, wherein the query further includes an identifier for a user of the wireless client device.

10. The method of claim 1, further comprising:
prior to sending the first plurality of strings, sorting the first plurality of strings according to a popularity metric.

11. The method of claim 1, wherein the wireless client device is a cellular phone.

12. The method of claim 11, wherein the cellular phone is WAP-enabled.

13. The method of claim 1, wherein the wireless client device is a wireless PDA.

14. The method of claim 1, wherein the computer network comprises the Internet.

15. A method of locating network-based resources via a handheld device, wherein the handheld device is in wireless communication with an Internet access system, the Internet access system including a WAP server and a resource database, the method comprising:
sending a query vector from the wireless device to the WAP server, the query vector including
a user-provided string, wherein the user-provided string is input by a user to the wireless device
a query context, the query context including state information about the handheld device;
applying a linear transformation to the query vector to generate a weighted query vector;
mapping the weighted query vector to a plurality of entries in a resource database, wherein each of the plurality of entries in the resource database includes a URI attribute.

16. The method of claim 15, wherein the state information indicates an identifier for the wireless device.

17. The method of claim 15, wherein the state information includes a time/date stamp.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000122

18. The method of claim 15, wherein the state information includes a geographical location of the wireless device.

19. The method of claim 15, wherein the state information includes an identifier for a user of the wireless device.

20. The method of claim 15, wherein the state information includes an identifier for a natural language preferred by a user of the device.

21. The method of claim 15, further comprising:
for each entry in the plurality of entries, applying a relevance function to the entry and the query vector, wherein the relevance function maps the entry and the query vector to a scalar value, the scalar value indicating a level of similarity between the entry and the query vector.

22. The method of claim 21, further comprising:
selecting a relevant subset of entries from the plurality of entries, wherein the similarity level of each entry in the subset with the query vector is within a pre-defined threshold.

23. The method of claim 22, wherein each entry in the relevant subset has a popularity attribute, the popularity attribute represented by a numerical value.

24. The method of claim 23, further comprising:
sorting the relevant subset according to the popularity attributes.

25. The method of claim 24, further comprising:
sending identifiers for the relevant subset to the handheld device in sorted order.

26. A system for providing Internet access to a handheld wireless client device, the system comprising;
a WAP server coupled wirelessly to the client device;
a resource database in communication with the WAP server, wherein the resource database stores a plurality of resource records, each of the resource records including
a URI for an Internet-based resource, and
a keyword corresponding to the resource

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000123

such that each resource record is indexed by a plurality of fragments of the corresponding keyword.

27. The system of claim 26, wherein each of the resource records further includes a popularity attribute, the popularity attribute comprising a scalar value.

28. The system of claim 26, wherein the popularity attribute is a page rank of the Internet-based resource.

29. The system of claim 26, wherein the plurality of fragments includes at least three strings.

30. The system of claim 29, wherein the plurality of fragments includes at least five strings.

31. The system of claim 26, wherein the keyword corresponding to the resource is a trade name.

32. The system of claim 26, wherein the keyword corresponding to the resource is a substring of the URI.

33. The system of claim 26, wherein the handheld wireless client device is one of a cellular phone, a wireless PDA

34. The system of claim 26, wherein the handheld device is WAP-enabled.

35. The system of claim 26, wherein the handheld device is GPS-enabled.

36. The system of claim 26 wherein the popularity attribute is proportional to a fee paid for placement.

37. The system of claim 26 wherein the keyword corresponding to the resource comprises a telephone number.

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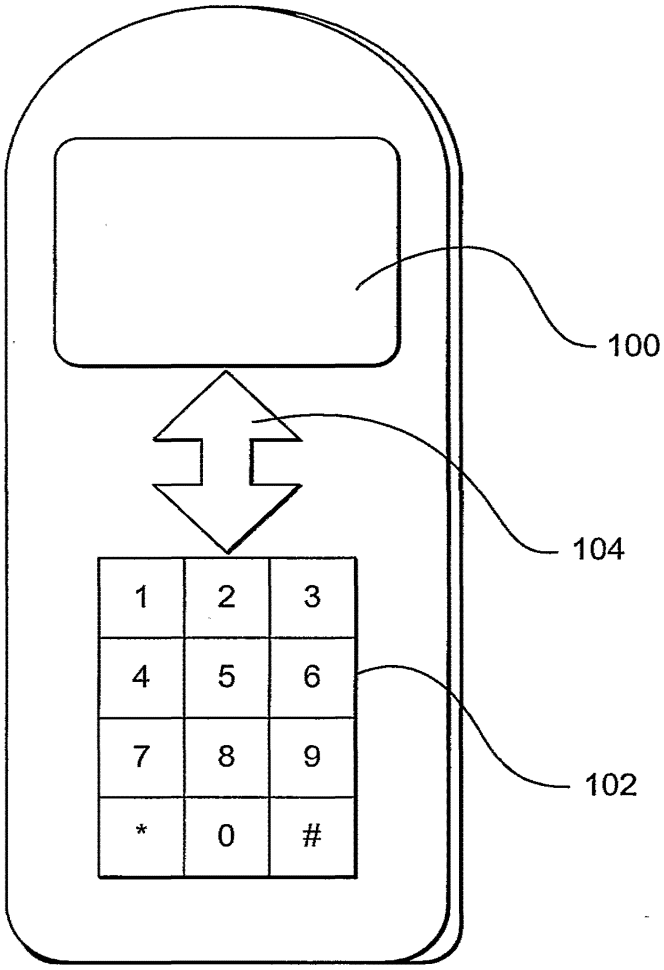


FIG. 1

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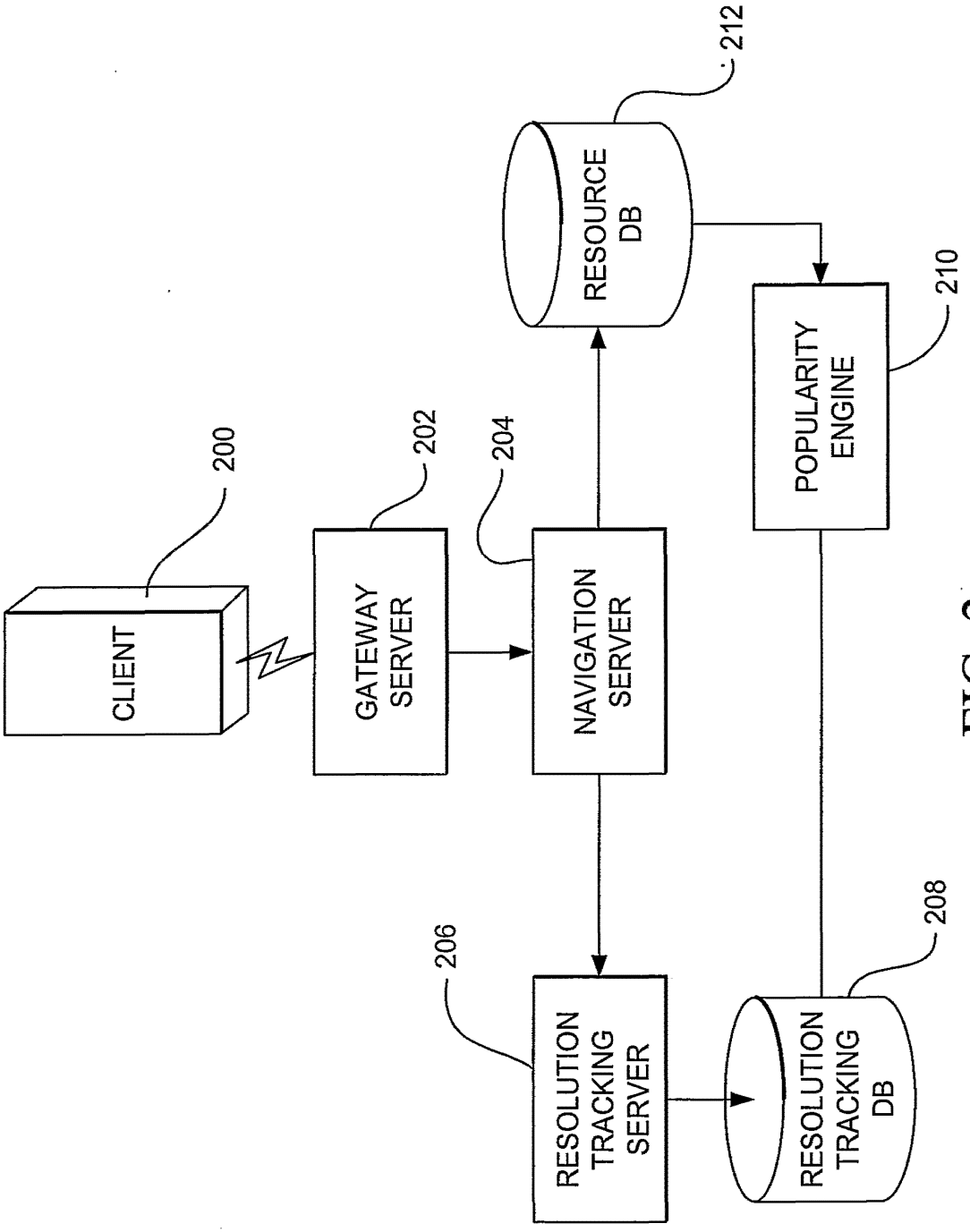


FIG. 2

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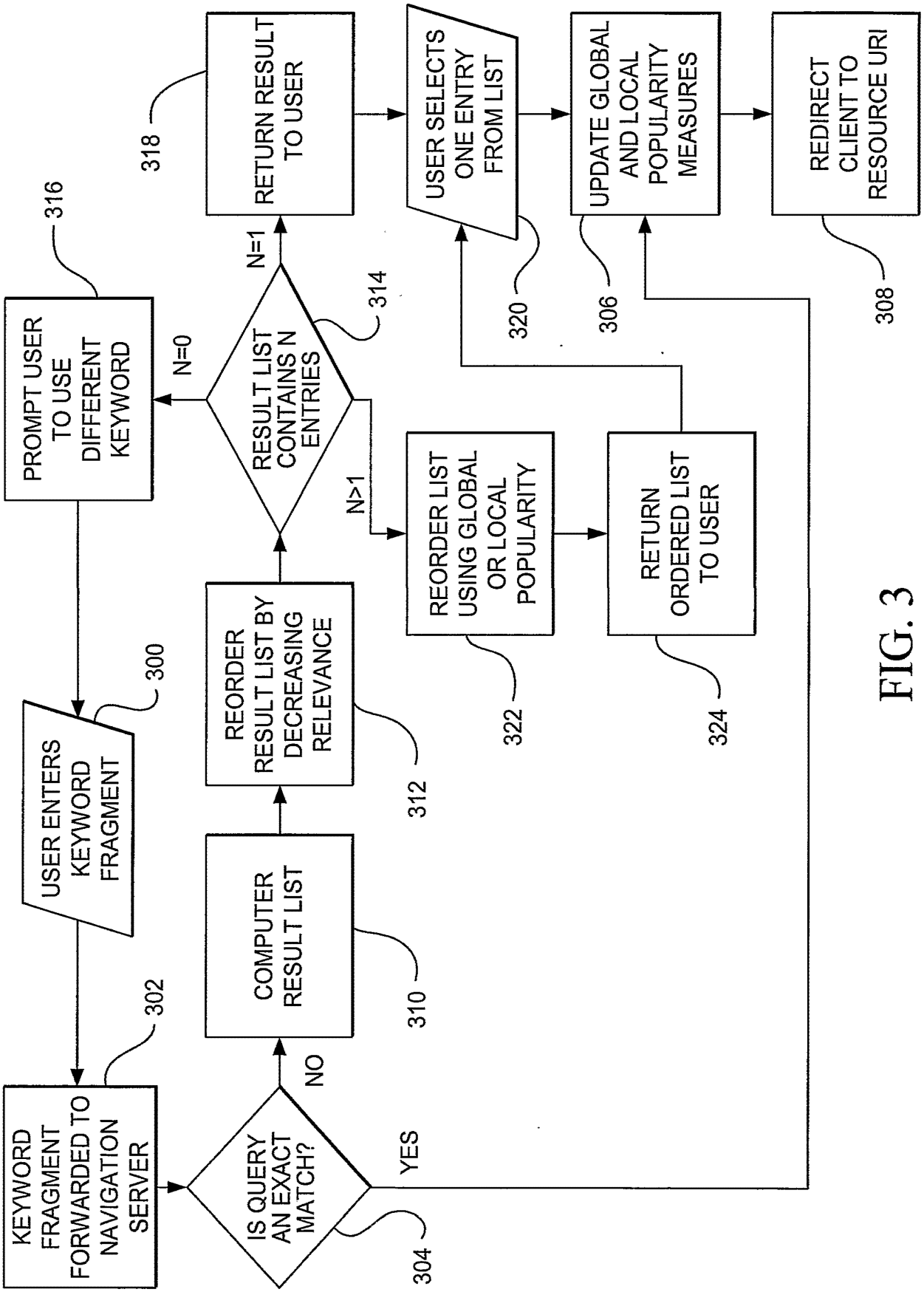


FIG. 3

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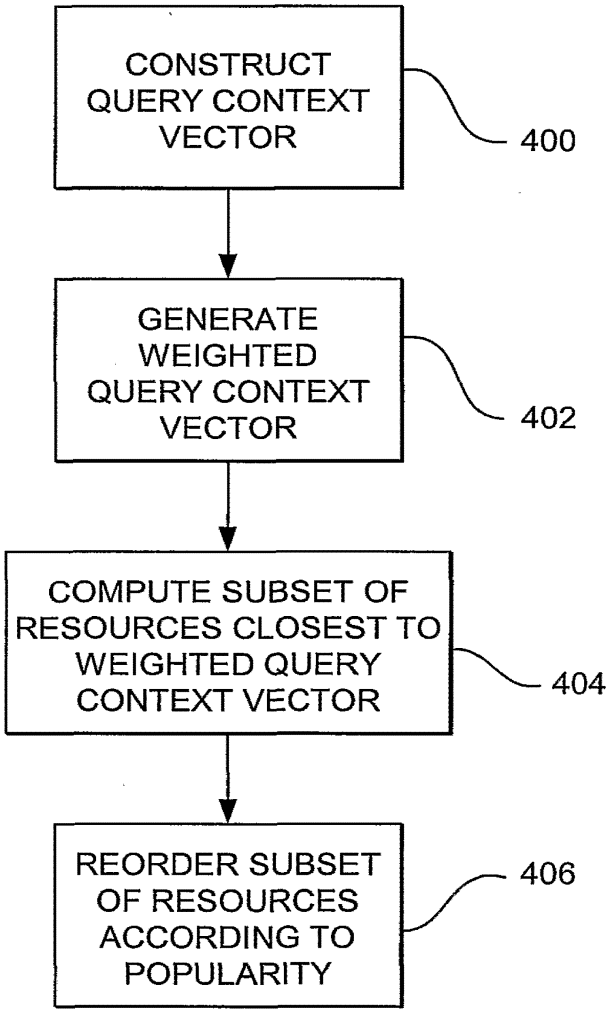


FIG. 4

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000128

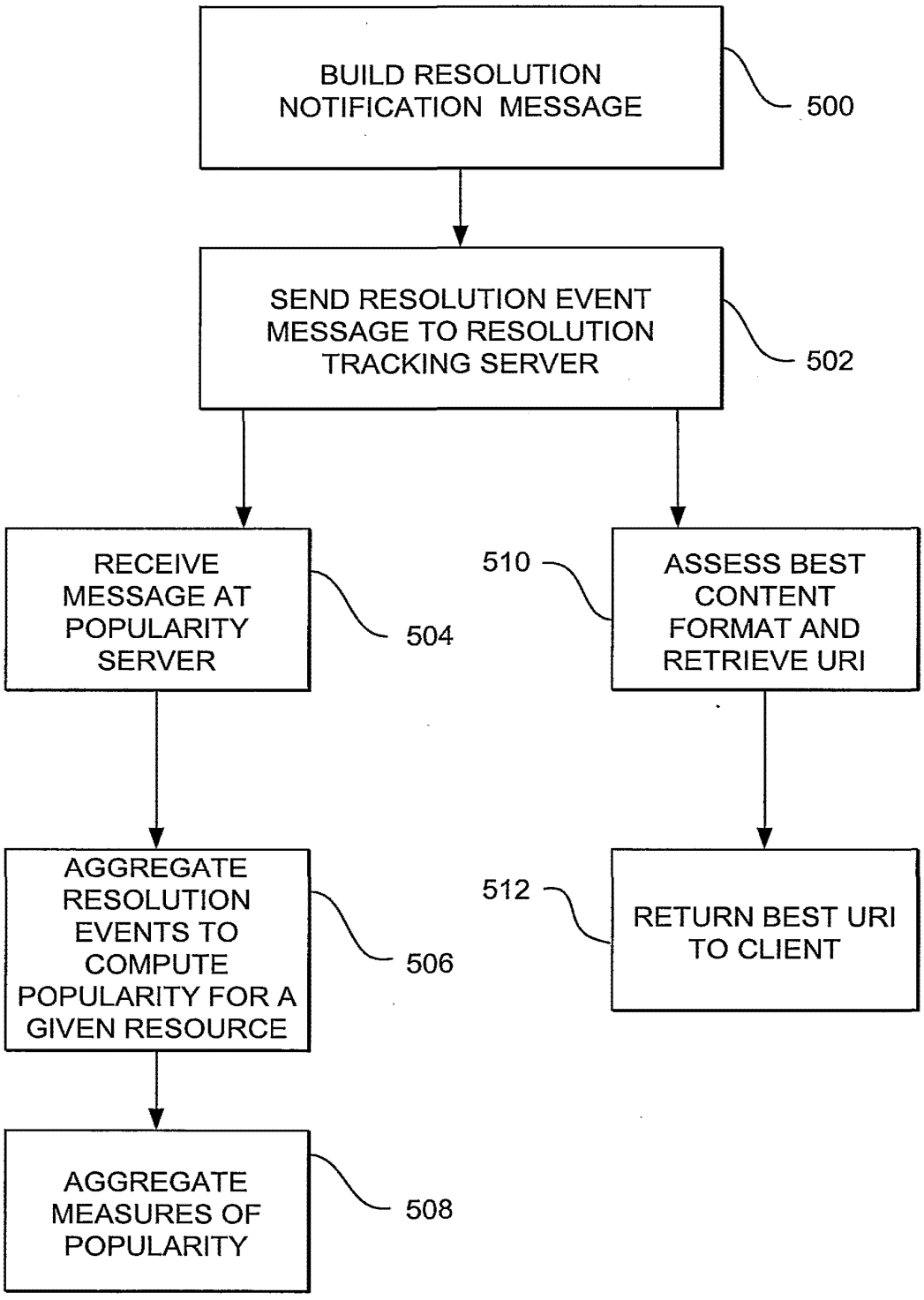


FIG. 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000129

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(54) Title: CONTEXT AWARE COMPUTING DEVICES AND METHODS

(57) Abstract: Context-aware computing systems and methods are described. In particular embodiments, location aware systems and methods are described. In the described embodiments, hierarchical tree structures are utilized to ascertain a device context or location. The tree structures can be stored on or accessible to mobile computing devices so that the devices can determine their own particular context or location. In one embodiment, one of the tree structures comprises a Master World tree structure that contains nodes that represent geographical divisions of the Earth. Another of the tree structures can comprise a so-called Secondary World that contains nodes that represent physical or logical entities that are organization or company specific views of the world. A computing device can automatically determine its context or location by ascertaining a node on one or more of the tree structures and then traversing the tree structure to ascertain the complete context. A unique device architecture is described that permits context aware computing. The device architecture comprises a context service module, a common interface, and one or more context providers. The context providers provide information, through the common interface, that pertains to the context of a device, and the context service module processes the information to device the device's context. An application program interface (API)/events layer is provided through wich various applications can call the device to ascertain the device's location so that location dependent goods or services can be rendered. A privacy manager is also provided in some embodiments to enforce privacy thereby protecting the granularity of the location information that is provided to the applications. In addition, unique location beacons are described that transmit information that can be used by the computing device to ascertain its location.

WO 01/82562 A2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000130

CONTEXT AWARE COMPUTING DEVICES AND METHODS

TECHNICAL FIELD

This invention relates to generally to the area of context-aware computing or ubiquitous computing.

BACKGROUND OF THE INVENTION

The World Wide Web (WWW) was created to make content available from any source in any location around the world. Users of the Web are able to generally access a seemingly infinite number of resources via the Web. The Web has been highly successful in this regard. Yet, with the evolution of the Web, certain needs remain largely unmet. Specifically, people continue to have a need to access information that has a contextual aspect to it. That is, often times, individuals will find themselves in a computing environment that carries with it a certain context. Yet, the context of the environment cannot be easily incorporated into the present computing environment. As an example, consider the context of location. People generally have a need to access information, data, resources and the like, that have geographic dimensions to them. For example, individuals may desire to take advantage of services or products that are close in proximity to where they currently are located. In this regard, it is desirable to understand the individual's contextual location so that services, goods and the like can be made available to the individual. As "eCommerce" continues to grow in importance, the necessity of bringing people, places, services and goods together in an efficient manner will become critically important.

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To date, many attempts have been made to bring people, places, services and goods together. These various attempts have generally approached the problem from different directions in an often times incompatible manner. As an example, consider the context of location. Some services have attempted to bring people and services together by defining large databases that maintain information about the services. For example, a list of restaurants may be maintained in a web accessible database where each restaurant is associated with a zip code in which the restaurant is located. When a user desires to locate a particular restaurant, they might simply enter the zip code where they are located to see a list of corresponding restaurants in that zip code. From the list of restaurants, they might be able to select one or two restaurants of interest. This approach is undesirable for a number of reasons. First, the operation of the system is dependent upon a central server that is responsible for receiving user queries and executing the queries to return the information to the user. In the event the server fails, so too does the service. In addition, this particular service might be suited to finding restaurants, but possibly not other businesses. In addition, the granularity with which the results are returned to the user may foist some of the search burden on the user (i.e. the user gets a list of restaurants in a nearby zip code, but has to further explore the list to select which ones are of interest). Further, the list of restaurants may include some restaurants that are blocked by some type of a physical barrier (i.e. a river, mountain, etc.) that makes the distance, as the crow flies, unroutable.

Providers of services and products want to be connected to nearby end-users. End-users want to consume these services and goods at the closest and most convenient location. Acquiring the services of a dentist or a plumber that lives somewhere "out on the net" is not appropriate if you need them to fill a cavity or

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unclog a sink. Looking for the nearest hotdog while in a stadium requires you to stay in the stadium.

There is an unsolved need to be able to create context-aware computing in which computing devices can participate in their particular context. In specific circumstances, there are needs to provide relational position awareness among physical locations in both public and private views of the world. To date, however, there is no one standardized view of the world that would unlock the potential of context-aware computing. Context-aware computing is much more than just position awareness—although this is a very big field in and of itself.

This invention arose out of concerns associated with developing a standardized, context-aware infrastructure and related systems to unlock the potential of context-aware computing.

SUMMARY OF THE INVENTION

Context aware computing systems and methods are described. In the described embodiment, one or more hierarchical tree structures are defined that uniquely identify geographical divisions of the Earth and/or physical or logical entities. Each tree has multiple nodes and at least one node from each tree is linked. Goods and services can be associated with individual nodes on the tree, the nodes providing a universal reference when attempting to locate or consume the goods or services.

In one embodiment, a computing device (such as a stationary or mobile computing device) has access to one or more of the tree structures and can utilize the tree structures to ascertain its current context. The device determines its context by traversing one or more of the tree structures to ascertain information that is associated with the individual nodes of the tree structure. In a particular

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000133

embodiment, the context is the device location and the device is capable of autonomously determining its location within a Master World and one or more Secondary worlds. Once the computing device has determined its location, it can then take part in location-dependent scenarios.

In one embodiment a Master World is defined and is a hierarchical tree structure that represents a universally acceptable description of the world. One or more Secondary Worlds can be defined and constitute company- or organization-specific views of the world that link with the Master World. A Secondary World can describe the location tree of an organization.

In one embodiment, a device architecture includes a common interface, a location service module, a plurality of location providers, and an application program interface (API) or events layer. Various location providers can call the common interface with location information that is processed by the location service module to ascertain the device's current location. The location providers provide hints about the current location and the location service module turns the hints into a nodal location on one or more of the hierarchical tree structures. The location service then traverses one or more of the tree structures to ascertain a complete device location. Various applications can call the API layer to ascertain location information from the location service module. By knowing where a device is located within a hierarchical structure, the applications can present location-dependent goods or services to the user. Thus, a user is able to actively participate in their current computing environment.

In other embodiments, the location service module is able to determine, to a degree of certainty, the location of the device. It does so through the use of confidence and accuracy parameters that are assigned to the information that is provided by the location providers. Additionally, a trust parameter can be assigned

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000134

by the location service module to the location providers and provides a measure of the trust that is associated with a particular location provider. The location service module can then consider all of the parameters in deciding which location information to use and how to use it in determining a device location.

In another embodiment, privacy issues are addressed by a privacy manager that functions to modulate the information that is provided to the various applications as a function of the applications' identities and security policies on the device.

In yet another embodiment, a unique beacon provider is described. A beacon can be located in various places and transmits context information that (in the case of location information) can be directly used to ascertain the device's location relative to a tree structure node. This provides direct information about the device's location within the defined hierarchical infrastructure.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram of an exemplary computing device that can be used in accordance with the described embodiments.

Fig. 2 is a conceptual diagram of an exemplary Master World and an exemplary Secondary World in accordance with the described embodiment.

Fig. 3 is an exemplary specific view of a Master World and a Secondary World and their relation to one another.

Fig. 4 is a flow diagram that describes steps in a method in accordance with the described embodiment.

Fig. 5 is a flow diagram that describes steps in a method in accordance with the described embodiment.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000135

Fig. 6 is a high level diagram of an exemplary computing device architecture.

Fig. 7 is a somewhat more specific view of an exemplary computing device architecture.

Fig. 8 is a flow diagram that describes steps in a method in accordance with the described embodiment.

Fig. 9 is a flow diagram that describes steps in a method in accordance with the described embodiment.

Fig. 10 is a flow diagram that describes steps in a method in accordance with the described embodiment.

Fig. 11 is a side elevational view of an exemplary location beacon in accordance with one embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Overview

To provide a standardized solution, embodiments described just below provide a uniform definition of the world. The uniform definition is defined in terms of a hierarchical tree of nodes, where each node represents some aspect of the world. Each node is connected to at least one other node by a branch. An exemplary classification of nodes takes place on a physical level (e.g. physical locations such as political entities, infrastructure entities and public places), as well as a non-physical level (e.g. military APOs). This hierarchical nodal structure is referred to as the Master World, and is a standardized view worldwide. Each node of the Master World has various attributes associated with it that assist in context-aware computing. Exemplary attributes include a unique ID, name, geographic entity class, latitude/longitude, relative importance, contextual parents to name just

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a few. The Master World is useful because it can be used to determine the relative location of a place anywhere in the world and at any definable granularity.

Once an individual's location or a place an individual is interested in is determined, various services that reference the location can be offered to the individual based on their location. That is, value is provided by the Master World model in the ability to tie services to nodal locations in the Master World.

Building on this concept, two additional concepts add value—the concept of so-called Secondary Worlds and a "geozone."

A Secondary World is a powerful computing mechanism whereby individual entities (such as businesses or organizations) can define their own particular worlds that need not necessarily conform to the Master World view of the world. That is, while the Master World is essentially a physical hierarchical representation of the world, the Secondary Worlds can be physical and/or logical representations of each individual entities' world view. One particularly useful aspect of the Secondary World is that it links, at at least one point, into the Master World. Thus, within any Secondary World, a user's location not only within the Secondary World, but the Master World as well can be determined. Various services can be attached to the nodes of the Secondary World. Based upon a user's calculated position, these various services that are associated with Secondary World nodes can be offered to the user. In addition, because the user's context is determined relative to the Master World, other services that may not be associated with a particular Secondary World can be offered.

A geozone is essentially a spatial indexing mechanism by which the Master World is subdivided into individual zones. In the described embodiment, the zones are subdivided through the use of a quadtree algorithm that is dependent on a density function (although many other spatial index approaches can also be used).

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Once a desired density level is achieved (density might be defined in terms of points of interest per zone), each node on the Master World is assigned a particular geozone. Geozones enable proximity calculations to be computed in a fast and straight forward manner.

A useful aspect of the Master and Secondary Worlds are that they are "reachable" from various computing devices such as stationary (i.e. desktop devices) or mobile computing devices (i.e. cell phones, laptops etc.). That is, the Master World (or at least a portion of it) and one or more Secondary Worlds can be either locally maintained on the computing device, or accessed, e.g. via the Web or some other mechanism, so that a user can derive their context. For example, the Secondary World can be downloaded onto the computing device so that a user can derive their context within the Secondary World. Once a user's context is determined from the Master World and one or more Secondary Worlds, a various robust collection of context-aware solutions become available to the user. For example, specific Secondary World services can be offered or Master World services can be offered. Additionally, services from other Secondary Worlds might also be offered since the user's location may be known (or made known) to these other Secondary Worlds. In this way, the Master World can link two or more Secondary Worlds together.

Another aspect is that the described embodiments harness the computing power of each computing device in determining the device's location. Here, by virtue of having the Master World and one or more Secondary Worlds reachable by the device (and possibly locally maintained on the device), the device itself determines its own context.

One embodiment provides a client side device that is configured to utilize the context-aware structures that are discussed above, i.e. the Master and one or

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more Secondary Worlds. The Master World or a portion thereof can be locally available on the device or can be accessible at another location, e.g. via the Web. In this embodiment, the client device has a location service embodied thereon. The described location service is a software module that can determine the location of the device and can answer queries from various applications (either executing on the device or off the device). The location service determines the location of the device by using the Master World and one or more Secondary Worlds. The applications query the location service through one or more Application Program Interfaces (APIs) or Events to get location information that is used by the applications to render a service.

The location service makes use of one or more location providers that convey information to the device. This information can be information that is specific to the location provider, or can be information that can be mapped directly into a node of the Master World or Secondary Worlds. Exemplary location providers can include Global Positioning Service (GPS) providers, cell phone providers (cell providers), Bluetooth providers, a user interface provider and the like. The location providers provide information that gives some aspect of a device's current location. This information is used by the location service to ascertain the location of the device.

One particularly advantageous feature of the client device is a standard or common location provider interface. The location provider interface enables the various location providers to provide information to the location service so that the location service can use the information to determine its location. Essentially, the multiple location provider interface is a common interface that enables multiple different location providers to provide location information (or hints) about location to a location service that is on a device. The location providers can provide the

location information constantly, at intervals, or when polled by the device. The location information can be provided with confidence and accuracy estimates to enable the location service to evaluate the relative quality of the information before it is used. The various providers also have the ability to self-monitor themselves which assists in the providers' ability to intelligently convey information to the location service. By having a common interface, the collection of location providers is dynamically extensible—that is location providers can be added or removed from the collection of location providers without any interference of the functionality performed by the location service or device. The location providers can be added or removed while the device is operating. This is particularly useful in accommodating location providers that are developed in the future. In this particular embodiment, two levels of abstraction are provided i.e. (1) the provider interface that receives information from the location providers and (2) the API/events layer that enables applications to get at the various information.

One focus of this embodiment is a device that can collect context information (e.g. location information) from a variety of different sources, determine the device's current context from that information, and provide the current context at some level to one or more applications that can use the device's context to render a service or enable the device to participate in its context environment.

In the described embodiment, the device receives location information or hints about its location. This information is collated and mapped by the location service into a node in the Master World and/or Secondary World. The hierarchical trees can then be traversed to determine the device's accurate location in both the Secondary World and the Master World. At this point, the device has determined its context. The information that is collected can be subject to arbitration to ensure

that only highly trusted information is used to determine context. The location information can be cached to provide "current location information" which, for a definable period of time will be accurate to some degree. Thus, if for some reason other location providers are unavailable, the cache can be used to ascertain location.

Once a device's location is determined, the device can apply a security policy to the information. Once this is done, the device can begin to answer queries from various applications.

One aspect of the described embodiment is a "favorite locations" aspect in which the device can be automatically configured, when it determines its context, so that it can adjust to the different locations.

Further, various types of location providers can convey different types of information. For example, a so-called "thin provider" provides location information that is translated by the location service into the appropriate node information. A so-called "thick provider" includes logic that takes location information and provides it in a form that can map directly into the Master World or Secondary World.

In another embodiment location translation services are provided that are directed to determining, as accurately as possible, the context or location of the device. In this embodiment, information is received from the various location providers. This information includes location, accuracy and confidence (all of which are provided by the location provider), trust (which is assigned to a location provider by the device or a user) and a timestamp (which helps to age the location information). The location translation processing involves determining which of the location providers are valid and active. The location providers can be ranked in accordance with the confidence and trust levels. This defines an ordered list of location providers. Provision is made for a situation in which all of the location

providers may go inactive. If so, a "current location" is used as a location provider whose confidence decreases over time.

In the event that information from two or more of the location providers conflicts, then measures can be taken to use information for which there is a higher level of trust. The information that is provided by all of the location providers (assuming no conflict) can then be used to determine a tree structure and a node's entity ID (EID). The tree might be the Master World and the EID is a node on the Master World. The tree might also be a Secondary World and the EID (or location unique identifier or "LUID") is a node on the Secondary World. Once this information is collected, complete location information can be determined by simply traversing the tree(s). Once a device's location is determined, a cache can be updated with the current location (including a time stamp).

In another embodiment, privacy issues in the context-aware computing environment are addressed. In this embodiment, the location service has acquired location information that pertains to the location of a particular device. A privacy manager determines what level of information to provide to applications that might request the information. The privacy manager can reside on the computing device itself, or can be proxied by a trusted third party.

According to this embodiment, a scale of privacy levels are defined. Each level is defined to include more or less specific information about the location of a particular device. A user is able to assign a privacy level to entities that might request location information. Additionally, each node of the Master World and a Secondary World can have a privacy level associated with it. When a query from an application is received, the privacy manager first determines who the query is from and the privacy level associated with the application or entity. The privacy manager then evaluates one or more of the Master World and the Secondary World to find a

node that has a corresponding privacy level. When a corresponding node is found, information at that particular granularity is provided to the requesting application or entity.

In another embodiment systems and methods of providing a location provider in the form of a location beacon are described. In this embodiment, a location beacon is provided that can be mounted in various areas (public/private areas) to beacon the location to any computing devices within transmission range. The information that is transmitted enables a device to determine its location or context. The location beacon can transmit information that is specific to the location service that uses the information. Transmitted information can include an EID/URL pair, and a LUID/URL pair. The EID gives the node identification of a node in the Master World; and, the associated URL gives a protocol to communicate with the Master World. The URL might, for instance, link to a server that can provide additional context information that uses the EID. The LUID indicates a node on a Secondary World that corresponds to a current location; and the URL gives a protocol to communicate with the Secondary World. For example, the URL can link with a server that is hosting the Secondary World. This server can then be queried to discover more information about the Secondary World (i.e. Secondary World tree structure, location of associated resources, etc.) With the EID and LUID (along with the URLs), a device can now traverse the Master World or Secondary World to determine its location. Various technologies can be used to implement the beacon (wireless, RF, IR). The beacon can be a "program once" device to deter tampering. Programmable beacons can, however, be provided. Security can also be provided in the form of a verifiable signature that is provided with the beacon information to assure the veracity of the transmitted information.

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A useful context-aware computing aspect of the beacon is the concept of "location-enabled access". That is, in addition to (or separately from) receiving location information, a beacon can transmit code download pointers that enable smart devices to access software code that allows the device to participate in its current context.

Exemplary Computing System

In the context of this document, the term "computing device" is used to refer generally to any type of computing device. Characteristics of exemplary computing devices are that they typically include one or more processors, computer-readable media (such as storage devices and memory), and software executing on the one or more processors that cause the processors to implement a programmed functionality. In particular embodiments, implementation takes place in the context of mobile computing devices (e.g. laptop computers and the like), and/or hand-held computing devices (e.g. palm PCs, wireless telephones and the like).

Fig. 1 is a schematic diagram that constitutes but one example of a computing device that is suitable for use in connection with the described embodiments. It is to be understood that portions of the illustrated computing device can be incorporated in one or more of the computing devices (e.g. palm PCs, wireless telephones, etc.) with which particular embodiments are envisioned for use.

Computer 130 includes one or more processors or processing units 132, a system memory 134, and a bus 136 that couples various system components including the system memory 134 to processors 132. The bus 136 represents one or more of any of several types of bus structures, including a memory bus or memory controller, a peripheral bus, an accelerated graphics port, and a processor or local

bus using any of a variety of bus architectures. The system memory 134 includes read only memory (ROM) 138 and random access memory (RAM) 140. A basic input/output system (BIOS) 142, containing the basic routines that help to transfer information between elements within computer 130, such as during start-up, is stored in ROM 138.

Computer 130 further includes a hard disk drive 144 for reading from and writing to a hard disk (not shown), a magnetic disk drive 146 for reading from and writing to a removable magnetic disk 148, and an optical disk drive 150 for reading from or writing to a removable optical disk 152 such as a CD ROM or other optical media. The hard disk drive 144, magnetic disk drive 146, and optical disk drive 150 are connected to the bus 136 by an SCSI interface 154 or some other appropriate interface. The drives and their associated computer-readable media provide nonvolatile storage of computer-readable instructions, data structures, program modules and other data for computer 130. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 148 and a removable optical disk 152, it should be appreciated by those skilled in the art that other types of computer-readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, random access memories (RAMs), read only memories (ROMs), and the like, may also be used in the exemplary operating environment.

A number of program modules may be stored on the hard disk 144, magnetic disk 148, optical disk 152, ROM 138, or RAM 140, including an operating system 158, one or more application programs 160, other program modules 162, and program data 164. A user may enter commands and information into computer 130 through input devices such as a keyboard 166 and a pointing device 168. Other input devices (not shown) may include a microphone, joystick, game pad, satellite

dish, scanner, or the like. These and other input devices are connected to the processing unit 132 through an interface 170 that is coupled to the bus 136. A monitor 172 or other type of display device is also connected to the bus 136 via an interface, such as a video adapter 174. In addition to the monitor, personal computers typically include other peripheral output devices (not shown) such as speakers and printers.

Computer 130 commonly operates in a networked environment using logical connections to one or more remote computers, such as a remote computer 176. The remote computer 176 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to computer 130, although only a memory storage device 178 has been illustrated in Fig. 1. The logical connections depicted in Fig. 1 include a local area network (LAN) 180 and a wide area network (WAN) 182. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets, and the Internet.

When used in a LAN networking environment, computer 130 is connected to the local network 180 through a network interface or adapter 184. When used in a WAN networking environment, computer 130 typically includes a modem 186 or other means for establishing communications over the wide area network 182, such as the Internet. The modem 186, which may be internal or external, is connected to the bus 136 via a serial port interface 156. In a networked environment, program modules depicted relative to the personal computer 130, or portions thereof, may be stored in the remote memory storage device. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

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Generally, the data processors of computer 130 are programmed by means of instructions stored at different times in the various computer-readable storage media of the computer. Programs and operating systems are typically distributed, for example, on floppy disks or CD-ROMs. From there, they are installed or loaded into the secondary memory of a computer. At execution, they are loaded at least partially into the computer's primary electronic memory. The invention described herein includes these and other various types of computer-readable storage media when such media contain instructions or programs for implementing the steps described below in conjunction with a microprocessor or other data processor. The invention also includes the computer itself when programmed according to the methods and techniques described below.

For purposes of illustration, programs and other executable program components such as the operating system are illustrated herein as discrete blocks, although it is recognized that such programs and components reside at various times in different storage components of the computer, and are executed by the data processor(s) of the computer.

Defining the World

One of the problems to date with attempting to solve the context-aware computing problem is that every proposed solution has its own approach, data structures, processes and the like. There is little if any standardization between the various approaches. In the described embodiment, standardization is achieved at the foundational level by defining a universal view of the Earth. That is, a universally acceptable definition of the Earth is proposed and is useable in various computing scenarios to enable context-dependent computing. In this document, a specific example of context-dependent computing is given in the form of location

dependent computing. It is to be understood that this constitutes but one example of a context in which the various embodiments discussed below can be employed. Other "contexts" can include, any information that can fit into a hierarchical structure including, without limitation, role/personnel in an organization, device categorizations, current activity, current environment, active devices and the like.

The Master World

A Master World is defined as a politically correct and publicly accepted hierarchical tree structure that catalogs physical location or geographic divisions of the Earth. The Master World is defined in such a way that many different classes of political, administrative and geographic entities across the entire Earth are included. Areas of political contention are accounted for by presenting a view of the world based on the language/locale of the computing device.

Fig. 2 shows an exemplary hierarchical tree structure 200 that represents a portion of the Master World. The Master World contains multiple nodes 202, with each node representing some type of geographic division (e.g. political or natural entity) of the Earth. In the illustrated example, the nodes of the Master World are arranged in the following groups: (1) political or natural entities (e.g. continents, countries, oceans, states, counties, cities and the like); (2) infrastructure entities (e.g. postal codes, area codes, time zones and the like); (3) public place entities (e.g. parks, malls, airports, stadiums, and the like); and (4) non-physical entities (military postal code regions, vacation regions, affiliate coverage areas of television networks that can be geographically discontinuous, and the like).

In the Fig. 2 example, the top node of the tree structure represents the Earth. Each node underneath the top node represents a geographical division of the Earth. In this example, none of the nodes have an association with any businesses or

services. That is, there is a distinction between node entities that are part of the Master World and non-geographic places where activities take place. Though the Master World includes nodes for public places (i.e. airports, malls, etc), it does not include individual listings of businesses or service providers. Each node is uniquely identified by an ID (EID or entity ID). In addition to the unique EIDs, a URL is associated with the tree structure and provides a context for the tree structure as will become apparent below.

As an example, consider the following: Seattle-Tacoma International Airport (SeaTac) will be included in the Master World, but references to individual airline business locations at SeaTac might be "leaves" on the tree that are tagged by the SeaTac Airport EID (see "Secondary World" section and the Table below). Similarly, the Seattle Center might be a node on the Master World, while the Seattle Arts Festival, Bumpershoot, the Seattle Sonics NBA Team, and the Seattle Center Starbucks Coffee Shop might be tagged with the Seattle Center EID. As another example, the Master World also contains nodes for all Interstate (motorway) exits. For example, the I-90, Exit 109, Washington is a node in the Master World. The Best Western Inn located at 1700 Canyon Road in Ellensburg, Washington might be tagged with the EID of this Exit.

Thus, the Master World provides a uniform way of defining locations. The uniform location definitions can then be universally used to assign attributes to goods or services. Whenever a computing device determines its location to correspond to a particular uniform location definition, it can take advantage of the location-dependent goods or services that share the uniform location definition. The Master World is useful because it is a standardized view of the world. Its accurate standardized geographic dimension attribution can be easily accessed by both providers and consumers. Services and product providers (or third parties

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such as search engines, network and yellow-page database directories) can use the nodes of the Master World by assigning a standardized persistent geographic reference to all commerce locations or points of interest. These commerce locations or points of interest can be considered as "leaves" on the tree structure.

In the illustrated example, the nodes of the Master World have one or more attributes that facilitate its use. Exemplary attributes are described in the table immediately below:

Attribute	Description
Entity ID (EID)	The EID is a unique ID for each node. No two nodes have the same EID.
Name	The name is defined in terms of the neutral ground truth (NGT) name. The NGT name supports various language translations for entity names as appropriate (e.g. Pacific Ocean, Pazifischer Ozean, Oceano Pacifico, etc.)
Geographical Entity Class (GEC)	The GEC is a geographical classification of each node. An exemplary GEC is discussed below in the "Geozone" section.
Latitude	The horizontal coordinate position on the globe (i.e. the coordinate position of the node's centroid)
Longitude	The vertical coordinate position on the globe (i.e. the coordinate position of the node's centroid)
Relative Importance	The geographic importance of an entity in reference to other entities in the same region. Value from 1 to 256 (e.g. New York City = 3, Los Angeles = 4, and Omaha = 5 even though Omaha is much smaller but almost as important in relation to surrounding populated places)
Contextual Parent(s)	The parents of the parent/child relationship for each node. Multiple parents are supported (e.g. Redmond is a child of King County, Area Code 425, the Pacific Time Zone, and the MSNBC affiliate KING TV).
Source	The source of origin for the record (e.g. Microsoft or a specified data vendor)
Start Date	Date when the node information was first valid
End Date	Date when the node information was last valid (retired zip codes, breakup of countries)
Modification Date	Records date changes that are made tot eh record relating to retirement or updates to any fields
Status	Active, lashed (links duplicate nodes together), pending or retired

The attributes listed above constitute exemplary attributes only. Other attributes that are different from and/or additional to those referenced above could be used. A few exemplary entity or node records that employ the above attributes are shown below:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000150

Entity ID (EID)	24948
Name	Pacific Ocean, Pazifischer Ozean, Oceano Pacifico, etc.
Geographical Entity Class (GEC)	138/Ocean
Latitude	0 (+000° 00' 00")
Longitude	-170 (-170° 00' 00")
Relative Importance	1
Contextual Parent(s)	World
Source	MSFT GeoUnit
Start Date	0/0/00
End Date	0/0/00
Modification Date	01/18/00
Status	Active

Entity ID (EID)	27490
Name	Redmond
Geographical Entity Class (GEC)	78/non-capital town
Latitude	47.6768303 (+047° 40' 36")
Longitude	-122.1099625 (-122° 06' 35")
Relative Importance	107
Contextual Parent(s)	1. King, second level [Washington, United States] 2. Puget Sound-Seattle, travel region [Washington, United States]
Source	MSFT GeoUnit
Start Date	0/0/00
End Date	0/0/00
Modification Date	01/18/00
Status	Active

The Master World also serves as a repository of common denominator links between itself and various "Secondary Worlds" and as a conduit that connects

Secondary Worlds to other Secondary Worlds. Content, service and device providers can use the Master World to associate their publicly available offerings with a geographic location and the corresponding multiple branch hierarchical structure. This location will be associated with a single entity within the tree structure thereby allowing geographic and time/distance calculations and the necessary parent/child relationship navigation.

The Master World Index (Geozones)

By definition, the Master World provides a hierarchical structure of entities (nodes) that cover the entire globe. Upward navigation within the hierarchy is quite natural. Efficient navigation downward requires geographic proximity awareness. Additionally, there are possible scenarios that will require jumping from branch to branch in order to successfully return values in a query, or for more accurate calculations of distances to close "leaves" attached to nodes other than the original source node. The Master World makes use of an index scheme that can identify peer level nodes by virtue of the geographical proximity. This indexing scheme makes use of a quad tree algorithm to define so-called "geozones."

A quadtree is essentially a spatial index that breaks coverage into homogeneous cells of regularly decreasing size. Each quadrant of the tree has up to four children. The quadtree segmentation process can continue until the entire map is partitioned based on many different end result criteria including the density of the number of items (e.g. points of interest) in each quad. The approach provides a form of spatial index that accelerates spatial selection and content identification.

To complete the spatial indexing scheme to provide each node with a defined geozone, a quadtree algorithm is applied to the nodes and can be based upon a desired density of, for example, points of interest that are to occur in any one zone.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000152

Once all of the zones have been defined, each zone is given a unique ID (e.g. top/left and bottom/right Latitude and Longitude pairs). Each of the nodes of the Master World is then assigned a zone in which it is located. Quadtree algorithms are known and will be appreciated by those of skill in the art.

The Master World Location

As can be appreciated, having a uniform standardized representation of the world in the form of a hierarchical traversable tree structure can greatly facilitate the manner to which context-dependent, and more specifically, location-dependent goods and services can be linked.

In the described embodiment, a computing device has access to at least a portion of the Master World. For example, the computing device can have the Master World saved in an internal storage device, it can comprise part of the computing device's operating system, or the device might access the Master World via a network medium such as the Internet. With the Master World tree structure being accessible to each computing device, each device has the power to determine its own context or node-referenced location. That is, the computing device can determine, through software it is executing, its particular location, i.e. node. Once the computing device determines an associated node, it can simply traverse the tree to ascertain its complete location.

For example, if a computing device determines that it is currently located at a node that corresponds to the City of Redmond, it can traverse the Master World tree structure to ascertain that it is in the State of Washington, Country of The United States, on the continent of North America. By ascertaining its precise location, the computing device (or its user) is now in a position to take advantage of location-dependent services that might be offered. This particular model is a

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tremendous improvement over current models that utilize a central server to ascertain location for a number of different devices. In that model, each device (or user) provides information about its location (e.g. perhaps the user enters the zip code or city that the device is currently in) and might enter a query to find, for example, a McDonald's restaurant in his zip code. The server then takes this information and might, for example, tell the user about the location of all of the McDonald's restaurants within that zip code or city. If the servers fails in this model, then none of the computing devices can take advantage of its services. In the present model, each computing device is self-sustaining. Each can determine its own location, and accordingly, each device can take advantage of location-dependent services. For example, if the computing device understands that it is located on a particular node of the Master World, then it can execute queries to find a McDonald's that has an EID that corresponds to the particular node in which the computing device is located. Particular robustness is provided through the use of the above-described geo-zones. The geo-zones enable proximate geographic divisions to be quickly searched in an efficient manner. For example, if an individual is looking for the nearest Kinko's to make copies and none are located in the geo-zone that corresponds to the node in which the computing device is located, then adjacent geo-zones can be quickly searched.

Secondary Worlds

In the described embodiment, the concept of a Secondary World is used to provide support for additional context. A secondary world might be defined by a third party organization or company and contains nodes that comprise physical and/or logical entities that are unique to that organization. The nodes of the Secondary World may or may not have much context outside of the particular

organization that defined the Secondary World, since a secondary world could be made either public or private. The Secondary Worlds do not duplicate the Master World, but rather supplement it in a unique, organization specific manner. While the Master World is defined to be a widely accepted standard, each Secondary World can be a widely variant representation of an organization's proprietary view of the world. In the described embodiment, each Secondary World has at least one node that is linked with a node of the Master World. This gives the Secondary World a context or location in the Master World. Also note that in some context applications, several secondary worlds may be accessed, each providing additional context specific pieces of location data.

Fig. 2 shows an exemplary Secondary World 204 that comprises a plurality of nodes 206. Each of the nodes 206 constitutes a physical or logical entity. For example, the nodes can constitute a company, its divisions, regions campuses, buildings, floors in various buildings and rooms on various floors. At least one of the nodes is linked with a node of the Master World. The nodes of the Secondary World can have the same attributes as the nodes of the Master World.

As an example of a Secondary World, consider that Boeing might define a Secondary World that includes a list of entities that are important to its employees. The root entity would be "Boeing Corp." and its children might be company divisions (St. Louis Military Division, Everett Plant, Corporate HQ, etc.). Further down the tree structure, individual nodes might be defined to represent individual buildings (Hanger 12), offices within this building (Office 1001), building areas (Southwestern quadrant of hanger 12), etc. Each entity or node has a unique identifier (Local Unique ID or "LUID") and a URL that is associated with the tree on which the node occurs. The URL uniquely identifies the Secondary World tree structure so that a user within that world can determine how to interact with the

world. This aspect is discussed below in more detail. Boeing can then use the LUIDs to associate equipment, services, departments or even personnel to a physical or logical location.

As a more concrete example, consider Fig. 3 which shows an exemplary portion of the Master World 300 and a Secondary World 302. Master World 300 includes the following nodes: World, United States, Washington, Redmond, and Zip = 98052. The exemplary Secondary World 302 is a hierarchical tree structure that has been defined by Microsoft Corporation and includes the following nodes: Microsoft, Redmond Campus, 1 Microsoft Way, Building 26, 3rd floor, Conference Room 3173, Building 24, 2nd floor, Conference Room 1342. In this example, the Secondary World 302 "touch points" into the Master World from the Redmond node. In this example, a video projector is shown as being associated with the node "Conference room 1342". Here, the video projector is not a node in the secondary world. Rather, the video projector is an item in some other resource discovery service (e.g. the active directory) and includes a location attribute that is a pointer to "Conference room 1342." There may be times, however, when nodes can be created in the worlds to represent the location of key services—the node themselves, however, would not represent the services.

Like the Master World, the Secondary World is advantageously accessible to a user's computing device. It could, for example, be downloaded—completely or partially--and stored on a storage device and accessed when needed. It might be downloaded for a one time use only. The Secondary World enables the computing device to ascertain its context within the Secondary World. In this example, the computing device would, by using the Secondary World, compute its location within the Secondary World. The computing device can do this by traversing the tree structure from the node in which it is currently located to the root node. This

would, for example, give the computing device (and hence the user) a complete Secondary World context. Once the Secondary World location is known, the user is in a position to take advantage of goods or services that are associated with the nodes of the Secondary World. That is, once the computing device determines its Secondary World context, it is ready to become an active participant in the Secondary World.

Tremendous value can be achieved by associating goods or services with the individual nodes of the Secondary World. For example, Conference Room 1342 has a video projector associated with it. That is, the location of the video projector is in Conference Room 1342. Assume that an individual in Conference Room 3173 has a presentation that requires the use of the video projector such as the one located in Conference Room 1342. Normally, an individual would have no way of ascertaining the location of the video projector other than perhaps physically calling over to the building to check whether there is a video projector available. In this example, because the user's computing device is able to ascertain its location within the Secondary World, it is able to locate the video projector in Conference Room 1342. It would do this by simply executing software that traverses the Secondary World tree structure to find the resource of interest.

Note also that because there is a link into the Master World, the computing device is able to derive it context (location) within both worlds. This enables the computing device, and hence the user, to take advantage of goods and services that are associated with the Secondary World, as well as participate in location-dependent services that are consumable based upon the user's location in the Master World.

Fig. 4 is a flow diagram that describes steps in a method in accordance with the described embodiment. The steps described just below are implemented by a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000157

computing device which, in the illustrated example, is a hand-held mobile computing device.

Step 400 accesses first and second hierarchical tree structures that are resident on a computer-readable media. In this example, the tree structures might be stored on the device or might be accessible via a network such as the Internet. An exemplary first tree structure is the Master World and an exemplary second tree structure is a Secondary World. Alternately, the tree structures could both be Secondary Worlds. Once the tree structures have been accessed by the device, step 402 traverses multiple nodes of the tree structures to derive the context of the computing device. In this example, the computing device receives information that informs it as to its location at a node of one of the trees. This information can come to the computing device in any suitable way, e.g. a user can enter the information through a User Interface (UI) or the location might be broadcast to the computing device by another computing device (e.g. through the use of Bluetooth technology or Universal Plug and Play (UpnP). Specific examples of how this information can be conveyed to the computing device are given below in more detail. Regardless of how this information is conveyed to the computing device, once the computing device has the information, it executes software that traverses one or both of the tree structures to derive its context which, in this example, is the device's location.

Defining Secondary Worlds

As was mentioned above, one particularly valuable aspect of the described embodiment is that individual organizations can define their own Secondary Worlds. This gives the organization a great deal of flexibility in providing goods and services and, more broadly, increasing the efficiency of their organization. In

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000158

one embodiment, a software tool is provided that enables individual organizations to define and maintain their own Secondary Worlds.

In one embodiment, each secondary world can be uniquely identified as a name space (e.g. an XML namespace). This ensures that any overlap in names between the Secondary World and the Master World will not result in a collision. As an example, consider the following: the Master World might contain an entity identified as "Chicago" referring the city. A Secondary World that is established by the National Basketball Association (NBA) and a different Secondary World that is established by the Caterpillar Corporation might also have entities named "Chicago" that refer to completely different entities than the Master World's "Chicago." For example, the NBA's "Chicago" might refer to an NBA market area while Caterpillar's "Chicago" might refer to a sales district. Having the namespace separation between the Master and Secondary Worlds can ensure that there not a collision between identically named entities because each name space is uniquely different from every other namespace.

Fig. 5 is a flow diagram that describes steps in a method of building a context-aware data structure. These steps are implemented by a software tool that is executing on a computing device.

Step 500 receives input from a source that specifies information that pertains to physical and/or logical entities. In this example, a system administrator might physically enter information about the structure of the Secondary World that they desire to define. This information can include information about buildings, divisions, conference rooms and the like. Step 502 then processes the information to define a hierarchical tree structure that has a context. In this example, the context is location. It will be appreciated, however, that other contexts could be employed. Each of the nodes in the hierarchical tree structure represents a separate

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000159

physical or logical entity. Step 504 then links at least one of the nodes of the hierarchical tree structure with another tree structure having a context. In this example, this other tree structure can comprise the Master World. Once the tree structures have been built and linked, they are ready for traversal in a manner that enables context to be derived from one or more of the nodes.

Location as a Service

In the above examples, the computing device is able to determine its own location. In the embodiment about to be described, the computing device determines its location by using location information that is provided to it from a number of different sources of information. The device is able to take the information that is provided to it and process the information to determine a particular node on one or more hierarchical trees. Once the device has done this, it can determine its complete location which is a useful thing to know particularly when there are location-dependent services that can be consumed by the device's user.

Fig. 6 shows a high level diagram of an exemplary computing device 600 that comprises, among other components, a context service module 602 and one or more context providers 604. The context service module 602 can be implemented in any suitable hardware, software, firmware or combination thereof. In this particular example, the context service module is implemented in software that is executed by one or more device processors. The context service module 602 receives context information from one or more context providers 604 and processes the information to determine a current device context. In this particular example, the device context is the device's location. Accordingly, the context providers are location providers that provide location information, in various forms, to the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000160

context service module 602 for processing. The location providers 604 receive information from various sources of context information (location information) 606.

In the context of this document, a context provider comprises a software component that can either be implemented on the device or off the device. The context provider can also include any suitable hardware, firmware or combination thereof. The role of the context providers are to receive information from sources 606 and convey the information to the context service module 602 so that the context service module can use the information to determine a current device context.

In the case where the context of the device is the device's location, sources 606 provide various information to the location providers 604 that pertains to the device's current location. As an example, the sources of the information can include various information transmitters such as a GPS system, cell phone or cell ID, wireless transmitters that transmit location information, location beacons, 802.11 transmitters and various other sources of information. The sources of information can also include other computing devices that might, for example, provide location information through Bluetooth technology. In addition, a source of information 606 might include a person who, for example, physically enters location information into the device 600 so that the device can process the information to determine its location.

When the device 600 receives the location information from the sources 606, it processes the information with the location providers 604 and provides the information to the location service module 602. The location service module 602 processes the location information and determines a particular node on one or more of the hierarchical tree structures to which it has access which corresponds to its

current location. The location service module 602 can then traverse the tree structures to determine a complete location for the device. Once the complete location is determined, the device 600 can begin to interact with one or more applications 608 that can query the device about its particular location so that one or more location-dependent services can be rendered to the device. In this example, the applications 608 are illustrated as being separate from the device. It is to be understood, however, that the applications could be executing on the device, e.g. a browser application.

As shown, the applications 608 can make calls to the device to ask the device where it is located. The device is configured to receive the calls and respond in an appropriate manner to the application. Once the application has the device's location information, it can then render location specific services to the device.

Consider the following example: You are a traveler and have a hand-held mobile computing device that contains a Master World tree and a Secondary World tree for SeaTac International Airport. You are scheduled to depart on a plane for China from Concourse C. SeaTac International Airport has designed its Secondary World to have the following nodes: "Arrivals", "Departures", "Concourses", "Airlines", "Gates assigned to Airlines", and "Gate Location". When you arrive at the airport, as you enter the airport your computing device receives location information from different sources and with that information your device determines that your location is in the Arrivals node. SeaTac International has bank of servers that are executing applications to assist you while you are in the airport. There are applications that can help you find services, locate facilities (e.g. coffee shops, restaurants), give directions (e.g. how to get to your departure gate), update you on the status of your flight, and even check you in automatically for your flight. Consider also that as you walk through the airport your location changes. Your

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000162

computing device, however, can receive continuous location information updates so that it can continue to determine its location as you move through the airport. At one point, as you pass a Starbucks coffee shop, your hand held device notifies you that if you purchase a latte at Starbucks and present your hand held device, you will receive a 50 cent discount on your latte. In this example, the utility of the Secondary World is demonstrated. By knowing where its particular customers are in its facility, SeaTac International is able to provide a host of services that were not possible before.

Assume further that you are in the airport and your flight is canceled. You must find a place to stay for the night. Accordingly, you wish to determine the closest Double Tree hotel because you really like the warm chocolate chip cookies they give you when you check in. You execute a search engine on your computing device to find the nearest Double Tree hotel. The search engine application first determines your current location in the Master World as indicated by the EID of the Master World node that corresponds to your location. Executing a search, the search engine application looks for a Double Tree hotel that has an attribute that includes an EID that matches your EID. If it finds one, it simply indicates for you the result. If it does not find one with the corresponding EID, it can use an adjacent geozone to search for a Double Tree hotel. It may also provide driving directions to the hotel. The search engine application was able to do this because it was able to ascertain your location in the Master World. It did this quickly and automatically with little or no effort from you.

Consider further that as you are driving from the airport to the hotel you decide that you want to find the nearest Kinko's so that you can print 100 copies of a presentation that you are to give in the morning. Consider that your hand-held computing device is a cellular phone and that Sprint is the carrier. Sprint has

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defined its own Secondary World that might, for example, be designated in terms of cell nets. By virtue of having Sprint's Secondary World on your computing device, you are able to ascertain your location in Sprint's Secondary World and, accordingly, your location in the Master World. Consider that Kinko's also has a Secondary World that links with the Master World. By executing a search application on your device, you are able to ascertain the location of the nearest Kinko's as well as driving directions thereto. All of this is possible because your device has access to the Master World and one or more Secondary Worlds. In this example, the Master World provides a mechanism to daisy chain two or more Secondary Worlds together. This is possible because the Secondary Worlds have at least one reference or link into the Master World.

Exemplary Device Architecture

Fig. 7 shows computing device 600 in somewhat more detail. In this particular embodiment, device 600 comprises an architecture that includes the following components: a location service module 602, a location provider interface 700, an application program interface (API)/Events module 702, a privacy manager 704 a location conversion module 706, one or more applications 608 and one or more location providers 606. Also included in the architecture is an active directory 708, Web service 710, location database 712, and personal places 714. The architecture can be implemented in any suitable hardware, software, firmware or combination thereof. The architecture mentioned above is advantageous in that it enables each computing device to determine its own context or location.

Common Location Provider Interface

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000164

One particularly advantageous aspect of the described embodiment is that it employs a common interface 700 that provides a standard interface through which the location providers 606 communicate. By having a common interface, the location providers are extensible (to support future providers) in that they can be dynamically added or removed from the collection of location providers. All that is required of a particular location provider 606 is that it be written to support the common interface.

In this example, there are several location providers 606. These location providers provide location information in different forms. For example, a GPS location provider might provide location information that is GPS specific. Similarly, an IP/Subnet location provider might provide information that is specific to an Internet Protocol. A mobile phone location provider might provide location information in the form of a cell ID. In addition, a location User Interface (UI) might provide location information in the form of a user entry that specifies a city, street or building. All of the location information that is provided by the various location providers is processed by the location service module 602 so that a current device location can be determined. To determine the current device location, the location service module 602 may have to consult with an active directory 708, a Web service 710, or a location database 712. In the illustrated example, the active directory 708 might, for example, maintain a secondary world and other networking metadata such as subnet and "site" information that can help determine location based on networking connectivity. Web service 710 can hold the master or secondary worlds, the attributes of which can be used to find location. For example, if a cell phone knows its cell tower ID, then the location provider can query the secondary world to ascertain the nodes that match that cell tower ID.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000165

Location database 712 is basically a version of the web service that is hosted or cached locally.

Location Providers

As indicate above, the architecture contemplates multiple different location providers that can provide location information to the location service module 602. This information can come in many different forms and quality levels. The information is then processed by the location service module 602 to determine a current device location. To do this, the service module 602 ascertains from the location information a particular node ID (EID and/or LUID) and a URL that is associated with the tree structure with which the node is associated. Once the location service module ascertains a node ID, it can then query the tree structure (or more accurately a server that manages the tree structure) using the URL to ascertain more information about the tree structure. For example, if the location service module 602 ascertains a LUID from a particular Secondary World, it might then query an active directory 708 (or an Intranet server—which is another location database) to discover the parents and the children of the node. This would then enable the location service module to build the Secondary World.

The location providers 606 can provide the location information to the location service module 602 in many different ways. For example, some location providers 606 may continuously provide information (e.g. the GPS provider may continuously provide GPS coordinates). Alternately, the location providers can periodically provide location information such as at specific times or on the occurrence of definable events. For example, a user may define specific times when the location information should be updated. Alternately, the location information might be updated only when a device's location changes (i.e. a location

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000166

change event). Additionally, the location providers might provide location information when polled by the location service module 602. For example, the location service module 602 can call the location provider interface 700 and request location information from one or more of the location providers.

One specific location provider 606 is shown as a cache. The cache provider essentially maintains a current device context or location. That is, once the location service module 602 has ascertained its current location, it writes this location to a cache. This enables the device 600 to ascertain its location with a degree of confidence in the event all of the other location providers are not able to provide location information (e.g. the GPS provider may not receive GPS information because the GPS transmitter that supplies it with the information is unable to contact a requisite number of satellites).

Confidence and Accuracy Parameters

One important and useful feature of the described embodiment is that one or more of the location providers are configured to assign confidence parameters and/or accuracy parameters to the information that they provide to the location service module 602. Confidence parameters provide a measure of a provider's confidence in the information that it provides to the location service module 602. For example, assume that a GPS transmitter must receive information from five or more satellites in order to provide highly confident information. Assume that only three satellites are available at the time. The GPS transmitter would then transmit its information based only on the three satellites. The GPS provider would then know that the information it receives from the GPS transmitter was based only on three satellites rather than the desired five or more. In this case, the GPS provider can set a confidence parameter on the location information that indicates that it has

a lower confidence level than if the information were based on the desired five or more satellites. In this case, the location service module 602 can take the confidence parameters for all of the location providers into account when determining the location of the device. This is discussed in more detail below.

With respect to the accuracy parameters, consider that the location information that is received from the location providers is accurate to varying degrees. Some information may be accurate to within one mile, while other information may be accurate to within 100 feet. The location providers are desirably configured to assign accuracy parameters to the location information that they provide to the location service module 602. The accuracy parameters give the location service module an indication of the accuracy of the information.

When the confidence and accuracy parameters are used by the location service module 602, the module can make decisions on how to use the location information it receives from each provider. For example, the location service module 602 might disregard completely any information that has a low confidence parameter. It might, on the other hand, strike a balance between the accuracy of the information and its confidence. For example, the module 602 might be programmed to use information with lower levels of accuracy only when there is a high level of confidence in the information. The module 602 might utilize the parameters to assign weights to the information so that the location is calculated as a weighted function of the confidence and accuracy of the information.

Another use of the confidence parameters is as follows: Assume that the location service module has determined a device location and has written that location to a cache. At the time when the location is written to a cache, it is assigned perhaps a high confidence level. Assume further that all of the other location providers are unavailable to provide location information. For a period of

time, the location service module 602 can use the cache location as a current location and be fairly confident that its information is generally accurate. In this case, the location service module might assign a linearly decreasing confidence level to the information over time so that at some point, it ceases to use the information or informs the user that the information cannot be guaranteed.

Location, Trust, and Timestamp

When the location providers provide their information to the location service module 602, the information can include, in addition to the confidence and accuracy parameters, the actual location information in a known format, a trust parameter and a timestamp. The trust parameter is a metric that is assigned by the location service module 602 to one or more of the location providers and defines the trust that the location service module has for the particular location provider. The timestamp is a metric that defines the time when the location information was provided by the location provider. This assists the location service module 602 in ascertaining whether information is stale and might need refreshed.

Once the location service module 602 has all of the location information, it can then set about determining the location of the device.

Fig. 8 is a flow diagram that describes steps in a method of determining a device context which, in this example, is the device location. These steps are implemented by the location service module 602.

Step 800 gets the current device context. The current context can be the last calculated device context that is stored in the cache. Step 802 determines whether any of a number of context providers are available to provide context information. The location service module might do this by polling the context providers to ascertain which of the providers are active and valid. Step 804 determines whether

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000169

all of the providers are inactive. If all of the providers are inactive, step 806 decreases the confidence in the current context over time and uses the current context as the device context. Step 802 then continues to monitor for current active and valid providers. If step 804 determines that one or more of the context providers are active, then step 808 orders the active and valid context providers. When the location service module 602 orders or sorts the context providers, it does so as a function of the confidence of the provider's information and/or the trust that the location service module has in the location provider. This provides a ranked list of the location providers. Step 810 checks to ascertain whether the context information appears to be correct. For example, where the context is the location of the device, the location service module 602 might know that five seconds ago the current location was Redmond, Washington. Accordingly, location information that indicates that the current location is Beijing, China would be incorrect. Step 812 then determines whether any of the context information conflicts with either the device's current context or the context information from other providers. For example, the location service module 602 can compare the context information from each of the context providers with the information in the cache. If any of the information conflicts with the cached information, then the information from that context provider can be discarded. Similarly, if context information varies inordinately as between the context providers, then step 814 can select the context providers having a predefined level of trust and perhaps use just their information (Step 816). If there are no conflicts, then step 816 determines the current context based upon the information that is provided by all of the context providers. In the described embodiment, this step is implemented by using the information to map to a particular node in one or more of the hierarchical tree structures mentioned above. For example, the location of the device can be ascertained by mapping the

information to a particular node, and then completely traversing the tree structure until the root node is reached. Step 818 then updates the current context by perhaps writing it to the cache and returns to step 802 to determine the active and valid context providers.

The method described above provides a way for the location service module to receive location information and use only the location information that appears mostly likely to represent a current location. Conflicting information can be discounted or disregarded thereby assuring that only the most trusted, accurate and confident information is utilized to determine the device's current location.

Self Monitoring

In addition to the confidence and accuracy parameters, one or more of the location providers are advantageously programmed to self monitor their own operation for various irregularities that can occur. On the occurrence of an irregularity, the location providers are configured to notify the location service module 602. For example, the source from which the location provider receives its information may go off line for a period of time so that the location provider is unable to receive any additional information. In this case, the location provider might generate a "provider out" message and send it to the location service module 602. When the location service module 602 receives the "provider out" message, it can then take steps to exclude the location information from that provider from any location calculations that it performs. When the location provider's source comes back on line, it can generate a "provider on" message that informs the location service module 602 that it is able to transmit location information to the module. Of course, the location service module can be notified by the location providers on

the occurrence of other operational irregularities, with the above example constituting but one specific case.

Applications

Once the location service module 602 has determined the device's location, it can receive queries from one or more applications 608. In the Fig. 7 example, the applications include a web site application, an Outlook application, and a service discovery application. In the present example, the web site application can be any web site application that is capable of rendering location-specific services. For example, the user of the device 602 might access Amazon.com's web site to buy a favorite book. When the user purchases their book, Amazon.com must now compute the taxes that the user must pay. In this example, a script executing on Amazon.com's web site might query device 602 to learn of the user's location. In this particular example, the device might respond to the query by returning the state in which the user is making the purchase. Amazon.com can then assess the tax automatically. Amazon.com might also desire to know where the individual is located so that they can select an optimal shipping method (UPS or Express Mail). Depending on where the individual is located, one method may be preferred over the other. The Outlook application might query the location service module to ascertain the location because it (or the operating system, e.g. Windows) may change device settings based on the location of the computing device. For example, the user may print on one particular printer while at work, and another particular printer when at home. When the Outlook application determines that the user has gone home for the day, it can automatically change the device settings for the printer at the user's home. It might acquire the print settings from a personal places data store 714. Thus, the device is automatically configured for use depending on

the user's location. The service discovery application might query the device to determine its location so that it can render a particular service depending on where the device is located. For example, if the user asks the application to locate the nearest color printer, the service discovery application might query the location service module to ascertain the device's current location so that it can use this information and find the nearest color printer. Consider also that the Outlook application could configure itself email to a work location (when an individual is at work) or to a home location (when an individual is at home). In addition, the Outlook calendar can become location aware, e.g. when you change time zones, your appointments would show up in the proper time slots.

As one can imagine, the possibilities are seemingly endless. This functionality is made possible through the use of the Master World and one or more Secondary Worlds.

Application Program Interface/Events

In the described embodiment, the applications 608 communicate with the location service module 602 through one or more application program interfaces (APIs) and/or events. The applications can make function calls on the API to query the location service module as to its current location. Similarly, the applications can register for location notifications by using an events registration process. For example, an application may register for a notification when the user changes their location. Consider the case where an application requests to be notified when the user arrives at work or at home so that the application can change the device's configuration (such as printer configuration).

Fig. 9 is a flow diagram that describes steps in a method in accordance with the described embodiment. The steps that are described are implemented by device

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000173

600. Step 900 receives information that pertains to the current context of the device. In this particular example, a portion of the information is received from one or more context providers which, in this case, are location providers. Step 902 processes the information on and with the device to ascertain the current context of the device. In the illustrated example, the device maintains (or has access to) one or more of the Master World and one or more Secondary Worlds. When the device receives all of the location information, it maps the information to a particular node in the hierarchical tree structure that defines the Worlds. It then traverses the tree structures to ascertain the complete context (i.e. location) of the device. Step 904 receives calls from one or more applications that request information that pertains to the device's current context or location. In the illustrated example, the applications can call one or more APIs to request the information or the applications can register for event notifications. Step 906 then supplies the applications with at least some information that pertains to the current device location. As will be discussed below, a security policy or privacy policy can be applied to the information before it is returned to the applications.

Privacy Manager

In one embodiment, a privacy manager 704 (Fig. 7) is provided. Although the privacy manager is illustrated as being incorporated on the device, it could be implemented by a trusted entity such as a trusted server that is not part of the mobile computing device. The privacy manager can be implemented in any suitable hardware, software, firmware or combination thereof. In the illustrated example, the privacy manager comprises a software module that is incorporated in the mobile computing device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000174

The privacy manager 704 addresses privacy concerns that are associated with the information that is collected by the computing device. Specifically, the location service module can calculate detailed information regarding the location of the computing device. It may be desirable, in some instances, to filter the information that is provided to various applications. That is, it is entirely likely that a user may not want their specific location information provided to untrusted applications. In these instances a user might just desire for location service module 602 to inform such applications that the user is in the State of Washington.

Fig. 10 shows a flow diagram that describes steps in a privacy protection method in accordance with the described embodiment. These steps can be implemented by the privacy manager 704.

Step 1000 defines a plurality of privacy levels. Exemplary privacy levels are set forth in the table immediately below:

Privacy Level	**Approximate Scale**	**Level of Revelation**
0	-	No location information is returned
10	100,000 Km	Planet/Continent
20	1,000 Km	Country
30	100 Km	State
40	10-100 Km	City & County or Region
50	10 Km	Postal Code & Phone Area Code
60	1 Km	Full Postal Code (Zip + 4) & Area Code and Exchange
70	100 m	Phone Number & Building/Floor
80	10m	Room #

90	1m	Exact Coordinates

In the illustrated table, 10 different privacy levels are defined and each has an associated approximate scale. For example, a privacy level of 0 means that no location information is returned. A privacy level of 90 means that very detailed location information is returned.

Step 1002 assigns various privacy levels to the individual nodes in one or more hierarchical tree structures. For example, each node of the Master World and the Secondary Worlds can have a privacy level associated with it. The root node of the Master World tree structure might have a privacy level of 10, while the node that represents a current location in a Secondary World might have a privacy level of 90. Step 1004 determines the context of the computing device. In the present example, the context is the device location and examples of how this is done are given above. Individual applications that call the location service module can have privacy levels associated with them. These privacy levels can be assigned by individual users. For example, a trusted application might have a privacy level of 90, while an untrusted application might have a privacy level of 30. Step 1006 receives context queries from one or more applications. Here, an application calls the location service module 602 (Fig. 7) to ascertain the location of the device. Step 1008 determines the privacy level associated with the application or applications. For example, if a untrusted application calls to request location information, the privacy manager 704 would determine that the application has a privacy level of 30. The privacy manager then traverses (step 1010) one or more hierarchical tree structures to find a node with a corresponding privacy level so that it can select the information that is associated with that node. In this example, the traversal might involve jumping from the Secondary World to the Master World to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000176

find the node that corresponds to the state in which the user is located. Once the corresponding node is found, step 1012 returns the context information (e.g. location information) associated with the node. In this case, the location service module would inform the application that the user's location is the State of Washington.

As an example, consider the following: There is a web site that gives up to the minute weather of various locations. Accordingly, you might assign this web site a privacy level of 60 so that you can receive weather information for the geographical area that corresponds to your present full postal code. Another web site might be a corporation intranet web site that is a trusted web site. Thus, any applications associated with this web site can be assigned a privacy level of 90 so that you can give them precise location information as to your whereabouts.

Thus, in the present example, the computing device is able to determine the source (i.e. application) of its queries and modulate the information that is returned to the application as a function of the application's identity. The computing device is able to do this because it has access to the Master World and one or more Secondary Worlds. The above description constitutes but one exemplary way of accomplishing this feat.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000177

Location Beacons as a Location Provider

In one embodiment, one of the location providers comprises a location beacon that beacons or transmits information to enable a computing device to actively participate in its current context. Location beacons can comprise standalone devices that can be retrofitted onto existing infrastructures, e.g. a smoke detector or wall outlet in order for the device to have a power source.

Fig. 11 shows an exemplary beacon 1100 that is mounted on a structure 1102. Structure 1102 can be any suitable structure such as a wall in a conference room or public place, a smoke detector, an electrical socket and the like. In the described embodiment, the location beacons are small inexpensive devices that can be permanently mounted in special locations such as conference rooms, building lobbies, airport gates, public places and the like. The beacons announce the physical location in the form of an EID and/or LUID to all mobile devices that are within range, such as laptops, tablet PCs, hand held computers, mobile phones, wearable computers and the like.

In the described embodiment, the location beacon can identify the particular locations by beaconing standard information that will be understood by the mobile computing devices. In the present example, the beacons can transmit one or two location identifier pairs comprising an EID/URL pair and a LUID/URL pair. The beacon might also transmit multiple LUIDs. The EID and LUID give the present node location in the Master World and Secondary World respectively. The URLs provide a reachable location for the Master and Secondary Worlds. For example, the URL associated with the Secondary World can give a service location that the device can use to query information about the Secondary World so that it can derive its context and take advantage of resources or services that are associated with the nodes in the Secondary World.

The beacons can also transmit a digital signature that can be used by the device to ascertain that the beacon is valid and legitimate. Any suitable signature or verification method could be used. In addition, and of particular use in the context-aware environment, the beacon can be programmed to transmit code download pointers to devices within range. The code download pointers can enable the computing device to access software code that permits them to interact with their environment. Consider the following example: You walk into a conference room with your cell phone computing device and immediately a beacon in the conference room transmits your location in the form of an EID/URL pair and a LUID/URL pair. Your device uses the information pairs to ascertain its location in the Master and Secondary Worlds as described above. The beacon also transmits a code download pointer that points to software code that enables you to operate the video projector in the conference room using your hand-held cellular phone. In this manner, the beacon serves as more than just a location beacon—it permits you, through your computing device, to actively participate in your surroundings.

The beacons can transmit the information in any suitable way, e.g. wireless methods including infrared and radio frequencies. In one embodiment, Bluetooth short range radio frequency communication can be used to provide a low cost, low power alternative.

Conclusion

The embodiments described above provide a uniform, standardized way to enhance the world of context aware computing. The embodiments provide a way for individuals to uniquely experience the world around them by ascertaining their location in the world in a standard way. The embodiments also provide a way for service providers to uniquely position their goods and services in a manner that is

sensitive to and appreciates the contexts, e.g. locations, of various consumers of the goods and services. Unique and useful architectures and data structures are employed to facilitate the user's computing experience and provide for an individual-centric experience.

Although the invention has been described in language specific to structural features and/or methodological steps, it is to be understood that the invention defined in the appended claims is not necessarily limited to the specific features or steps described. Rather, the specific features and steps are disclosed as preferred forms of implementing the claimed invention.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000180

CLAIMS

1. A computing device comprising:

one or more processors;

memory operably associated with the one or more processors; and

a context service module loadable in the memory and executable by the one or more processors to receive context information from one or more context providers and process the information to determine a current device context.

2. The computing device of claim 1 embodied as a mobile computing device.

3. The computing device of claim 1 embodied as a desktop computing device.

4. The computing device of claim 1, wherein the device comprises cache memory that maintains a current device context.

5. The computing device of claim 1, wherein the context service module is configured to automatically receive the context information from the context providers.

6. The computing device of claim 1, wherein the context service module is configured to automatically receive the context information from the context providers and, as the context of the computing device changes, process the information to determine a new current device context.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000181

7. The computing device of claim 1, wherein the context service module is configured to request context information from one or more of the context providers.

8. The computing device of claim 1, wherein the context service module is configured to provide information concerning a current device context to one or more applications.

9. The computing device of claim 8, wherein the context service module is configured to receive a request from the one or more applications that request the current device context information.

10. The computing device of claim 1 further comprising a context provider interface associated with the context service module, the context provider interface comprising a common interface that is capable is receiving context information from multiple different context providers.

11. The computing device of claim 1 further comprising one or more application program interfaces (APIs) operably associated with the context service module, the one or more APIs being callable by one or more applications to acquire information concerning the current device context.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000182

12. The computing device of claim 1 further comprising one or more events that are configured for use by one or more applications so that the applications can register to receive information concerning a current device context responsive to the occurrence of one or more events.

13. A computing device comprising:

one or more processors;

memory operably associated with the one or more processors; and

a location service module loadable in the memory and executable by the one or more processors to receive location information from one or more location providers and process the information to determine a current device location.

14. The computing device of claim 13 embodied as a mobile computing device.

15. The computing device of claim 13 embodied as a desktop computing device.

16. The computing device of claim 13, wherein the location service module is configured to automatically receive the location information from the location providers.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000183

17. The computing device of claim 13, wherein the location service module is configured to automatically receive the location information from the location providers and, as the location of the computing device changes, process the information to determine a new current device location.

18. The computing device of claim 13, wherein the location service module is configured to request location information from one or more of the location providers.

19. The computing device of claim 13, wherein the location service module is configured to provide information concerning a current device location to one or more applications.

20. The computing device of claim 13, further comprising a location provider interface associated with the location service module, the location provider interface comprising a common interface that is capable is receiving location information from multiple different location providers.

21. The computing device of claim 13, further comprising one or more application program interfaces (APIs) operably associated with the location service module, the one or more APIs being callable by one or more applications to acquire information concerning the current device location.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000184

22. The computing device of claim 13, further comprising one or more events that are configured for use by one or more applications so that the applications can register to receive information concerning a current device location responsive to the occurrence of one or more events.

23. A computing device comprising:

one or more processors;

one or more computer-readable media;

at least one hierarchical tree structure resident on the media and comprising multiple nodes each of which represents a geographical division of the Earth; and

a location service module loadable in the memory and executable by the one or more processors to receive location information from one or more location providers and process the information to determine a current device location that comprises a node of the hierarchical tree structure.

24. The computing device of claim 23 embodied as a mobile computing device.

25. The computing device of claim 23 embodied as a desktop computing device.

26. The computing device of claim 23, wherein the location service module is configured to determine the current device location by traversing multiple nodes of the hierarchical tree.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000185

27. The computing device of claim 23 further comprising another hierarchical tree structure resident on the media and comprising multiple nodes each of which represents a physical or logical entity, the location service module being configured to determine the current device location by traversing multiple nodes of the hierarchical trees.

28. The computing device of claim 23 further comprising:

another hierarchical tree structure resident on the media and comprising multiple nodes each of which represents a physical and/or logical entity; and

a link between nodes on the different trees,

the location service module being configured to determine the current device location by traversing multiple nodes of the hierarchical trees.

29. The computing device of claim 23, wherein the location service module is configured to provide information concerning a current device location to one or more applications for rendering location-specific services.

30. The computing device of claim 29, wherein the location service module is configured to receive calls from the one or more applications that request the information concerning the current device location.

31. The computing device of claim 29, wherein the location service module is configured to register one or more applications for notification of information concerning a current device location upon the occurrence of a definable event.

32. A computing device comprising:

one or more processors;

one or more computer-readable media;

at least one hierarchical tree structure resident on the media and comprising multiple nodes each of which represents a physical or logical entity; and

a location service module loadable in the memory and executable by the one or more processors to receive location information from one or more location providers and process the information to determine a current device location that comprises a node of the hierarchical tree structure.

33. The device of claim 32 embodied as a mobile computing device.

34. The device of claim 32 embodied as a desktop computing device.

35. The device of claim 32, wherein the hierarchical tree structure comprises an organization specific tree structure that has context only within a particular organization.

36. The device of claim 32 further comprising one or more services associated with one or more nodes of the hierarchical tree, the device comprising an application that is executing on the one or more processors to traverse the hierarchical tree to located the one or more service.

37. A location-aware computing system comprising:

one or more computing devices;

each computing device having a software architecture comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000187

a location provider interface that is configured to receive location information;

a location service module communicatively associated with the location provider interface and configured to receive the location information from the multiple different location providers and process the information to ascertain a current device location; and

one or more application program interfaces (API) or events associated with the location service module and defining a mechanism through which information concerning a current device location can be provided to one or more applications that are configured to provide location-specific services.

38. The location-aware computing system of claim 37, wherein at least one of the one or more computing devices comprises a mobile computing device.

39. The location-aware computing system of claim 37, wherein at least one of the one or more computing devices comprises a desktop computing device.

40. The location-aware computing system of claim 37, wherein the location provider interface is configured to receive location information from multiple different location providers.

41. The location-aware computing system of claim 37, wherein the location provider interface is configured to receive location information from multiple different location providers, the location service module being configured to poll one or more of the location providers so that the polled location provider can provide location information to the location provider interface.

42. The location-aware computing system of claim 37 further comprising:

one or more computer-readable media; and

a hierarchical tree structure resident on the media and comprising multiple nodes each of which represent geographical divisional of the Earth, the location service module being configured to process the information to ascertain a current device location that comprises one node on the hierarchical tree structure.

43. The location-aware computing system of claim 42, wherein the location service module is configured to ascertain a current device location by traversing the hierarchical tree structure to a root of the tree structure.

44. The location-aware computing system of claim 42 further comprising one or more additional hierarchical tree structures resident on the media and comprising multiple nodes each of which represent physical or logical entities, the additional hierarchical trees each having at least one node that is linked with the first-mentioned hierarchical tree structure, the location service module being configured to ascertain a current device location by traversing at least one of the additional hierarchical trees and the first-mentioned hierarchical tree.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000189

45. A computer-implemented method of determining a computing device context comprising:

receiving, with a computing device, information that pertains to a current context of the device;

processing the information on and with the device to ascertain the current context of the computing device.

46. The computer-implemented method of claim 45, wherein said receiving comprises receiving the information with a mobile computing device.

47. The computer-implemented method of claim 45, wherein said receiving comprises receiving the information with a hand-held computing device.

48. The computer-implemented method of claim 45, wherein said receiving comprises receiving the information with a desktop computing device.

49. The computer-implemented method of claim 45, wherein the current context is the device location.

50. The computer-implemented method of claim 49, wherein the receiving of the information comprise receiving information from multiple different location providers.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000190

51. The computer-implemented method of claim 50, wherein the information that is received from the multiple different location providers is received in different forms.

52. The computer-implemented method of claim 50, wherein the receiving of the information comprises receiving the information through a common interface.

53. The computer-implemented method of claim 45, wherein the receiving of the information comprise receiving information from multiple different context providers.

54. The computer-implemented method of claim 53, wherein the information that is received from the multiple different location providers is received in different forms.

55. The computer-implemented method of claim 53, wherein the receiving of the information comprises receiving the information through a common interface.

56. The computer-implemented method of claim 45 further comprising receiving a request from an application for information that pertains to the current context of the mobile computing device and returning at least some information to the application.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000191

57. The computer-implemented method of claim 45 further comprising receiving at least one event registration from one or more applications that pertains to an event for which the application is to receive information pertaining to the current context of the computing device, and returning information pertaining to the current context of the computing device to the one or more applications responsive to the occurrence of an event.

58. One of more computer-readable media having computer-readable instructions thereon which, when executed by a computing device, cause the computing device to:

receive information that pertains to a current location of the device, the information being received from multiple different location providers; and

process the information to map the information to a node of a hierarchical tree structure that comprises multiple nodes that represent either (1) geographical divisions of the Earth or (2) physical or logical entities; and

traverse the hierarchical tree structure to ascertain the current device location.

59. A computer-implemented method of determining the location of a hand-held, mobile computing device comprising:

maintaining a hierarchical tree structure on the mobile computing device, the tree structure comprising multiple nodes each of which represent geographical divisions of the Earth;

receiving information from multiple different location providers that describe aspects of a current device location;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000192

processing the information with the mobile device to ascertain a node on the tree structure that likely constitutes a current device location; and

traversing at least one other node of the tree structure to ascertain additional location information that is associated with the current device location.

60. The computer-implemented method of claim 59, wherein:

the maintaining of the hierarchical tree structure comprises maintaining multiple hierarchical tree structures that are linked with one another; and

the traversing comprises traversing the multiple hierarchical tree structures to ascertain the additional location information.

61. The computer-implemented method of claim 60, wherein one tree structure comprises a unique representation of a physical or logical entity.

62. The computer-implemented method of claim 59 further comprising receiving a request from one or more applications for information that pertains to a current device location and providing the one or more applications with the information that pertains to the current device location.

63. The computer-implemented method of claim 62, wherein the receiving of the request comprises receiving a call to an application program interface (API).

64. The computer-implemented method of claim 62, wherein the receiving of the request comprises receiving an event registration.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000193

65. The computer-implemented method of claim 62 further comprising applying a security policy to the information that pertains to the current device location before providing the information to the one or more applications.

66. The computer-implemented method of claim 59 further comprising before processing the information to ascertain a node, resolving any conflicts that might exist between information that is received from different location providers.

67. One or more computer-readable media having computer-readable instructions thereon which, when executed by a computing device, cause the computing device to:

maintain or access a hierarchical tree structure on or with the computing device, the tree structure comprising multiple nodes each of which represent geographical divisions of the Earth;

receive information from multiple different location providers that describe aspects of a current device location;

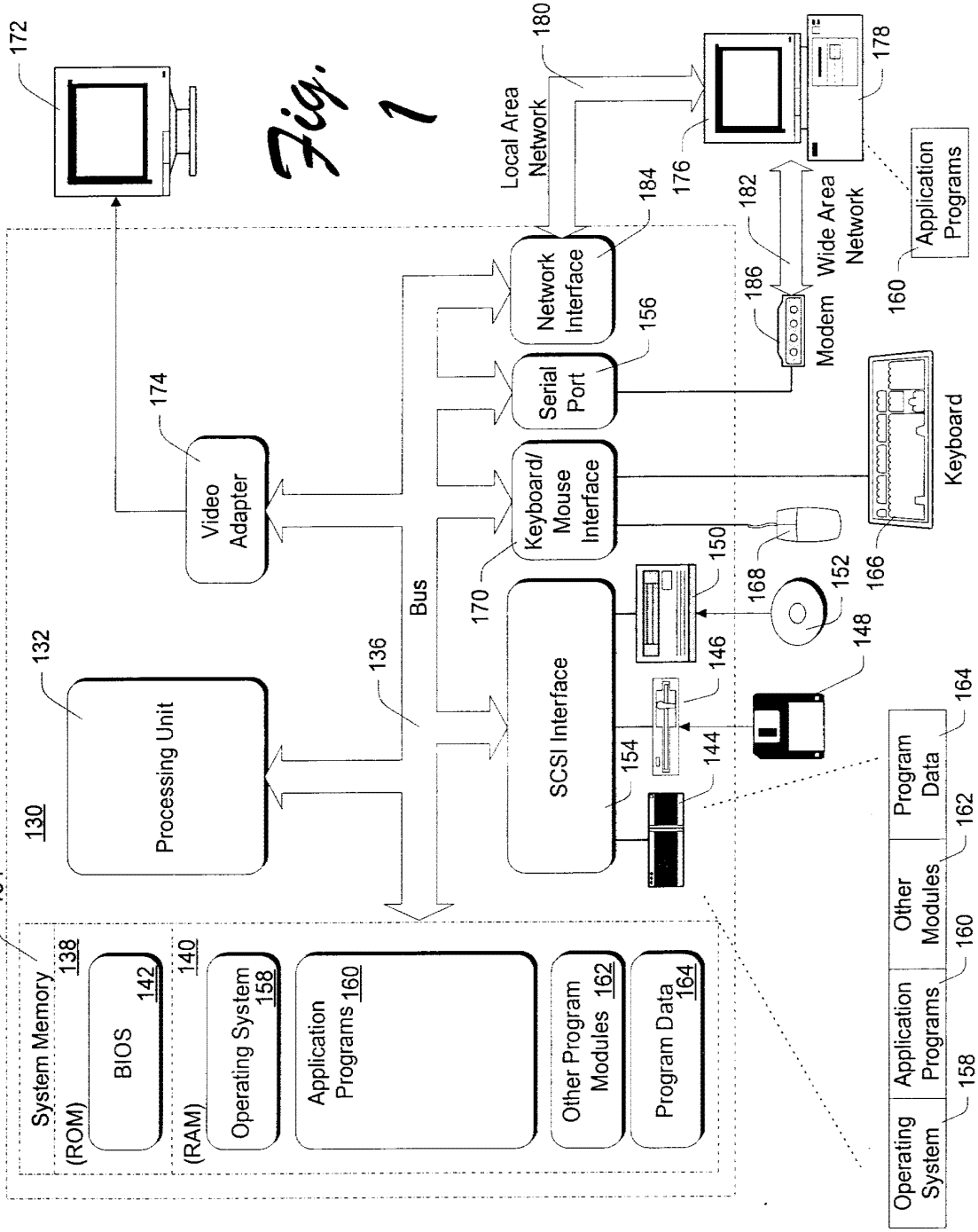
process the information with the device to ascertain a node on the tree structure that likely constitutes a current device location;

traverse at least one other node of the tree structure to ascertain additional location information that is associated with the current device location;

receive one or more calls from one or more applications for information that pertains to a current device location, the applications being configured to render location-specific information; and

supply at least some information that pertains to the current device location to the one or more applications.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000194


172
Fig. 1
Local Area Network
180
178
Application Programs
160
182
Wide Area Network
176
184
Network Interface
186
Modem
156
Serial Port
174
Video Adapter
Keyboard/ Mouse Interface
Keyboard
Bus
170
168
166
150
152
148
132
Processing Unit
136
SCSI Interface
146
154
144
130
134
System Memory
138
(ROM)
BIOS
142
140
(RAM)
Operating System
158
Application Programs
160
Other Program Modules
162
Program Data
164
Operating System
158
Application Programs
160
Other Modules
162
Program Data
164

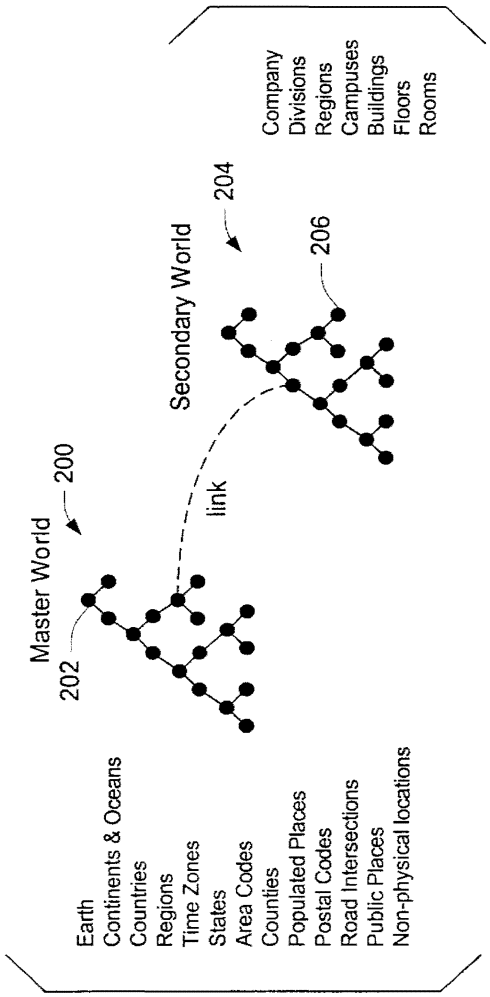

Master World
200
202
Earth
Continents & Oceans
Countries
Regions
Time Zones
States
Area Codes
Counties
Populated Places
Postal Codes
Road Intersections
Public Places
Non-physical locations
link
Secondary World
204
206
Company
Divisions
Regions
Campuses
Buildings
Floors
Rooms

Fig. 2

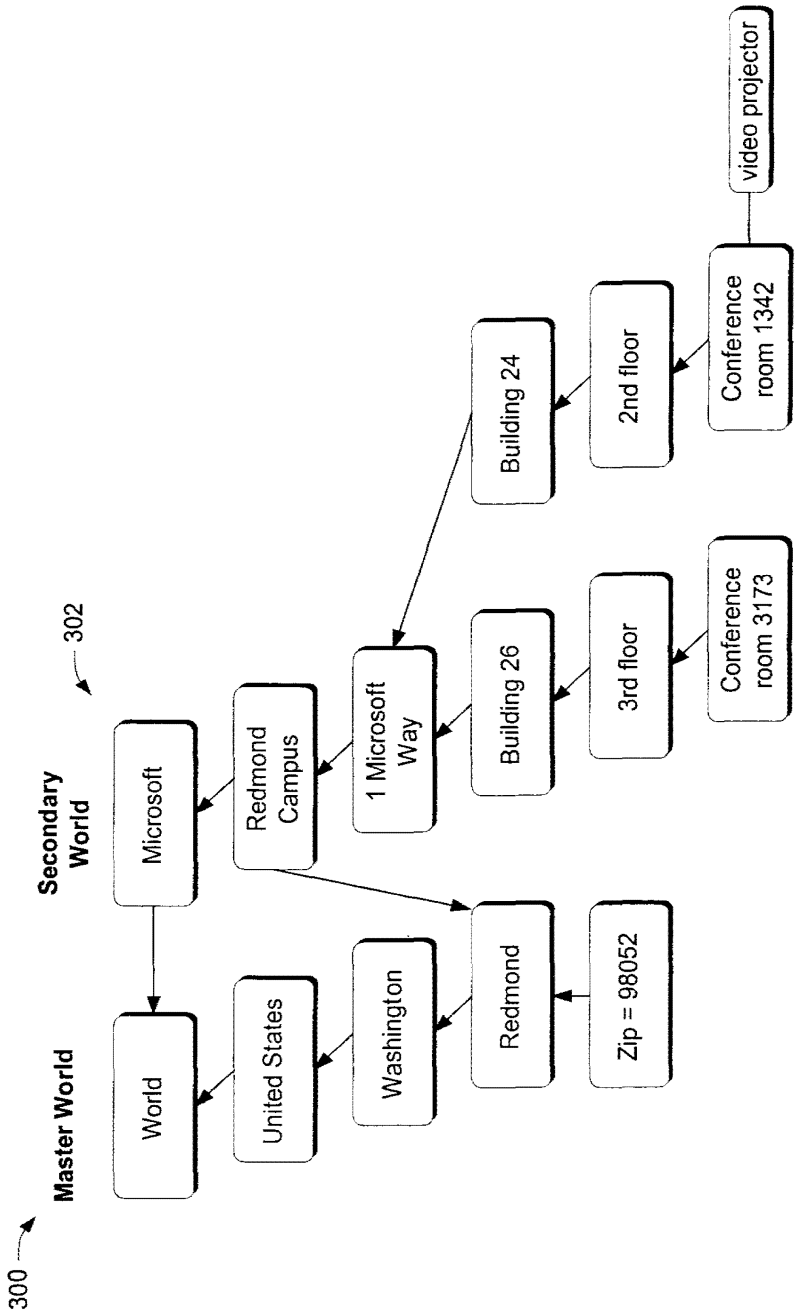

300
Master World
Secondary World
302
World
Microsoft
United States
Redmond Campus
Washington
1 Microsoft Way
Redmond
Building 26
Zip = 98052
Building 24
3rd floor
2nd floor
Conference room 3173
Conference room 1342
video projector

Fig. 3

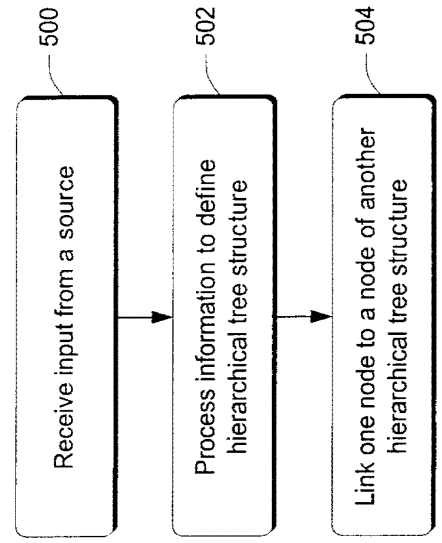

500
Receive input from a source
502
Process information to define hierarchical tree structure
504
Link one node to a node of another hierarchical tree structure

Fig. 5

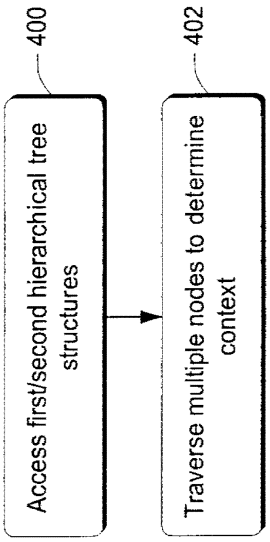

400
Access first/second hierarchical tree structures
402
Traverse multiple nodes to determine context

Fig. 4

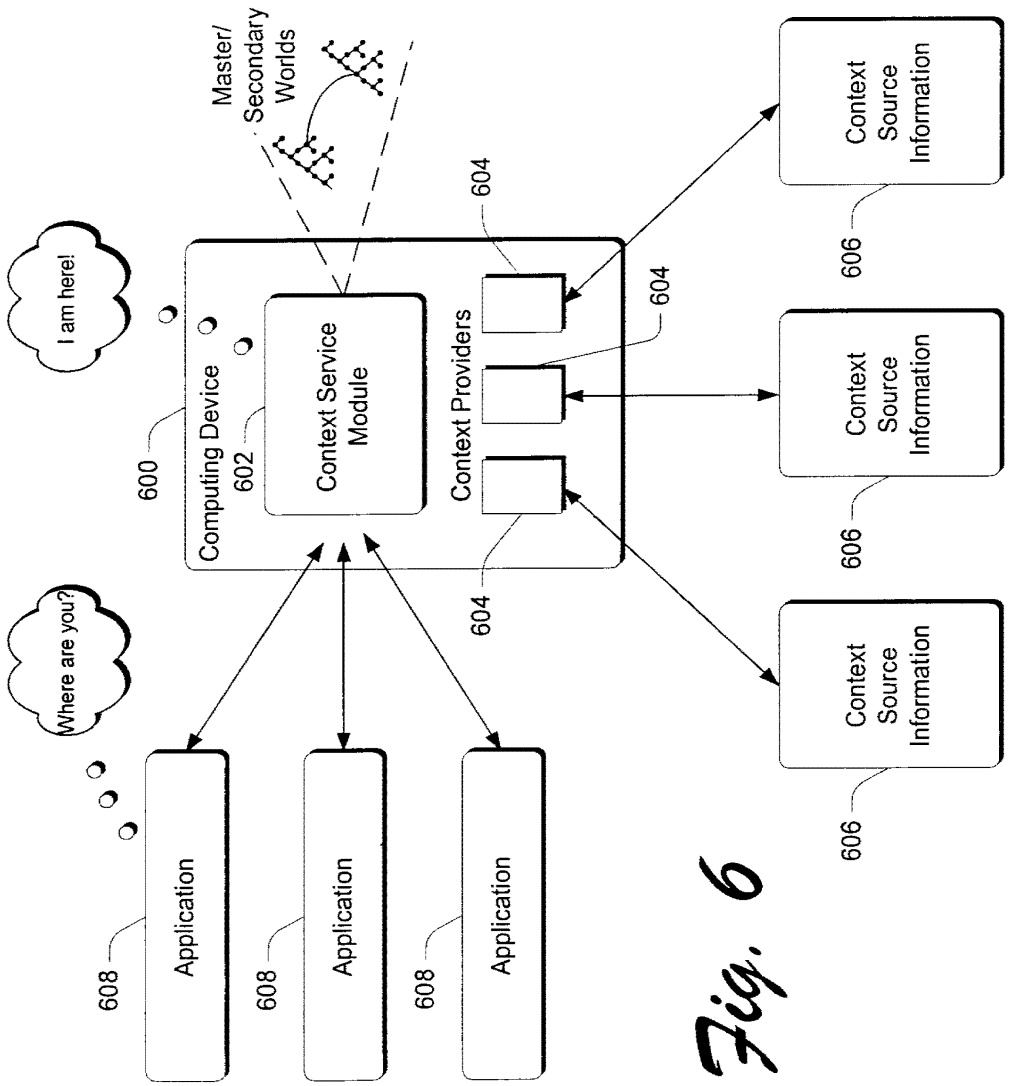

Master/
Secondary
Worlds
I am here!
Where are you?
Computing Device
600
Context Service
Module
602
Context Providers
604
604
604
Context
Source
Information
606
Context
Source
Information
606
Context
Source
Information
606
Application
608
Application
608
Application
608

Fig. 6

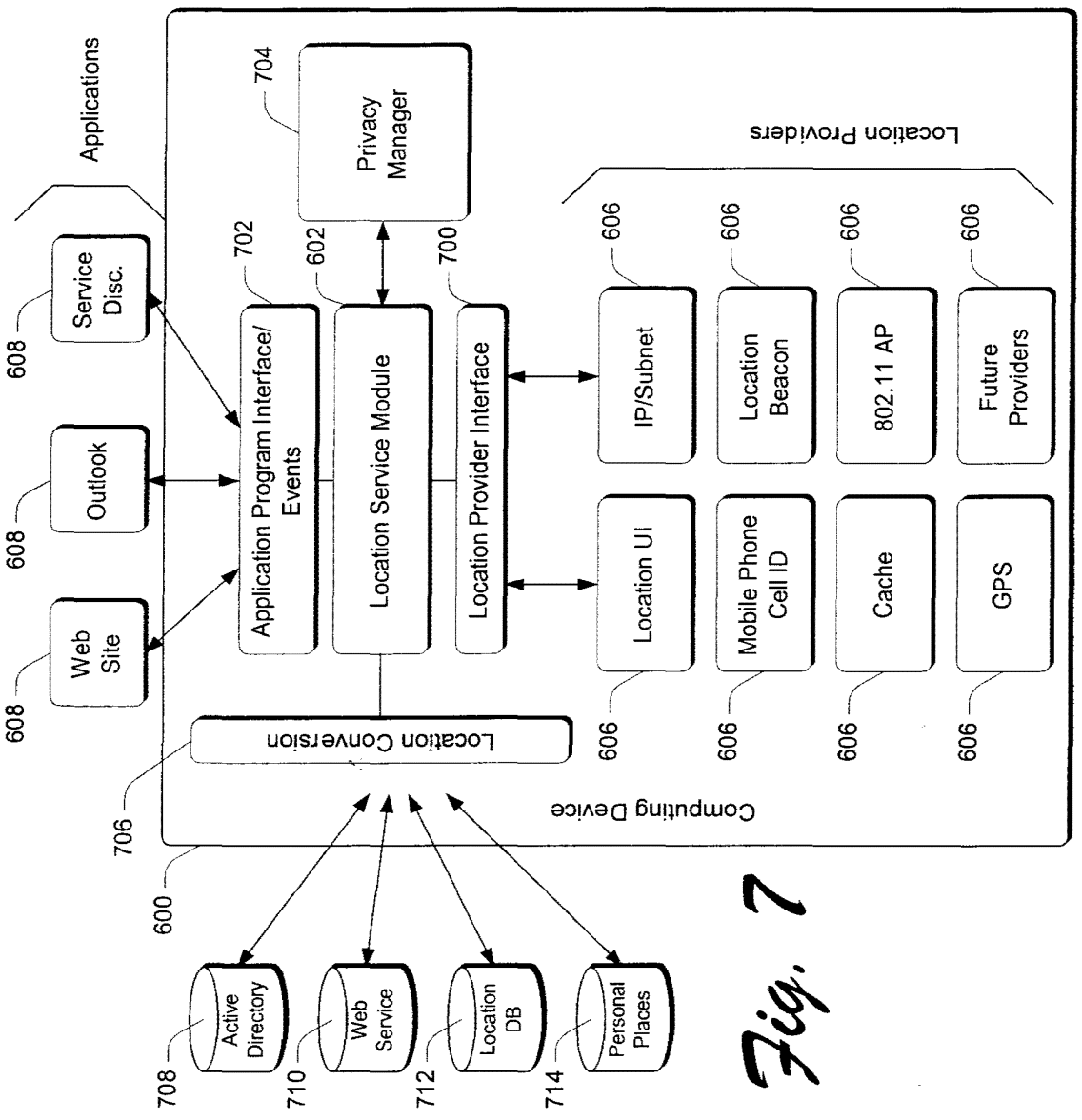

Applications
Service Disc.
Outlook
Web Site
608
608
608
Application Program Interface/ Events
Location Service Module
Location Provider Interface
Location Conversion
Privacy Manager
702
602
700
704
706
600
Computing Device
Location Providers
IP/Subnet
Location Beacon
802.11 AP
Future Providers
Location UI
Mobile Phone Cell ID
Cache
GPS
606
606
606
606
606
606
606
606
Active Directory
Web Service
Location DB
Personal Places
708
710
712
714

Fig. 7

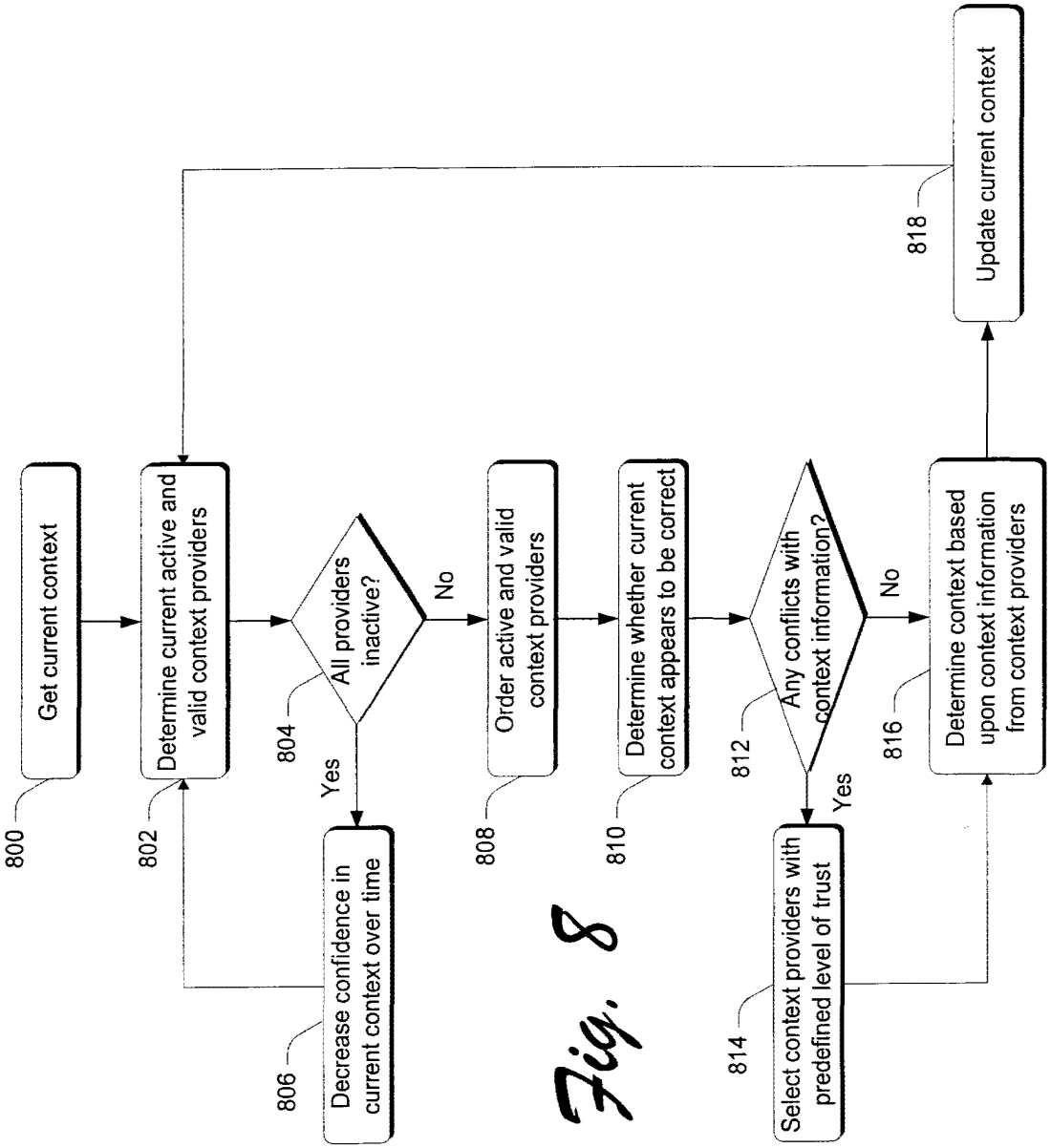

Get current context
800
Determine current active and valid context providers
802
All providers inactive?
804
Yes
No
Decrease confidence in current context over time
806
Order active and valid context providers
808
Determine whether current context appears to be correct
810
Any conflicts with context information?
812
Yes
No
Select context providers with predefined level of trust
814
Determine context based upon context information from context providers
816
Update current context
818

Fig. 8

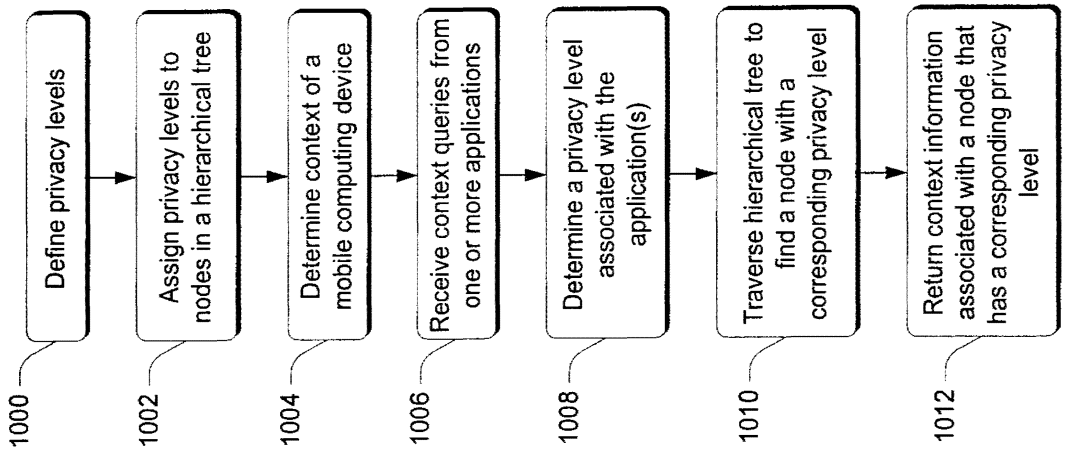


Fig. 10

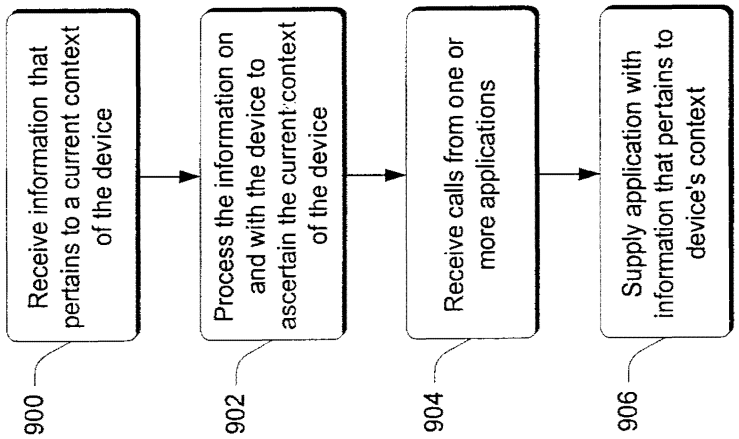


Fig. 9

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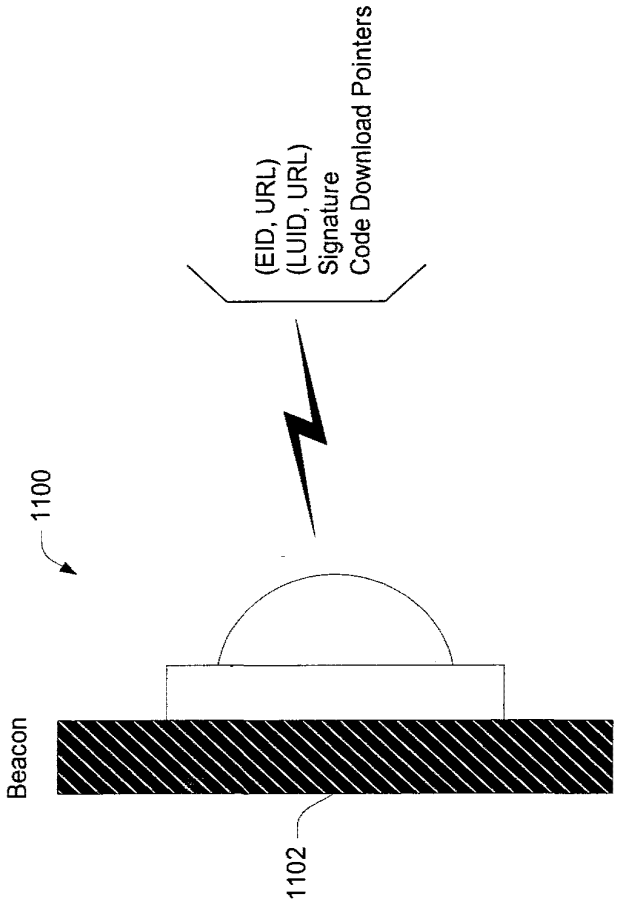

(EID, URL)
(LUID, URL)
Signature
Code Download Pointers
1100
Beacon
1102

Fig. 11

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[Continued on next page]

(54) Title: CONTEXT BASED SEARCH ARRANGEMENT FOR MOBILE DEVICES

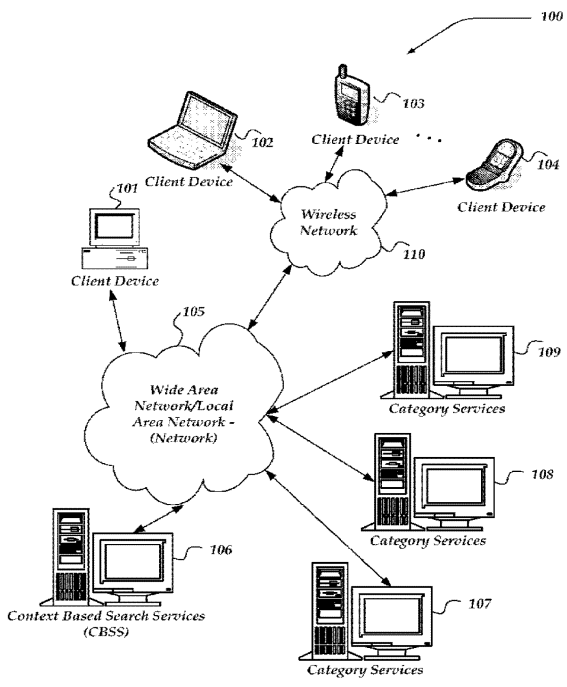


FIG. 1

(57) Abstract: Embodiments are directed towards managing mobile searches by enabling a user to indicate a context of a search query to narrow a scope of the search. A user may fine tune a search by selecting from a plurality of pre-defined contexts for which to perform a search query. In one embodiment, the user may combine two or more pre-defined contexts to create more complex contexts for use in customized context search queries. The user also enters one or more search terms. A subset of databases is selected from a plurality of databases associated with different subject categories. The subset of databases is selected as predefined by an operator based on the user's context, and searched based on the user's entered search terms and selected context. Results are then aggregated and provided to the user. Results may be rank ordered based on the given user context or user's previous search behavior.

WO 2010/016989 A2

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CONTEXT BASED SEARCH ARRANGEMENT FOR MOBILE DEVICES

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority from U.S. Patent Application No. 12/188,178, filed on August 7, 2008, which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

The present invention relates generally to managing searches over a network and, more particularly, but not exclusively to providing a context based search capability for at least mobile devices.

BACKGROUND

Tremendous changes have been occurring in the Internet that influence our everyday lives. For example, in today's society, mobile computing devices are becoming increasingly more common. Many mobile computing devices, such as personal digital assistants, cellular phones, and the like, may be employed to communicate voice messages, emails, text messages, and so forth, as well as to search for information over the Internet. It is not uncommon to see a person on a bus, train, or even a boat, to be using their mobile devices to search for merchants, restaurants, music, businesses, or the like.

However, performing a search query for user relevant information still remains cumbrous. Often, the user might have to perform several search queries to obtain relevant search results. Multiple searches may be even more cumbersome when the search is performed using a mobile device that may include small screens, small keyboards, and/or other input mechanisms as opposed to traditional desktop screens, keyboards, and/or other desktop input mechanisms. Irrelevant search results mean that the user is less likely to find what they are looking for, which in turn may translate into lost opportunities for merchants, or other businesses, to prosper from the user. Where the searches involve social networking activities, such as searches for family, friends, jobs, images from friends or family, online dating activities, or the like, the frustration might further result in lost meeting opportunities, lost job opportunities, lost friendships, or the like.

BRIEF DESCRIPTION OF THE DRAWINGS

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Non-limiting and non-exhaustive embodiments of the present invention are described with reference to the following drawings. In the drawings, like reference numerals refer to like parts throughout the various figures unless otherwise specified.

For a better understanding of the present invention, reference will be made to the following Detailed Description, which is to be read in association with the accompanying drawings, wherein:

FIGURE 1 is a system diagram of one embodiment of an environment in which the invention may be practiced;

FIGURE 2 shows one embodiment of a client device that may be included in a system implementing the invention;

FIGURE 3 shows one embodiment of a network device that may be included in a system implementing the invention;

FIGURE 4 illustrates a logical flow diagram generally showing one embodiment of a process for managing contextual based searches useable on a mobile device; and

FIGURES 5-9 illustrate various embodiments of user interfaces useable for inputting and/or displaying results for contextual based searches useable on a mobile device.

DETAILED DESCRIPTION

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, which form a part hereof, and which show, by way of illustration, specific embodiments by which the invention may be practiced. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Among other things, the present invention may be embodied as methods or devices. Accordingly, the present invention may take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment combining software and hardware aspects. The following detailed description is, therefore, not to be taken in a limiting sense.

Throughout the specification and claims, the following terms take the meanings explicitly associated herein, unless the context clearly dictates otherwise. The phrase "in one

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embodiment" as used herein does not necessarily refer to the same embodiment, though it may. As used herein, the term "or" is an inclusive "or" operator, and is equivalent to the term "and/or," unless the context clearly dictates otherwise. The term "based on" is not exclusive and allows for being based on additional factors not described, unless the context clearly dictates otherwise. In addition, throughout the specification, the meaning of "a," "an," and "the" include plural references. The meaning of "in" includes "in" and "on."

As used herein, the term "client" refers to a computer's general role as a requester of data or services, and the term "server" refers to a computer's role as a provider of data or services. In general, it is possible that a computer can act as a client, requesting data or services in one transaction and act as a server, providing data or services in another transaction, thus changing its role from client to server or vice versa.

The following briefly describes the embodiments of the invention in order to provide a basic understanding of some aspects of the invention. This brief description is not intended as an extensive overview. It is not intended to identify key or critical elements, or to delineate or otherwise narrow the scope. Its purpose is merely to present some concepts in a simplified form as a prelude to the more detailed description that is presented later.

Briefly stated, embodiments are directed towards enabling a user to manage searches by enabling a search user to indicate a context, or intent, of a search query. In particular, because mobile devices often have limited screen display sizes, and/or restricted network bandwidth, a user may fine tune a search to attempt to overcome such limitations by selecting from a plurality of pre-defined contexts for which to perform a search query. By narrowing the search to pre-defined contexts, processing bandwidth may also be managed. In one embodiment, the user may combine two or more pre-defined contexts to create more complex contexts for use in customized context search queries.

The user may further enter one or more search terms, in addition to selecting a context. A subset of databases is selected from a plurality of databases that are each associated with a different defined subject category. In one embodiment, the plurality of different subject categories include but are not limited to finance, shopping, news, web, blogs, user answers, community, or the like. The subset of databases is selected from the set that is predefined by operators based on the user's context for the search. The subset of databases is

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then searched based on the user's entered search terms and selected context. Results are then aggregated and provided to the user. In one embodiment, the results are rank ordered based on the given user context or the user's previous search behavior..

Thus, by employing the user's selected context, searches may be focused to minimize search time, and an amount of search results that may span contexts for which the user may not be interested. Thus, the present invention is directed toward employing a user's selected context to provide the user's intent for a search. The user's context provides an intent that may then be employed to generate a rule set which may map a user's context and other relevant properties for use in performing a search. A result of the search may then provide more space which is more likely to have items relevant to the user by ruling out results from various database sources which are less likely to have relevant items satisfying the intent of the user's search.

Moreover, using the user's context for mobile device searches is further directed towards minimizing processing bandwidth and screen real estate required for providing search results to the user.

Illustrative Operating Environment

FIGURE 1 shows components of one embodiment of an environment in which the invention may be practiced. Not all the components may be required to practice the invention, and variations in the arrangement and type of the components may be made without departing from the spirit or scope of the invention. As shown, system 100 of FIGURE 1 includes local area networks ("LANs") / wide area networks ("WANs") - (network) 105, wireless network 110, client devices 101-104, Context Based Search Services (CBSS) 106, and category services 107-109.

One embodiment of a client device usable as one of client devices 101-104 is described in more detail below in conjunction with FIGURE 2. Generally, however, client devices 102-104 may include virtually any mobile computing device capable of receiving and sending a message over a network, such as wireless network 110, or the like. Such devices include portable devices such as, cellular telephones, smart phones, display pagers, radio frequency (RF) devices, infrared (IR) devices, Personal Digital Assistants (PDAs), handheld computers, laptop computers, wearable computers, tablet computers, integrated devices

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combining one or more of the preceding devices, or the like. Client device 101 may include virtually any computing device that typically connects using a wired communications medium such as personal computers, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, or the like. In one embodiment, one or more of client devices 101-104 may also be configured to operate over a wired and/or a wireless network.

Client devices 101-104 typically range widely in terms of capabilities and features. For example, a cell phone may have a numeric keypad and a few lines of monochrome LCD display on which only text may be displayed. In another example, a web-enabled client device may have a touch sensitive screen, a stylus, and several lines of color LCD display in which both text and graphics may be displayed.

A web-enabled client device may include a browser application that is configured to receive and to send web pages, web-based messages, or the like. The browser application may be configured to receive and display graphics, text, multimedia, or the like, employing virtually any web based language, including a wireless application protocol messages (WAP), or the like. In one embodiment, the browser application is enabled to employ Handheld Device Markup Language (HDML), Wireless Markup Language (WML), WMLScript, JavaScript, Standard Generalized Markup Language (SMGL), HyperText Markup Language (HTML), eXtensible Markup Language (XML), or the like, to display and send information.

Client devices 101-104 also may include at least one other client application that is configured to receive content from another computing device. The client application may include a capability to provide and receive textual content, multimedia information, or the like. The client application may further provide information that identifies itself, including a type, capability, name, or the like. In one embodiment, client devices 101-104 may uniquely identify themselves through any of a variety of mechanisms, including a phone number, Mobile Identification Number (MIN), an electronic serial number (ESN), mobile device identifier, network address, or other identifier. The identifier may be provided in a message, or the like, sent to another computing device.

Client devices 101-104 may also be configured to communicate a message, such as through email, Short Message Service (SMS), Multimedia Message Service (MMS),

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instant messaging (IM), internet relay chat (IRC), Mardam-Bey's IRC (mIRC), Jabber, or the like, between another computing device. However, the present invention is not limited to these message protocols, and virtually any other message protocol may be employed.

Client devices 101-104 may further be configured to include a client application that enables the user to log into a user account that may be managed by another computing device, such as CBSS 106, or the like. Such user account, for example, may be configured to enable the user to receive emails, send/receive IM messages, SMS messages, access selected web pages, or participate in any of a variety of other social networking activity. However, managing of messages or otherwise participating in other social activities may also be performed without logging into the user account.

A user of client devices 101-104 may employ any of a variety of client applications to access content, read web pages, receive/send messages, or the like. In one embodiment, each of client devices 101-104 may include an application, or be associated with an application that resides on the client device or another network device, that is useable to perform and/or otherwise manage contextual based searches. Such contextual based searching enables a user of one of client devices 101-104 to select from a pre-defined plurality of contexts from which to perform a search. The user may select from such contexts including, but not limited to news, fun, location, shopping, images, consumables, eating, education, or the like. In one embodiment, the user may select to perform a search over all of the plurality of contexts by selecting a default context of all. In one embodiment, the user may also employ an interface to the application to combine two or more pre-defined contexts to create a 'new' context. The user may also provide one or more terms for use in the contextual search query. Submitting the terms and the context enables the user to narrow the focus of the searches, returning information that is more likely to be directed towards an intent or context of the user's search query.

Wireless network 110 is configured to couple client devices 102-104 with network 105. Wireless network 110 may include any of a variety of wireless sub-networks that may further overlay stand-alone ad-hoc networks, or the like, to provide an infrastructure-oriented connection for client devices 102-104. Such sub-networks may include mesh networks, Wireless LAN (WLAN) networks, cellular networks, or the like.

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Wireless network 110 may further include an autonomous system of terminals, gateways, routers, or the like connected by wireless radio links, or the like. These connectors may be configured to move freely and randomly and organize themselves arbitrarily, such that the topology of wireless network 110 may change rapidly.

Wireless network 110 may further employ a plurality of access technologies including 2nd (2G), 3rd (3G), 4th (4G) generation radio access for cellular systems, WLAN, Wireless Router (WR) mesh, or the like. Access technologies such as 2G, 2.5G, 3G, 4G, and future access networks may enable wide area coverage for client devices, such as client devices 102-104 with various degrees of mobility. For example, wireless network 110 may enable a radio connection through a radio network access such as Global System for Mobile communication (GSM), General Packet Radio Services (GPRS), Enhanced Data GSM Environment (EDGE), Wideband Code Division Multiple Access (WCDMA), Bluetooth, or the like. In essence, wireless network 110 may include virtually any wireless communication mechanism by which information may travel between client devices 102-104 and another computing device, network, or the like.

Network 105 is configured to couple CBSS 106, category services 107-109, and client device 101 with other computing devices, including through wireless network 110 to client devices 102-104. Network 105 is enabled to employ any form of computer readable media for communicating information from one electronic device to another. Also, network 105 can include the Internet in addition to local area networks (LANs), wide area networks (WANs), direct connections, such as through a universal serial bus (USB) port, other forms of computer-readable media, or any combination thereof. On an interconnected set of LANs, including those based on differing architectures and protocols, a router acts as a link between LANs, enabling messages to be sent from one to another. Also, communication links within LANs typically include twisted wire pair or coaxial cable, while communication links between networks may utilize analog telephone lines, full or fractional dedicated digital lines including T1, T2, T3, and T4, Integrated Services Digital Networks (ISDNs), Digital Subscriber Lines (DSLs), wireless links including satellite links, or other communications links known to those skilled in the art. Furthermore, remote computers and other related electronic devices could be remotely connected to either LANs or WANs via a modem and

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temporary telephone link. In essence, network 105 includes any communication method by which information may travel between computing devices.

Category services 107-109 represent a plurality of network devices that may provide access to a variety of different content and/or services. In one embodiment, category services 107-109 might represent websites that provide different educational services, financial services, blogs, location services, music services, online dating services, maps, images, job services, games, or the like. Category services 107-109 may also include sites that enable users to provide Answers to various questions that may be posed by other users. Thus, in at least one embodiment, at least some of the category services include online social networking services. However, the category of services available through category services 107-109 may also include merchant sites, health sites, and/or virtually any other type or category of information for which a user might seek over a network.

In one embodiment, category services 107-109 may each include a database, data store, or the like, that may be searched to identify information for a given category managed by category services 107-109. However, the invention is not limited to this configuration. For example, in another embodiment, CBSS 106 might include a capability to perform searches, such as using a web crawler, spider, robots, or the like, to search category services 107-109 and generate a plurality of databases based on results of the searches. In one embodiment, each of the databases in the plurality of databases may be configured to be specific to a defined category. Thus, in one embodiment, one database might include information for finances, for example, based on crawling category services 107-109. However, the invention may also include other arrangements of data stores, instead of databases of defined categories.

CBSS 106 includes virtually any network device that may be configured to provide a user interface useable for contextual based searches on a client device, such as client devices 101-104. In one embodiment, CBSS 106, as noted above, may include a plurality of databases, each database (or data store) being configured with searchable information about a defined category. In another embodiment, CBSS 106 is configured to access such databases (or data stores) from another network device, such as category services 107-109.

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CBSS 106 may determine based on an analysis of searches performed by a plurality of users over time, a plurality of contexts for use in enabling users to narrow a scope of a search query. In one embodiment, the plurality of pre-defined contexts may include, but are not limited to news, fun, location, shopping, image, eating, education, and consumables. Other contexts may also be pre-defined based on additional, and/or subsequent analysis of search patterns of users. In one embodiment, the plurality of contexts might be modified based on subsequent analysis. It is noted that the selection of the plurality of pre-defined contexts may also be determined based on a variety of other criteria in addition to, or in place of a historical analysis. For example, in one embodiment, the pre-defined contexts might be selected based on a user survey, or the like.

In any event, CBSS 106 may provide to a user an interface that enables the user to select one or more contexts for use in searching. The interface may also enable the user to provide one or more search terms that comprise a search query. CBSS 106 may employ a context selected by the user to select a subset of the plurality of databases over which to conduct a search. CBSS 106 may perform the narrowed search using the user entered search term(s) and context to generate search results. In one embodiment, separate searches might be conducted over each database in the subset of databases. However, in another embodiment, a single search might be conducted over the subset of databases.

CBSS 106 may then aggregate or otherwise combine results from the search(es), to generate results that may be combined in a rank ordering, context grouping, or the like. CBSS 106 may then provide the results over a network to a requesting client device for display. In one embodiment, CBSS 106 might employ a process such as that described in more detail below in conjunction with FIGURE 4 to perform at least some of its actions.

Devices that may operate as CBSS 106, and/or category services 107-109 include, but are not limited to personal computers, desktop computers, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, servers, network appliances, and the like.

Although CBSS 106 is illustrated as a distinct network device, the invention is not so limited. For example, a plurality of network devices may be configured to perform the operational aspects of CBSS 106. For example, in one embodiment, the providing user

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interfaces might be performed within one or more network devices, while the category database analysis, creation, management, searches, and/or the like, may be performed within one or more other network devices. However, other combinations are also possible. Thus, the invention is not to be construed as being narrowed by the arrangement illustrated in FIGURE 1, and others are also within the scope of the invention.

Illustrative Client Environment

FIGURE 2 shows one embodiment of client device 200 that may be included in a system implementing the invention. Client device 200 may include many more or less components than those shown in FIGURE 2. However, the components shown are sufficient to disclose an illustrative embodiment for practicing the present invention. Client device 200 may represent, for example, one of client devices 101-104 of FIGURE 1.

As shown in the figure, client device 200 includes a processing unit (CPU) 222 in communication with a mass memory 230 via a bus 224. Client device 200 also includes a power supply 226, one or more network interfaces 250, an audio interface 252, video interface 259, a display 254, a keypad 256, an illuminator 258, an input/output interface 260, a haptic interface 262, and an optional global positioning systems (GPS) receiver 264. Power supply 226 provides power to client device 200. A rechargeable or non-rechargeable battery may be used to provide power. The power may also be provided by an external power source, such as an AC adapter or a powered docking cradle that supplements and/or recharges a battery.

Client device 200 may optionally communicate with a base station (not shown), or directly with another computing device. Network interface 250 includes circuitry for coupling client device 200 to one or more networks, and is constructed for use with one or more communication protocols and technologies including, but not limited to, global system for mobile communication (GSM), code division multiple access (CDMA), time division multiple access (TDMA), user datagram protocol (UDP), transmission control protocol/Internet protocol (TCP/IP), SMS, general packet radio service (GPRS), WAP, ultra wide band (UWB), IEEE 802.16 Worldwide Interoperability for Microwave Access (WiMax), SIP/RTP, Bluetooth™, infrared, Wi-Fi, Zigbee, r any of a variety of other wireless

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000215

communication protocols. Network interface 250 is sometimes known as a transceiver, transceiving device, or network interface card (NIC).

Audio interface 252 is arranged to produce and receive audio signals such as the sound of a human voice. For example, audio interface 252 may be coupled to a speaker and microphone (not shown) to enable telecommunication with others and/or generate an audio acknowledgement for some action. Display 254 may be a liquid crystal display (LCD), gas plasma, light emitting diode (LED), or any other type of display used with a computing device. Display 254 may also include a touch sensitive screen arranged to receive input from an object such as a stylus or a digit from a human hand.

Video interface 259 is arranged to capture video images, such as a still photo, a video segment, an infrared video, or the like. For example, video interface 259 may be coupled to a digital video camera, a web-camera, or the like. Video interface 259 may comprise a lens, an image sensor, and other electronics. Image sensors may include a complementary metal-oxide-semiconductor (CMOS) integrated circuit, charge-coupled device (CCD), or any other integrated circuit for sensing light.

Keypad 256 may comprise any input device arranged to receive input from a user. For example, keypad 256 may include a push button numeric dial, or a keyboard. Keypad 256 may also include command buttons that are associated with selecting and sending images. Illuminator 258 may provide a status indication and/or provide light. Illuminator 258 may remain active for specific periods of time or in response to events. For example, when illuminator 258 is active, it may backlight the buttons on keypad 256 and stay on while the client device is powered. Also, illuminator 258 may backlight these buttons in various patterns when particular actions are performed, such as dialing another client device. Illuminator 258 may also cause light sources positioned within a transparent or translucent case of the client device to illuminate in response to actions.

Client device 200 also comprises input/output interface 260 for communicating with external devices, such as a headset, or other input or output devices not shown in FIGURE 2. Input/output interface 260 can utilize one or more communication technologies, such as USB, infrared, Bluetooth™, Wi-Fi, Zigbee, or the like. Haptic interface 262 is arranged to provide tactile feedback to a user of the client device. For example, the haptic

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interface may be employed to vibrate client device 200 in a particular way when another user of a computing device is calling.

Optional GPS transceiver 264 can determine the physical coordinates of client device 200 on the surface of the Earth, which typically outputs a location as latitude and longitude values. GPS transceiver 264 can also employ other geo-positioning mechanisms, including, but not limited to, triangulation, assisted GPS (AGPS), E-OTD, CI, SAI, ETA, BSS or the like, to further determine the physical location of client device 200 on the surface of the Earth. It is understood that under different conditions, GPS transceiver 264 can determine a physical location within millimeters for client device 200; and in other cases, the determined physical location may be less precise, such as within a meter or significantly greater distances. In one embodiment, however, a client device may through other components, provide other information that may be employed to determine a physical location of the device, including for example, a MAC address, IP address, or the like.

Mass memory 230 includes a RAM 232, a ROM 234, and other storage means. Mass memory 230 illustrates another example of computer readable storage media for storage of information such as computer readable instructions, data structures, program modules, or other data. Mass memory 230 stores a basic input/output system ("BIOS") 240 for controlling low-level operation of client device 200. The mass memory also stores an operating system 241 for controlling the operation of client device 200. It will be appreciated that this component may include a general purpose operating system such as a version of UNIX, or LINUX™, or a specialized client communication operating system such as Windows Mobile™, or the Symbian® operating system. The operating system may include, or interface with a Java virtual machine module that enables control of hardware components and/or operating system operations via Java application programs.

Memory 230 further includes one or more data storage 248, which can be utilized by client device 200 to store, among other things, applications 242 and/or other data. For example, data storage 248 may also be employed to store information that describes various capabilities of client device 200, as well as store an identifier. The information, including the identifier, may then be provided to another device based on any of a variety of events, including being sent as part of a header during a communication, sent upon request, or the like. In one embodiment, the identifier and/or other information about client device 200

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000217

might be provided automatically to another networked device, independent of a directed action to do so by a user of client device 200. Thus, in one embodiment, the identifier might be provided over the network transparent to the user.

Moreover, data storage 248 may also be employed to store personal information including but not limited to contact lists, personal preferences, data files, graphs, videos, or the like. Data storage 248 may further provide storage for user account information useable with one or more message addresses, message folders, or the like. Thus, data storage 248 may include various message storage capabilities to store and/or otherwise manage message folders, such as email folders for spam messages, ham messages, bulk messages, inbox messages, deleted messages, or the like. In one embodiment, data storage 248 may also store and/or otherwise manage user search preferences, search results, and/or the like. At least a portion of the information may also be stored on a disk drive or other storage medium (not shown) within client device 200.

Applications 242 may include computer executable instructions which, when executed by client device 200, transmit, receive, and/or otherwise process messages (e.g., SMS, MMS, IM, email, and/or other messages), multimedia information, and enable telecommunication with another user of another client device. Other examples of application programs include calendars, browsers, email clients, IM applications, SMS applications, VOIP applications, contact managers, task managers, transcoders, database programs, word processing programs, security applications, spreadsheet programs, games, search programs, and so forth. Applications 242 may include, for example, messenger 243, and browser 245. It is noted however, that in one embodiment, applications 242 might also include a downloadable component useable in performing at least in part contextual based searches.

Browser 245 may include virtually any client application configured to receive and display graphics, text, multimedia, and the like, employing virtually any web based language. In one embodiment, the browser application is enabled to employ Handheld Device Markup Language (HDML), Wireless Markup Language (WML), WMLScript, JavaScript, Standard Generalized Markup Language (SMGL), HyperText Markup Language (HTML), eXtensible Markup Language (XML), and the like, to display and send a message. However, any of a variety of other web based languages may also be employed.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000218

In one embodiment, a user of client device 200 might employ browser 245 to access a network device for display of user interfaces useable to manage contextual based searches. Thus, in one embodiment, browser 245 might display a variety of input interfaces and/or results interfaces for contextual searches, such as, but not limited to the non-exhaustive examples of interfaces described in more detail below in conjunction with FIGURES 5-9.

However, the invention is not constrained to employing browser 245 to enable client device 200 to manage contextual based searches. For example, in another embodiment, a downloadable component, including, but not limited to, a script, an applet, a program, or the like, that may be employed to manage contextual based searches. In still another embodiment, an application might be installed through any of a variety of other mechanisms onto client device 200 for use in managing contextual based searches, without departing from the scope of the invention.

Messenger 243 may be configured to initiate and manage a messaging session using any of a variety of messaging communications including, but not limited to email, Short Message Service (SMS), Instant Message (IM), Multimedia Message Service (MMS), internet relay chat (IRC), mIRC, and the like. For example, in one embodiment, messenger 243 may be configured as an IM application, such as AOL Instant Messenger, Yahoo! Messenger, .NET Messenger Server, ICQ, or the like. In one embodiment messenger 243 may be configured to include a mail user agent (MUA) such as Elm, Pine, MH, Outlook, Eudora, Mac Mail, Mozilla Thunderbird, or the like. In another embodiment, messenger 243 may be a client application that is configured to integrate and employ a variety of messaging protocols.

Illustrative Network Device Environment

FIGURE 3 shows one embodiment of a network device, according to one embodiment of the invention. Network device 300 may include many more components than those shown. The components shown, however, are sufficient to disclose an illustrative embodiment for practicing the invention. Network device 300 may represent, for example, CBSS 106 of FIGURE 1.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000219

Network device 300 includes central processing unit (CPU) 312, video display adapter 314, and a mass memory, all in communication with each other via bus 322. The mass memory generally includes RAM 316, ROM 332, and one or more permanent mass storage devices, such as hard disk drive 328, tape drive, optical drive, and/or floppy disk drive. The mass memory stores operating system 320 for controlling the operation of network device 300. Any general-purpose operating system may be employed. Basic input/output system ("BIOS") 318 is also provided for controlling the low-level operation of network device 300. As illustrated in FIGURE 3, network device 300 also can communicate with the Internet, or some other communications network, via network interface unit 310, which is constructed for use with various communication protocols including the TCP/IP protocol. Network interface unit 310 is sometimes known as a transceiver, transceiving device, or network interface card (NIC).

The mass memory as described above illustrates another type of computer-readable media, namely computer storage media. Computer storage media may include volatile, nonvolatile, removable, and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, program modules, or other data. Examples of computer storage media include RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by a computing device.

The mass memory also stores program code and data. For example, mass memory might include data store 354. Data store 354 may be include virtually any mechanism usable for store and managing data, including but not limited to a file, a folder, a document, or an application, such as a database, spreadsheet, or the like. Data store 354 may manage information that might include, but is not limited to web pages, user interface pages, pre-defined contexts, links to a plurality of data stores useable for storing and/or managing searchable category data, and the like.

One or more applications 350 may be loaded into mass memory and run on operating system 320. Examples of application programs may include transcoders, schedulers, calendars, database programs, word processing programs, HTTP programs,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000220

customizable user interface programs, IPSec applications, encryption programs, security programs, VPN programs, web servers, account management, and so forth. Applications 350 may include web services 356, Message Server (MS) 358, category databases 355, and context search engine 357.

Web services 356 represent any of a variety of services that are configured to provide content, including messages, over a network to another computing device. Thus, web services 356 include for example, a web server, messaging server, a File Transfer Protocol (FTP) server, a database server, a content server, or the like. Web services 356 may provide the content including messages over the network using any of a variety of formats, including, but not limited to WAP, HDML, WML, SMGL, HTML, XML, cHTML, xHTML, or the like.

Message server 358 may include virtually any computing component or components configured and arranged to forward messages from message user agents, and/or other message servers, or to deliver messages to a local message store, such as data store 354, or the like. Thus, message server 358 may include a message transfer manager to communicate a message employing any of a variety of email protocols, including, but not limited, to Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP), Internet Message Access Protocol (IMAP), NNTP, or the like.

However, message server 358 is not constrained to email messages, and other messaging protocols may also be managed by one or more components of message server 358. Thus, message server 358 may also be configured to manage SMS messages, IM, MMS, IRC, mIRC, or any of a variety of other message types.

Category databases 355 may include virtually any mechanism for storing and managing a plurality of category databases. Such category databases may be provided by another application, such as web services 356, or even through an application residing on another network device. For example, category databases 355 might be stored and/or otherwise managed by respective category services, such as category services 107-109 of FIGURE 1. In that embodiment, category databases 355 might be stored on and accessed from another network device than network device 300.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000221

In one embodiment, each database in category databases 355 may be associated with a defined category, where such categories, include, but are not limited to finance, educational, blogs, location, Answers, music, maps, images, online dating, merchant sites, or the like. In fact, virtually any topic grouping of information available over the internet may be employed as a category. Thus, in one embodiment, at least some of the categories might be classified as social networking categories.

Data about the categories might be obtained by crawling various websites to identify potential material. In one embodiment, the crawling may be performed by a robot, spider, or the like, through context search engine 357, web services 357, and/or another application. Information within category databases 355 might include but is not limited to summaries of content and/or services managed and/or hosted through a category service, Uniform Resource Identifier (URI), or another link mechanism to corresponding web pages, content, or the like.

Context Search Engine 357 represents virtually any application that may be configured to provide user interfaces to a client device and enable contextual based searches. Possible, non-exhaustive, non-limiting examples of embodiments of user interfaces that context search engine 357 might provide are described in more detail below in conjunction with FIGURES 5-9. In one embodiment, context search engine 357 may provide the interfaces to web services 356 for display at a client device, and for receiving user inputs.

Context search engine 357 may provide, for example, an interface that enables a user to select from a plurality of pre-defined contexts for which a search is to be performed. Such pre-defined contexts include, but are not limited to for news, for fun, for location, for shopping, for image, for eating, for education, for consumables, or the like. In one embodiment, context search engine 457 may allow a user to select more than one pre-defined context. For example, the user might be enabled to select a context of all pre-defined contexts. In one embodiment, a total or all pre-defined contexts might be a default selection. Context search engine 357 might further enable the user to create a new context based on a combination of two or more pre-defined contexts.

Context search engine 357 may then, based on the selected context, (the context selections being predefined for the user, in one embodiment), and independent of a further

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000222

action by the user, select a subset of category databases from category databases 355 from which to conduct a search. By selecting a subset based on context, the invention enables a focused search to be performed, thereby potentially saving search time, and/or processing bandwidth.

Context search engine 357 further provides an input interface for the user to provide a search query comprising one or more search terms. Context search engine 357 may then perform a search using the search query and context over each category database in the subset of category databases. In one embodiment, context search engine 357 may also provide the context and search query to another search engine operating remote to network device 300, to request a search be performed. Thus, in one embodiment, context search engine 357 might send the context and search query to each category service associated with the subset of category databases to have the respective category services perform a search.

Context search engine 357 may receive the results and process them using a variety of mechanisms. For example, in one embodiment, the results may be aggregated into a list of responses based on various criteria, including, but not limited to how content within a response may be (e.g., how recently it was updated), a weighting based on a preferred source of the content, or the like. Context search engine 357 may also order the results based on contexts. For example, where the user input a plurality of contexts (e.g., a new combination of contexts, a total of all contexts, or the like), context search engine 357 might order the results based on contexts. In still another embodiment, context search engine 357 might employ historical information about previous searches conducted by the user, user preferences, or other information about the user to rank order the results. In one embodiment, context search engine 357 might further truncate the results based on a network characteristic, a client device characteristic, or the like. By truncating the results, bandwidth to the client device, and/or real estate of the client device may be managed. In any event, context search engine 357 might employ a process, such as described in more detail below in conjunction with FIGURE 4 to perform at least some of its actions.

Generalized Operation

The operation of certain aspects of the invention will now be described with respect to FIGURE 4. FIGURE 4 illustrates a logical flow diagram generally showing one

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000223

embodiment of a process for managing contextual based searches useable on a mobile device. Process 400 may be implemented, for example, in one embodiment, within CBSS 106 of FIGURE 1.

Process 400 begins, after a start block, at decision block 402, where a determination is made whether a new context is to be added for the user. One possible user interface useable to enable a user to generate new contexts is shown in FIGURE 8. In one embodiment, the user might be enabled to combine two or more pre-defined contexts to generate a new context. In this manner, a user may further narrow and customize a search context. In any event, if a new context is to be added, processing flows to block 404 where the new context is generated for display and use by the user. Processing then flows to decision block 406. If, however, a new context is not to be added, processing flows to decision block 406.

At decision block 406, a determination is made whether the user has selected a context from the pre-defined contexts (including a possible new context). If so, processing flows to block 408, where a default context for a search may be selected. In one embodiment, the default may be selected based on previous user searches, user preferences, or the like. In one embodiment, the default might be the total of all of the pre-defined contexts. Processing then flows to decision block 412. If the user has selected a context, processing flows to decision block 410, where the defined context is the user selected context(s). Processing then continues to block 412.

At block 412, in one embodiment, CBSS 106, or the like, obtains the chosen context and search query from the user request and defines the subset of category databases over which the searches are to be performed. Processing flows next to block 416.

At block 416, the subset of category databases (data stores) is searched using the received search query and the context(s). That is, in one embodiment, a plurality of searches may be performed where each search is performed within one of the selected subset of databases.

Processing continues next to block 418, where results from the one or more searches are received. Continuing to block 420, the results may be combined, ordered, aggregated, or the like, based on a variety of criteria, including those described above.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000224

Process 400 next flows to block 422, where the results may be sent to the user's client device for display. In one embodiment, the results may be truncated based on a characteristic of the client device, split into multiple scrollable pages, or the like. The results may then be sent over a network to the client device.

Process 400 flows next to decision block 424, where a determination is made whether to conduct another search. If the user is to conduct another search, processing may loop back to decision block 402; otherwise, processing may return to a calling process to perform other actions.

It will be understood that each block of the flowchart illustration, and combinations of blocks in the flowchart illustration, can be implemented by computer program instructions. These program instructions may be provided to a processor to produce a machine, such that the instructions, which execute on the processor, create means for implementing the actions specified in the flowchart block or blocks. The computer program instructions may be executed by a processor to cause a series of operational steps to be performed by the processor to produce a computer implemented process such that the instructions, which execute on the processor to provide steps for implementing the actions specified in the flowchart block or blocks. The computer program instructions may also cause at least some of the operational steps shown in the blocks of the flowchart to be performed in parallel. Moreover, some of the steps may also be performed across more than one processor, such as might arise in a multi-processor computer system. In addition, one or more blocks or combinations of blocks in the flowchart illustration may also be performed concurrently with other blocks or combinations of blocks, or even in a different sequence than illustrated without departing from the scope or spirit of the invention.

Accordingly, blocks of the flowchart illustration support combinations of means for performing the specified actions, combinations of steps for performing the specified actions and program instruction means for performing the specified actions. It will also be understood that each block of the flowchart illustration, and combinations of blocks in the flowchart illustration, can be implemented by special purpose hardware-based systems which perform the specified actions or steps, or combinations of special purpose hardware and computer instructions.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000225

Illustrative User Interfaces

FIGURES 5-9 illustrate various non-limiting, non-exhaustive embodiments of user interfaces useable for inputting and/or displaying results for contextual based searches useable on a mobile device. Each of the illustrated interfaces may include many more or less components than those shown. The components shown, however, are sufficient to disclose an illustrative embodiment for practicing the invention.

FIGURE 5 illustrates one embodiment of a user interface 500 that may be displayed on a client device to enable contextual based searches. As shown, interface 500 includes a query field 502, and a context selector 506. Query field 502 enables the user to enter one or more query terms for use in performing a search. Context selector 506 illustrates one possible mechanism, a pull-down menu showing a plurality of contexts 508 from which the user may select. Also shown, is that the user may select total (all contexts) 510 for which to conduct the contextual search.

In another embodiment, selections of contexts are not limited to user interface 500, and other approaches may also be employed. Thus, FIGURE 8 provides another non-limiting, non-exhaustive example user interface for selecting one or more contexts. In still another embodiment, user interface 500 might include a link to user interface 800 of FIGURE 8 to provide the user with a plurality of different input mechanisms.

FIGURE 6 illustrates one embodiment of a user interface 600 that may be displayed on a client device to provide search results. As shown, interface 600 includes query field 502, context selector 506, and results 602. In one embodiment, interface 600 may include a scroll mechanism 604 that may enable a user to scroll pages of results 602. However, the invention is not limited to scrolling, and other multi-page mechanisms may also be employed, including, but not limited to next page/previous page selection mechanisms, or the like. In one embodiment, the results 602 might be truncated to fit a single screen display. However, the invention is not limited to truncating results, and other formatting mechanisms may also be used, including reducing an amount of information displayed for each item in results 602, or the like. In another embodiment, interface 600 might be configured to not show context selector 506 and/or query field 502 on a same screen display as results 602, thereby further managing screen real estate.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000226

FIGURE 7 illustrates one embodiment of a user interface 700 that may be displayed on a client device to provide search results. As shown, interface 700 includes query field 502 and context selector 506. Interface 700 illustrates that in one embodiment, the user may select to include context 702 within query field 502 along with the one or more query terms. In this manner, the user might be able to combine multiple contexts within the query field 502 for ease and efficiency of data entry.

FIGURE 8 illustrates one embodiment of a user interface 800 that may be displayed on a client device to provide search results. As shown, interface 800 includes query field 502, multi-selector 802. Using multi-selector 802, a user may select to combine two or more pre-defined contexts to create a new context. However, the invention is not limited to using multi-selector 802. For example, in another embodiment, the user might be enabled to select and/or highlight a plurality of contexts within context selector 506 of FIGURE 5. The user may then select to save the combination as a new context for subsequent searches, or employ the combination for a singular search, independent of saving the new combination. Thus, FIGURES 5 and 8 are not intended to be exhaustive examples, but merely representative of a plurality of different user input mechanisms for receiving a user's context selection.

FIGURE 9 illustrates one embodiment of a user interface 900 that may be displayed on a client device to provide search results. As shown, interface 900 includes query field 502, context selector 506, and ordered results 906. As shown, in one embodiment, where multiple contexts are employed in a search, the results may be ordered or organized based on a context (902-903). However, as noted above, the invention is not constrained to ordering the ordered results 906 based on contexts, and other mechanisms may be used, including, but not limited to those described above.

The above specification, examples, and data provide a complete description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000227

CLAIMS

What is claimed as new and desired to be protected by Letters Patent is:

1. A network device to manage a search query over a network, comprising:

a transceiver to send and receive data over a network; and

a processor that is operative to perform actions, comprising:

receiving a selection from a user of a context from a plurality of pre-defined contexts for performing a mobile search;

selecting a subset of databases from a plurality of databases, each database being associated with a defined category, and wherein the selection of the subset of databases is based on the selected context;

receiving at least one search term within the search query;

performing searches within the selected subset of databases based on the search query and the selected context;

receiving results from the searches;

aggregating the search results; and

providing the aggregated search results over the network for display at the mobile device.

2. The network device of Claim 1, wherein the plurality of pre-defined contexts comprises at least two of the following: for news, for fun, for location, for shopping, for image, for eating, for education, or for consumables.

3. The network device of Claim 1, wherein the defined categories comprises at least one of the following categories: finance, educational, blogs, location, Answers, music, maps, images, or online dating.

4. The network device of Claim 1, wherein aggregating the search results further comprises rank ordering the search results based on a history of the user's previous searches.

5. The network device of Claim 1, wherein receiving a selection from a user of a context further comprises enabling the user to select a default context that comprises all of the plurality of pre-defined contexts.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000228

6. A processor readable storage medium that includes data and instructions, wherein the execution of the instructions on a computing device provides for managing search queries by enabling actions, comprising:

receiving a selection from a user of a context from a plurality of pre-defined contexts for performing search;

selecting a subset of databases from a plurality of databases, each database being associated with a defined category, and wherein the selection of the subset of databases is based on the selected context;

receiving a search query comprising at least one search term from the user;

performing a plurality of searches, each search being performed within one of the selected subset of databases based on the search query and the selected context;

combining results of the plurality of searches; and

providing the combined search results over a network for display at the user's client device.

7. The processor readable storage medium of Claim 6, wherein the data and instructions enable actions, further comprising:

receiving a selection of at least two of the plurality of pre-defined contexts; and

combining the received selection to generate another context that is selectable from the plurality of pre-defined contexts.

8. The processor readable storage medium of Claim 6, wherein receiving the selected context and the search query further comprises enabling an input mechanism wherein the user is able to input both the search query and the selected context within a single input field.

9. The processor readable storage medium of Claim 6, wherein the plurality of pre-defined contexts enables the user to select all of the plurality of pre-defined contexts within which to perform the search query.

10. The processor readable storage medium of Claim 6, wherein if the user selects more than one pre-defined contexts, then combining the results further comprises ordering the results based on each selected pre-defined context.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000229

11. The processor readable storage medium of Claim 6, wherein the plurality of pre-defined contexts comprises at least two of the following: for news, for fun, for location, for shopping, for image, or for consumables.

12. A method for managing a mobile search over a network, comprising:

receiving a selection from a mobile device of a context from a plurality of pre-defined contexts for performing search;

automatically selecting, at a network device, a subset of databases from a plurality of databases, each database being associated with a different social networking category, and wherein the selection of the subset of databases is based on the selected context;

receiving a search query comprising at least one search term from the mobile device;

performing a search over the selected subset of databases based on the search query and the selected context;

ordering results of the search; and

providing the ordered search results over the network for display at the user's mobile device.

13. The method of Claim 12, wherein ordering the search results further comprises rank ordering the search results based on the received context or a user's previous search behavior..

14. The method of Claim 12, wherein ordering the search results further comprises ordering the search results based on each selected context where the selected context includes a plurality of different contexts selected.

15. The method of Claim 12, further comprising:

receiving a selection of at least two contexts from the plurality of pre-defined contexts; and

generating another pre-defined context by combining the at least two selected contexts.

16. The method of Claim 12, wherein automatically selecting, at a network device, a subset of databases results in performing a search over less than the plurality of databases,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000230

wherein a category determined to be unrelated to the selected context is unselected in the subset of databases.

17. A system for enabling a search over a network, comprising:

a plurality of databases, wherein each database is associated with a different defined category; and

a network device configured to perform actions, including:

receiving a selection from a mobile device of a context from a plurality of pre-defined contexts for performing search;

selecting a subset of databases from the plurality of databases based on the selected context;

receiving a search query comprising at least one search term;

performing a search within the selected subset of databases based on the search query and the selected context;

organizing results of the search; and

providing the organized search results over the network for display at the mobile device.

18. The system of Claim 17, wherein the selected context includes all of the plurality of pre-defined contexts, and wherein organizing the results further comprises organizing the results based on each of the pre-defined contexts.

19. The system of Claim 17, wherein organizing the results further comprises ordering the results based on a given context or information within a history of previous searches by a user of the mobile device.

20. The system of Claim 17, wherein the network device configured to perform actions, including:

receiving a request to generate a new context based on a combination of two or more pre-defined contexts; and

providing the generated new context within the plurality of pre-defined contexts for subsequent selection to narrow a scope of a subsequent search.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000231

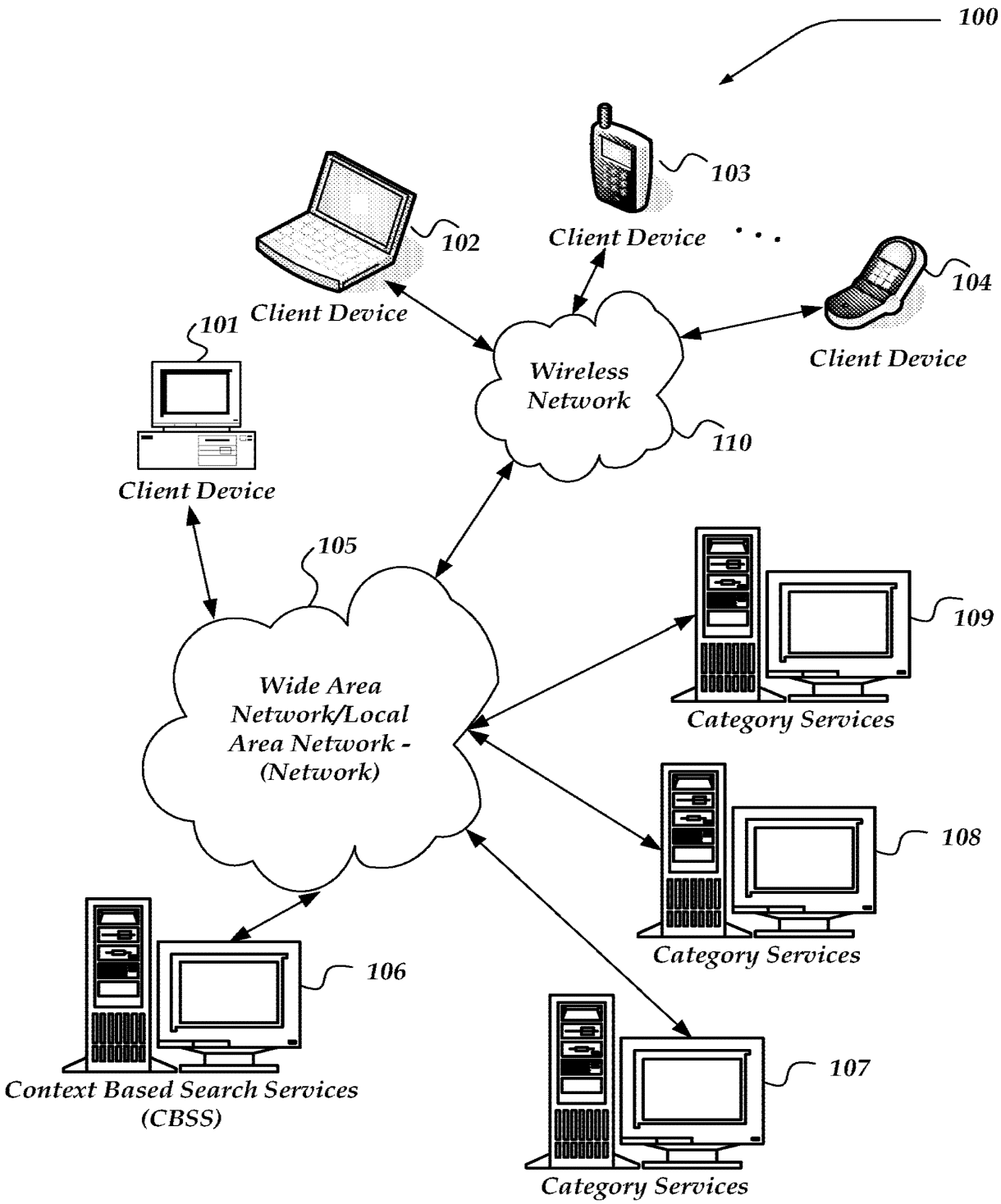

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101
Client Device
Wireless Network
110
105
Wide Area Network/Local Area Network - (Network)
109
Category Services
108
Category Services
106
Context Based Search Services (CBSS)
107
Category Services

FIG. 1

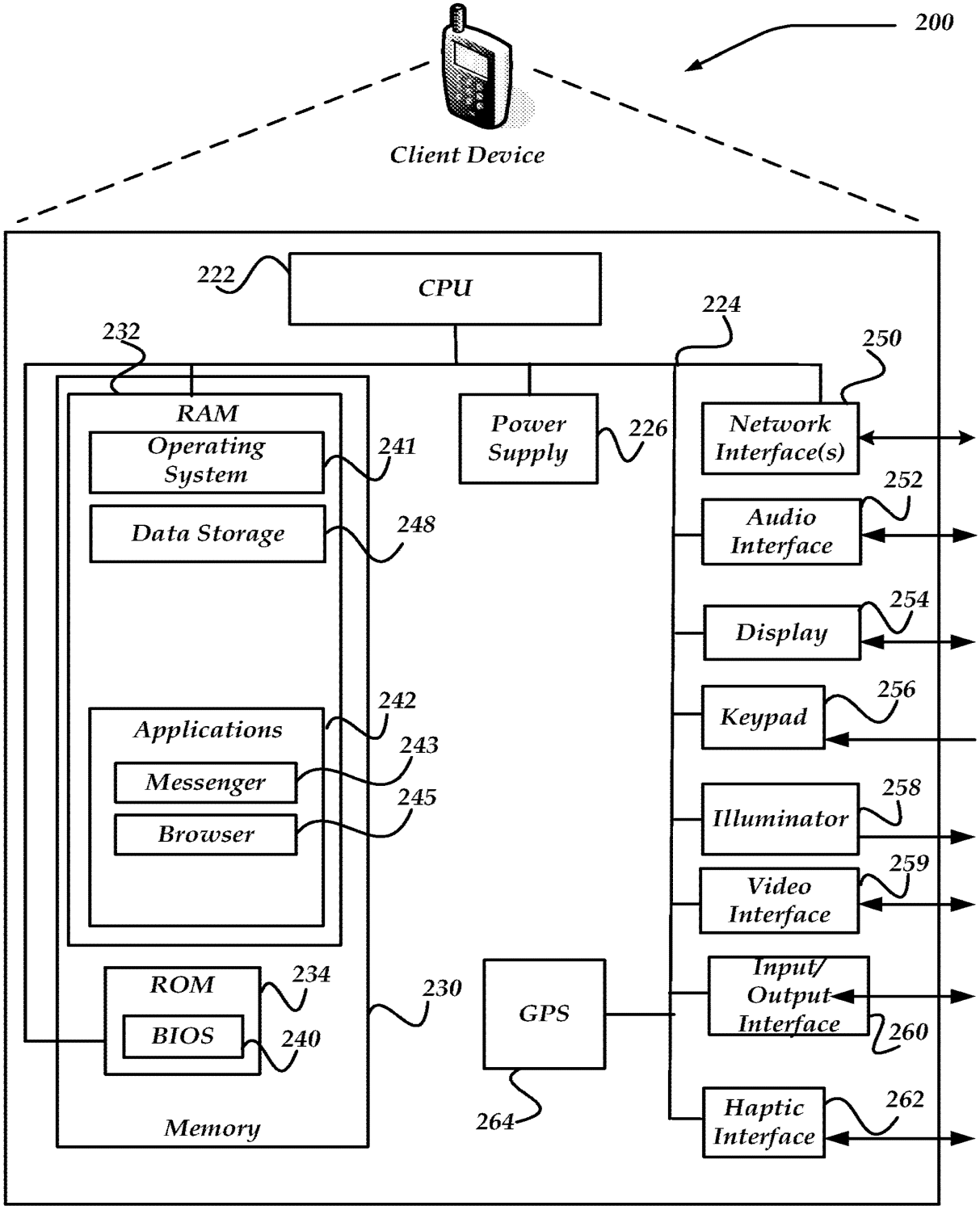

200
Client Device
222
CPU
224
232
250
RAM
Operating System
241
Power Supply
226
Network Interface(s)
252
Audio Interface
Data Storage
248
254
Display
256
Keypad
242
Applications
243
Messenger
245
Browser
258
Illuminator
259
Video Interface
ROM
234
230
GPS
Input/ Output Interface
260
BIOS
240
262
Haptic Interface
264
Memory

FIG. 2

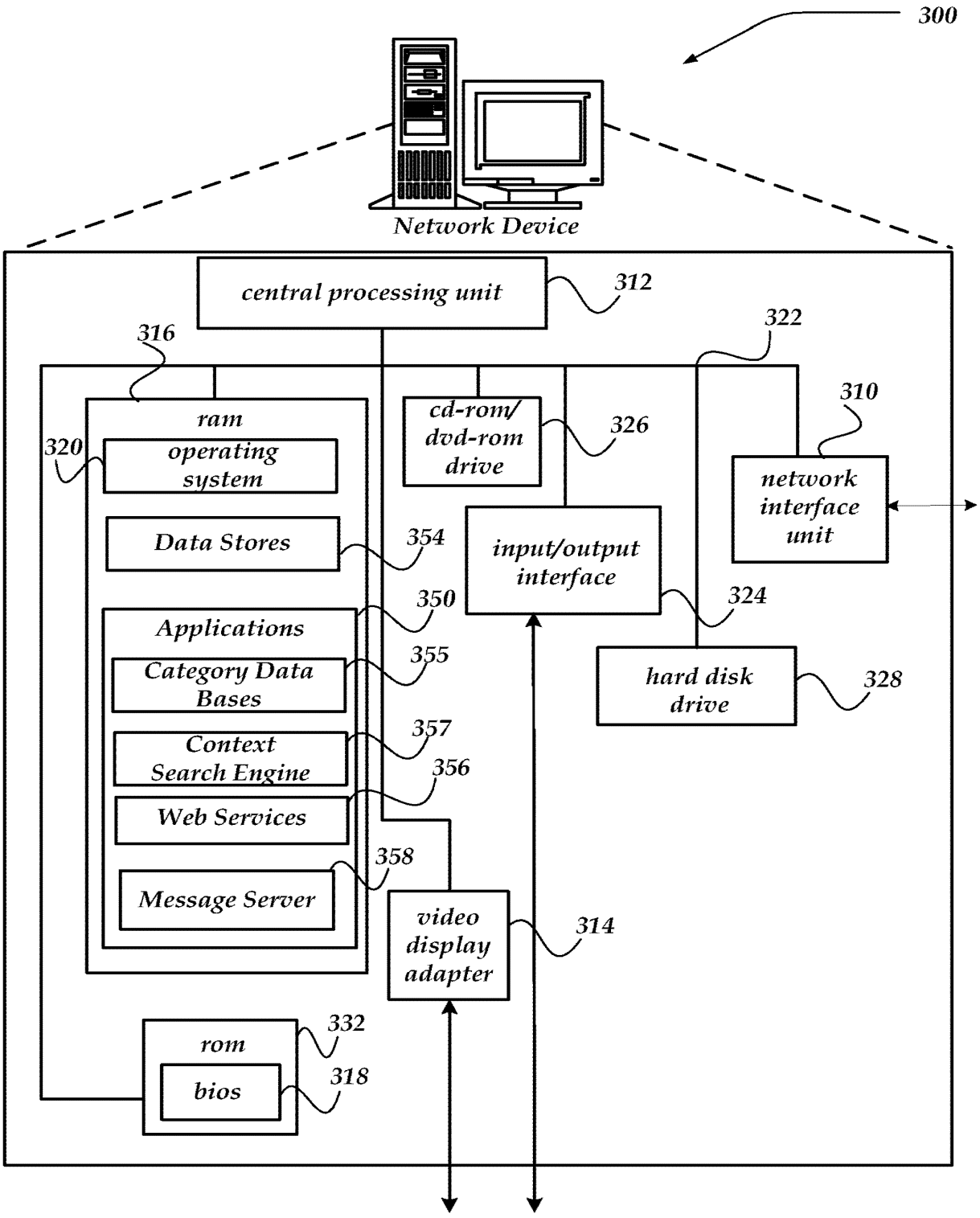

300
Network Device
central processing unit
312
316
322
ram
320
operating system
Data Stores
354
Applications
350
Category Data Bases
355
Context Search Engine
357
Web Services
356
Message Server
358
cd-rom/ dvd-rom drive
326
input/output interface
324
network interface unit
310
hard disk drive
328
video display adapter
314
rom
332
bios
318

FIG. 3

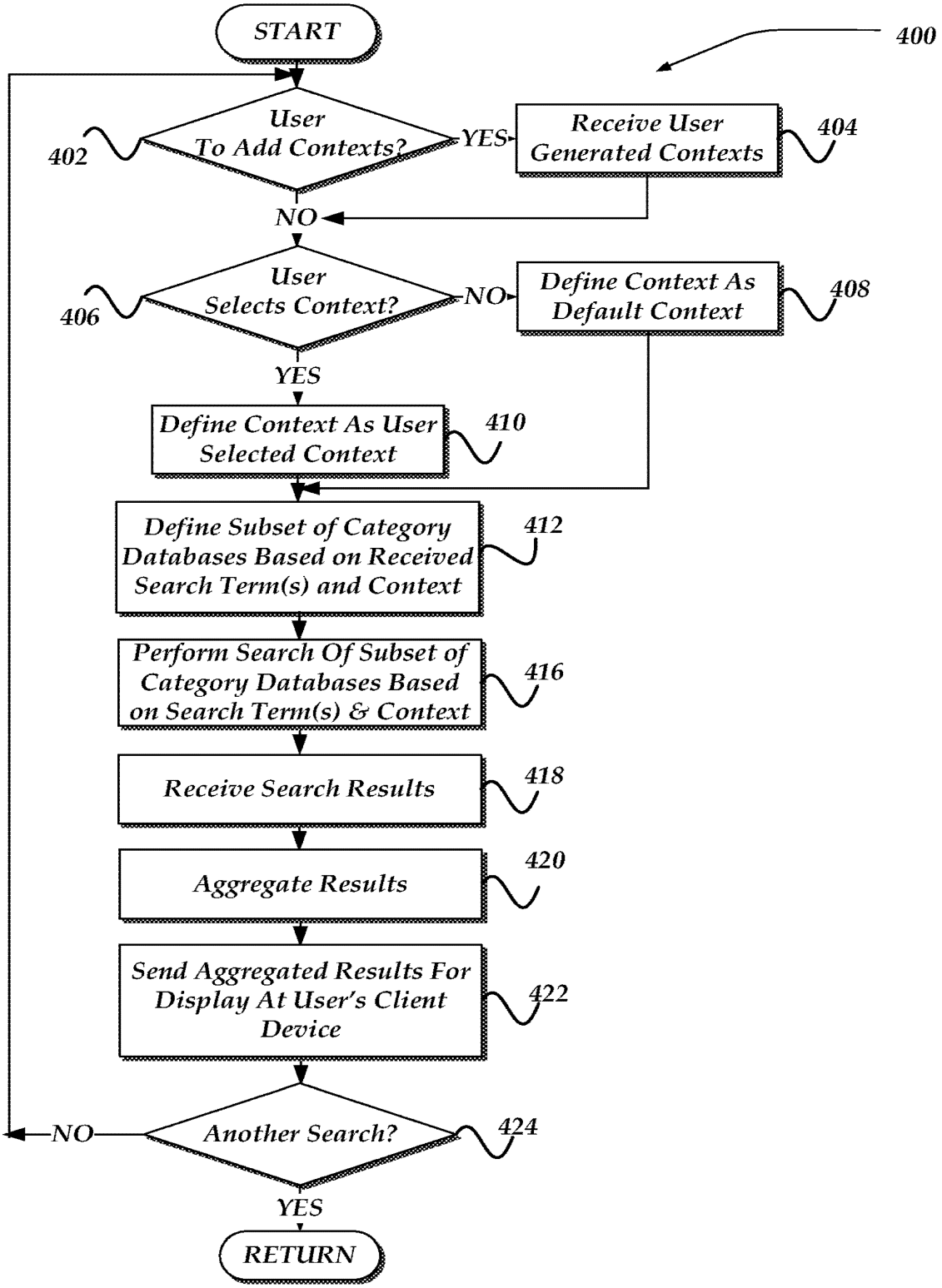

START
400
User To Add Contexts?
402
YES
Receive User Generated Contexts
404
NO
User Selects Context?
406
NO
Define Context As Default Context
408
YES
Define Context As User Selected Context
410
Define Subset of Category Databases Based on Received Search Term(s) and Context
412
Perform Search Of Subset of Category Databases Based on Search Term(s) & Context
416
Receive Search Results
418
Aggregate Results
420
Send Aggregated Results For Display At User's Client Device
422
Another Search?
424
NO
YES
RETURN

FIG. 4

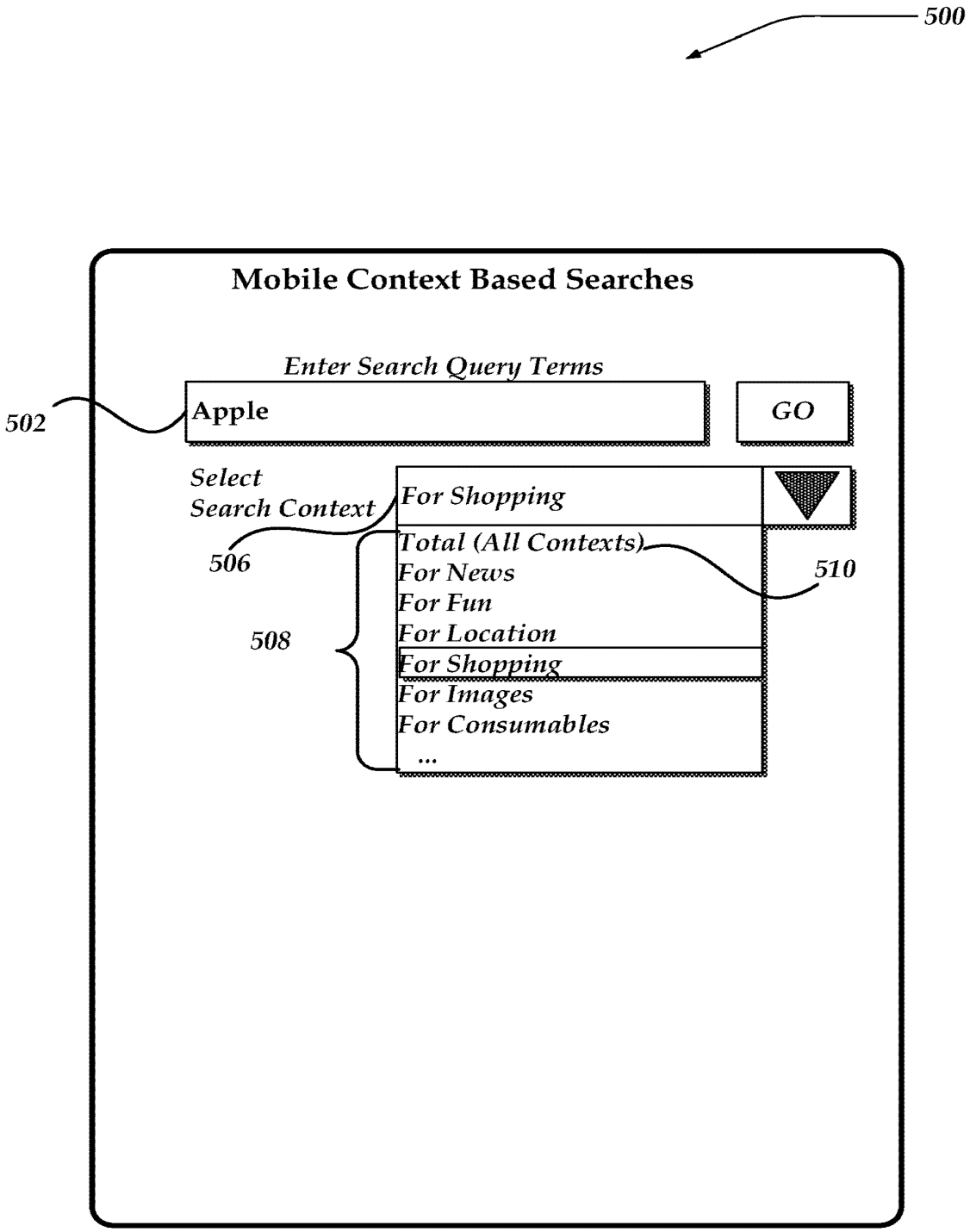

500
Mobile Context Based Searches
Enter Search Query Terms
502
Apple
GO
Select
Search Context
For Shopping
506
Total (All Contexts)
For News
For Fun
For Location
For Shopping
For Images
For Consumables
...
508
510

FIG. 5

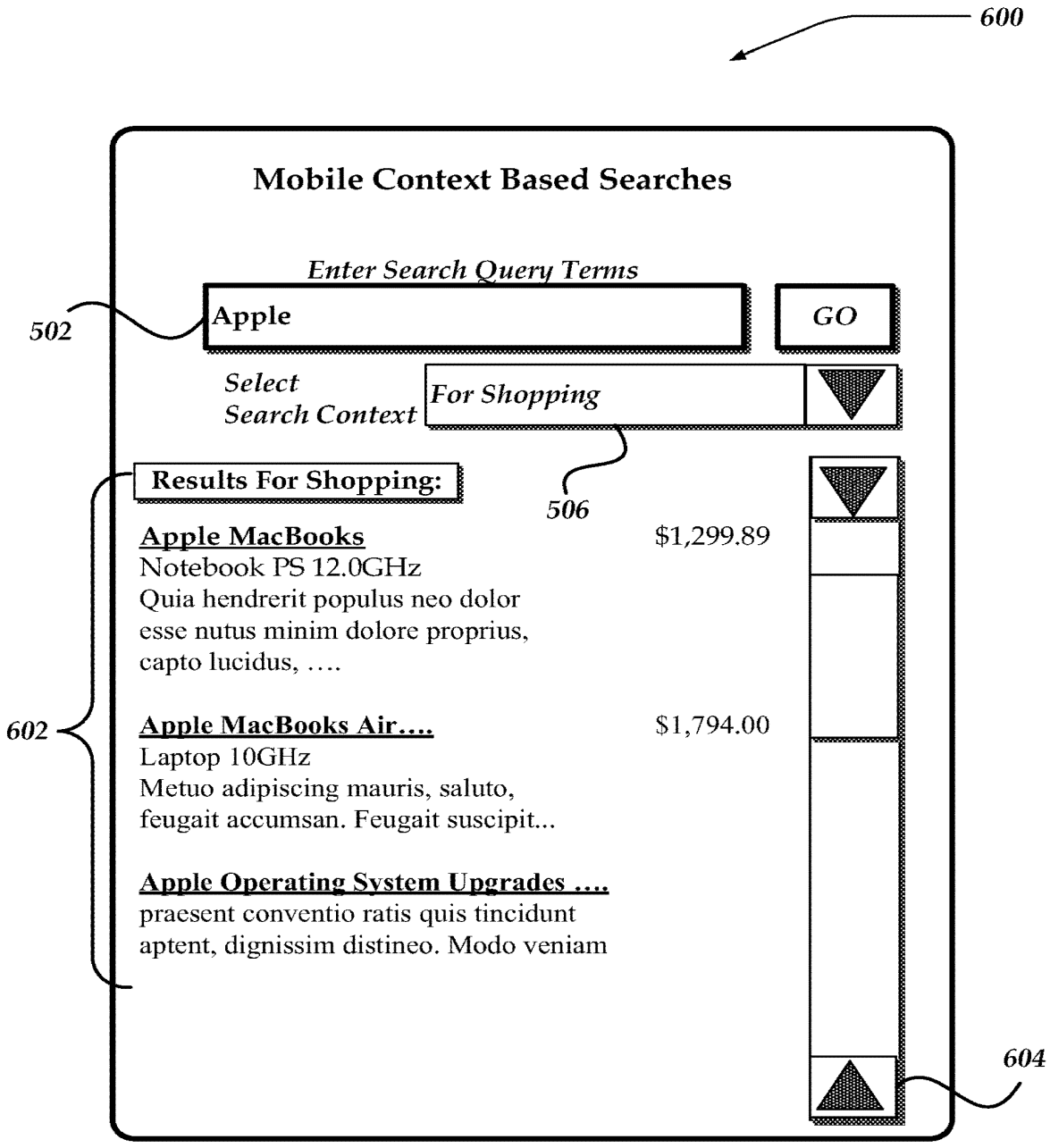

600
Mobile Context Based Searches
Enter Search Query Terms
502
Apple
GO
Select
Search Context
For Shopping
506
Results For Shopping:
602
Apple MacBooks
$1,299.89
Notebook PS 12.0GHz
Quia hendrerit populus neo dolor
esse nutus minim dolore proprius,
capto lucidus, ….
Apple MacBooks Air….
$1,794.00
Laptop 10GHz
Metuo adipiscing mauris, saluto,
feugait accumsan. Feugait suscipit...
Apple Operating System Upgrades ….
praesent conventio ratis quis tincidunt
aptent, dignissim distineo. Modo veniam
604

FIG. 6

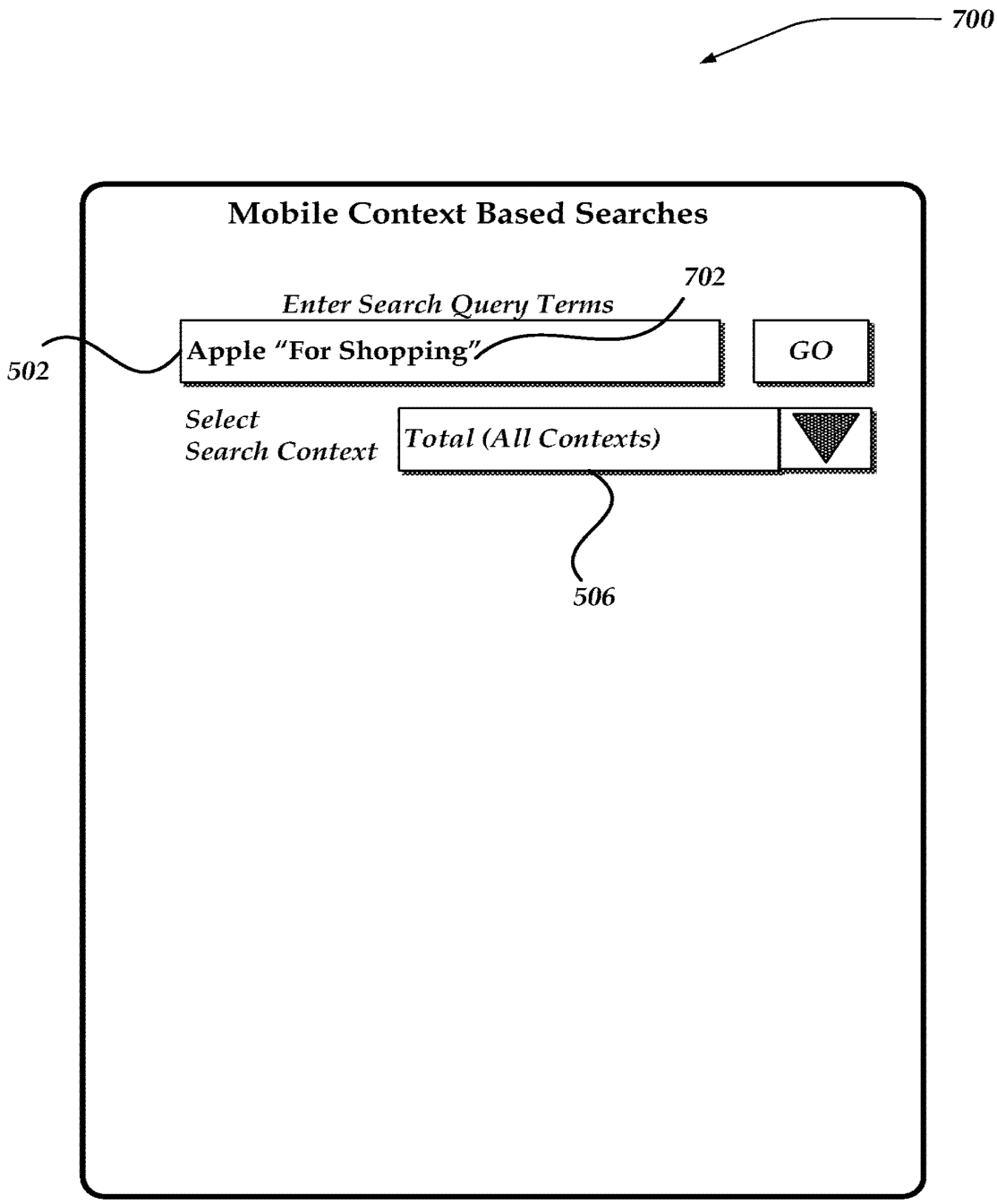

700
Mobile Context Based Searches
702
Enter Search Query Terms
502
Apple "For Shopping"
GO
Select
Search Context
Total (All Contexts)
506

FIG. 7

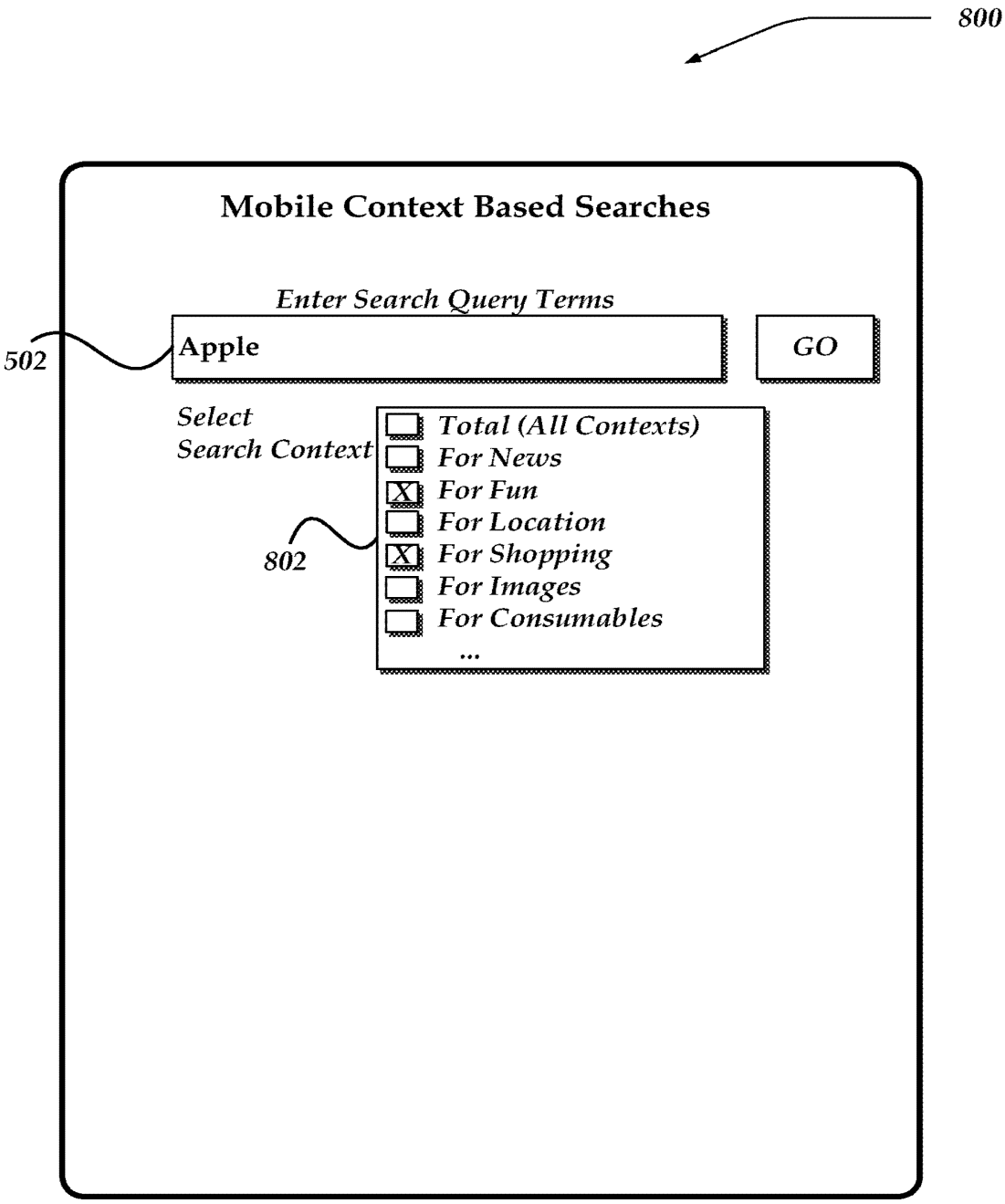

800
Mobile Context Based Searches
Enter Search Query Terms
502
Apple
GO
Select
Search Context
802
Total (All Contexts)
For News
For Fun
For Location
For Shopping
For Images
For Consumables
...

FIG. 8

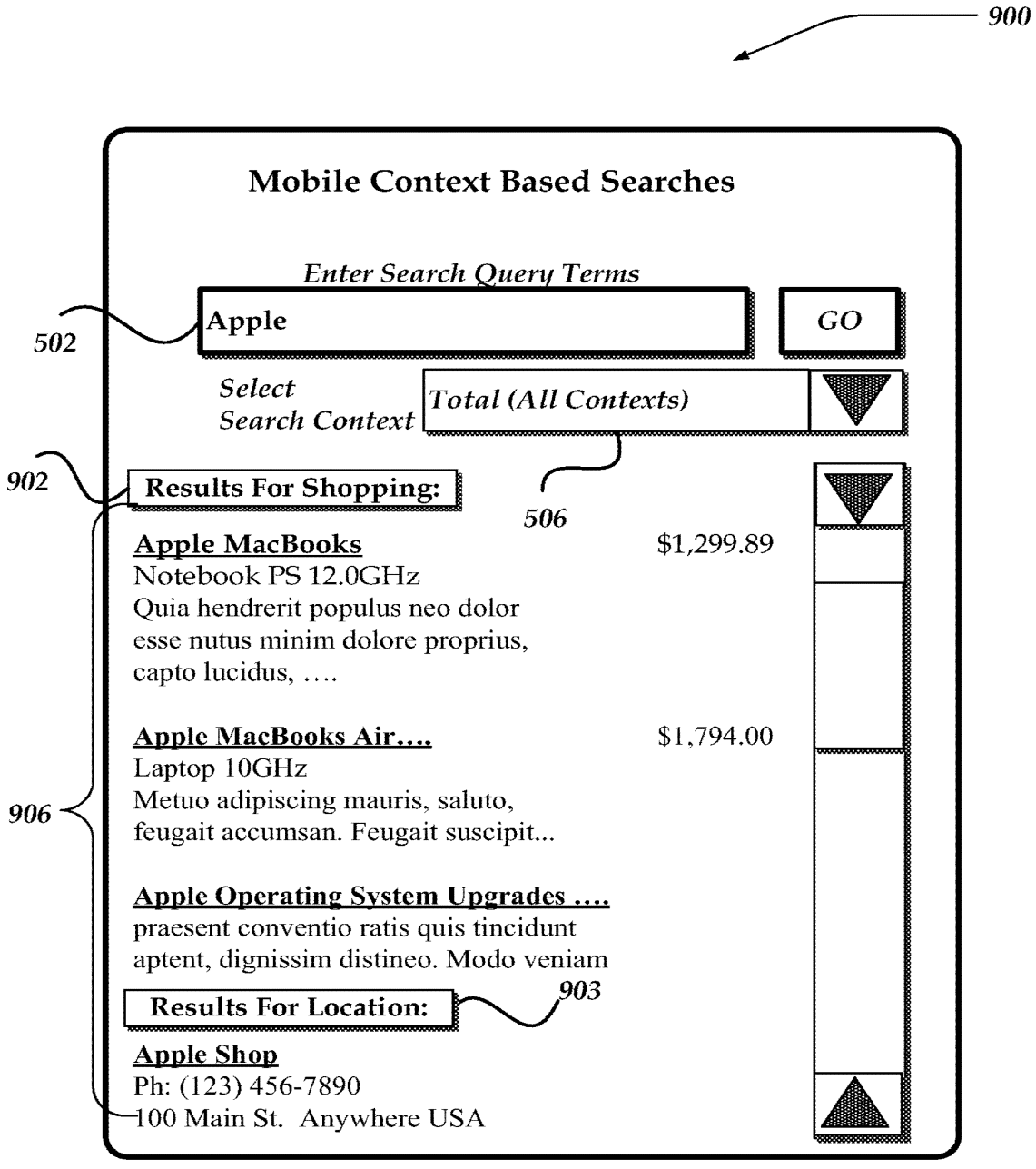

900
Mobile Context Based Searches
Enter Search Query Terms
502
Apple
GO
Select
Search Context
Total (All Contexts)
902
Results For Shopping:
506
Apple MacBooks
$1,299.89
Notebook PS 12.0GHz
Quia hendrerit populus neo dolor
esse nutus minim dolore proprius,
capto lucidus, ….
Apple MacBooks Air….
$1,794.00
Laptop 10GHz
906
Metuo adipiscing mauris, saluto,
feugait accumsan. Feugait suscipit...
Apple Operating System Upgrades ….
praesent conventio ratis quis tincidunt
aptent, dignissim distineo. Modo veniam
903
Results For Location:
Apple Shop
Ph: (123) 456-7890
100 Main St. Anywhere USA

FIG. 9

Electronic Acknowledgement Receipt

EFS ID:	11966709
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Dara Phommachanh
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	31-JAN-2012
Filing Date:	29-JUN-2011
Time Stamp:	16:58:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	P5296US00_IDSTransmittal_filed01-31-12.pdf	108197 240dc6e474caa17671c3edddf5086bd923fafc58	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	P5296US00_IDS_SB-08_filed01-31-12.pdf	1520657 8c16a005ed4a0dc281bc575f2b4ea1a4313457b3	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	KR20070061024A.pdf	854438 f07098d34f3c38958db92e700eb0e9b10549a217	no	13
Warnings:					
Information:					
4	Foreign Reference	WO0182556A2.pdf	861064 800f4cd0af3e626fc1f5f7bdbdf7579ee04188cd	no	21
Warnings:					
Information:					
5	Foreign Reference	WO0182562A2.pdf	2814795 a0180745e5b0fdd9a84245e69aae47c1997f4f05	no	74
Warnings:					
Information:					
6	Foreign Reference	WO2010016989A2.pdf	1704012 442a95aa4bd2bcf12d51483c56898e659b48e70c	no	37
Warnings:					
Information:					
		Total Files Size (in bytes):	7863163		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya Setlur *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	ABEL JALIL, NEVEEN
Filed:	June 29, 2011	Group Art Unit:	2165

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

This Information Disclosure Statement is submitted:

☒ Under 37 CFR § 1.97(b): (1) Within three months of filing of national application; (2) Within three months of date of entry of the national stage as set forth in § 1.491 in an international application; (3) Before mailing of a first Office action on the merits; or (4) Before mailing of a first Office action after the filing of a request for continued examination under § 1.114.

☐ Under 37 CFR § 1.97(c): After the period specified in § 1.97(b) but before the mailing date of either a final action under § 1.113 or a notice of allowance under § 1.311, whichever occurs first, and accompanied by either:
- ☐ (1) A statement under § 1.97(e) as set forth below, or
- ☐ (2) A $180.00 fee under 37 CFR 1.17(p).

☐ Under 37 CFR § 1.97(d): After the period specified in § 1.97(c) but on or before payment of the issue fee, and accompanied by:
- ☐ (1) A statement under § 1.97(e) as set forth below; and
- ☐ (2) A $180.00 fee set forth in 37 CFR 1.17(p).

Statement under 37 CFR § 1.97(e):

☒ Not necessary, because this IDS is filed under § 1.97(b) or § 1.97(c)(2).

☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a

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counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1); or

☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

Form PTO 1449–Information Disclosure Citation is attached with copies of patents, publications, or other information of which Applicants are aware, which may be material to the examination of this application, and for which there may be a duty to disclose in accordance with 37 CFR 1.56. This is not to be construed as a representation that a search has been made or that no better prior art exists, or that a reference is relevant merely because cited.

The Examiner is requested to initial the attached form PTO-1449 and to return a copy of the initialed document to the undersigned as an indication that the attached references have been considered and made of record.

To the extent necessary, a petition for an extension of time under 37 C.F.R § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully submitted,

DITTHAVONG MORI & STEINER, P.C.

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Attorney/Agent for Applicant(s)
Reg. No. 52823

918 Prince Street
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Phouphanomketh Ditthavong
Attorney/Agent for Applicant(s)
Reg. No. 44658

Date: January 31, 2012

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000244

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 07/12/2012

Ditthavong Mori & Steiner, P.C.
918 Prince Street
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2168	

NOTIFICATION DATE	DELIVERY MODE
07/12/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000245

Office Action Summary	Application No.	Applicant(s)	
	13/172,425	SETLUR ET AL.	
	Examiner	Art Unit	
	SUSAN CHEN	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/31/2012*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the preliminary amendment filed on 09/19/2011.

Claims 1-20 are pending for examination. Claims 21-48 have been canceled.

Information Disclosure Statement

The information disclosure statement filed on 01/31/2012 are in compliance with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file, and the information referred thereto has been considered as to the merits, except those being line through.

Claim Objections

Claim 1, is objected to because of the following informalities:

As to claim 1, there is a typing error ".." at the end of the claim, it should be replaced with only one ".". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1-10, these claims repeatedly use the phrase “and/or” which renders these claims indefinite, since this phrase leads to more than one interpretations of the claimed limitations, In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970).

Due to the ambiguous nature of the claims, the following art rejection is as to the best of the examiner ascertain. In addition, claims and only the claims form the metes and bounds of the invention. “Office personnel are to give claims their broadest reasonable interpretations in light of the supporting disclosure, In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claims are not read into the claims. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)” MPEP p 2100-8, c2, l 45-48; p 2100-9, c1, l 1-4). The examiner has full latitude to interpret each claim in the broadest reasonable sense. The examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2010/0094904 published by Jandhyala (hereinafter referred as '904) in view of U.S. Patent No. 7,747,618 issued to Zeng et al. (hereinafter referred as '618).

As to claim 1, '904 disclosed the claimed method [e.g., Abstract, Fig(s). 1-9 with associated texts], comprising:

a determination of a query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device [e.g., per the use of internet or other network user devices (e.g., Fig. 7 with associated texts) for determining adaptive Page Rank or other type of score for web pages using the techniques as shown by unit 40, Fig. 4 with associated texts & S.: 0051-0052];

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results [e.g., per the use of Trust Rank and Customized PageRank schemas executed by the device of Fig. 7 in repose to a user query at S.: 0051-0052 & 0058-0062]; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device [e.g., S.: 0053-0054 & 0061- 0062 & Fig.(s) 6-7 & 8-9].

‘904 did not specifically detail that the query is a multi-dimensional query.

However, '618 disclosed the claimed limitations [e.g., Abstract, 400, Fig. 4 with associated texts]

‘904 and ‘618 are analogous art [providing customized document ranking] and both in the same endeavor to create a reduced matrix to facilitate the user query processing by construct a reduced document matrix per page ranking and weighting schemas [e.g., '904: Abstract, S.: 0039, Fig.(s) 4 & 7; '618: Abstract, Fig. 4 & 7 with associated texts], hence, with the teachings of ‘904 and ‘618, in front of him/her, it would have been obvious for an ordinary skilled artisan at the time the invention was made to

apply the multi-dimensional query techniques as disclosed by '618 into ‘904 invention, because by doing so, the combination invention of ‘904 and ‘618 will be upgraded to support an efficient query click-through processing to identify accurate ranked page results by the page ranking and weighting, smoothing and normalization schemas with reduced process cost via generating reduced matrixes in an user, queries and documents augmentation system.

As to claim 2, in addition to the limitations of claim 1, the combined invention of ‘904 and ‘618 further disclosed that:

a determination of one or more object contextual attributes associated with the one or more results, wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes [e.g., ‘904: per a search engine processing at S.: 0061].

As to claim 3, in addition to the limitations of claim 2, the combined invention of ‘904 and ‘618 further disclosed that:

a determination of a precision thereof of the one or more object contextual attributes [e.g.,’904: S.: 0037 & 0039]; and

a display of one or more representations of the precision thereof [e.g., ‘904: per the use of display (e.g., 258, Fig. 7) at S.:0061-0062 & Fig.(s) 8-9].

As to claim 4, in addition to the limitations of claim 3, the combined invention of '904 and '618 further disclosed that: a determination of the precision thereof based, at least in part, on user update information [e.g., '904 S.: 0052].

As to claim 5, in addition to the limitations of claim 4, '904 further disclosed that: an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined precision thereof [e.g., '904: per the use of database (e.g., 250, Fig. 7) & S.: 0052].

As to claim 6, in addition to the limitations of claim 2, the combined invention of '904 and '618 further disclosed that: wherein the at least one ordering metric is based, at least in part, on a weighted sum thereof of one or more dimensions of the multi-dimensional query [e.g., S.: 0039].

As to claim 7, in addition to the limitations of claim 6, the combined invention of '904 and '618 further disclosed that: wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes [e.g., '904 units: 304, 306, Fig(s). 8-9], (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes [e.g., '904 unit: 302, Fig. 8 or 312, Fig. 9], and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list

[e.g., ‘904 per the density or relative number of inlinks and outlinks in a region of a web graph at S. 0044 & algorithms at S.0047. Please also refer to '618: col. 4, lines 1 - col. 5, lines 10].

As to claim 8, in addition to the limitations of claim 7, the combined invention of ‘904 and ‘618 further disclosed that: wherein the contextual relation dimension specifies weighting information for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof [e.g., ‘904 unit: 302, Fig. 8 or 312, Fig. 9].

As to claim 9, in addition to the limitations of claim 1, the combined invention of ‘904 and ‘618 further disclosed that: a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof [e.g., ‘904 S.: 0009-0010 & the setup steps: 44-48 of Fig 4],

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof [e.g., ‘904 S.: 0051-0052].

As to claim 10, in addition to the limitations of claim 1, the combined invention of ‘904 and ‘618 further disclosed that:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device [e.g., '904 S.: 0058-0061]; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes [e.g., '904: per unit: 240, Fig. 7 with associated texts].

As to claims 11-20, these claims recite similar subject matters as claims 1-11 in form of apparatus hence are rejected for the same reason.

Conclusion

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g., amendments, 35 U.S.C. 101, objections and the like) set forth by the examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1) U.S. Patent Publication No. 2010/0223261 published by Sarkar which disclosed system and method for communication and collaboration user's interactions per shared and retrieval ranking technique.

2) U.S. Patent No. 7,330,849 issued to Gerasoulis et al. which disclosed retrieval and display of data objects using a cross-group ranking metric.

3) U.S. Patent Publication No. 2011/0078159 published by Li et al. which disclosed a long query processing.

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN CHEN whose telephone number is (571)272-4016. The examiner can normally be reached on Monday - Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fred Ehichioya can be reached on 571-272-4034. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SUSAN CHEN/
Primary Examiner
Art Unit 2168

July 8, 2012

Notice of References Cited	Application/Control No. 13/172,425	Applicant(s)/Patent Under Reexamination SETLUR ET AL.	
	Examiner SUSAN CHEN	Art Unit 2168	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0094904	04-2010	Jandhyala, Vikram	707/791
*	B	US-2010/0223261	09-2010	Sarkar, Devajyoti	707/726
*	C	US-7,330,849	02-2008	Gerasoulis et al.	1/1
*	D	US-7,747,618	06-2010	Zeng et al.	707/732
*	E	US-2011/0078159	03-2011	Li et al.	707/749
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000257

PTO/SB/08a (07-09)
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Setlur
Art Unit	2165
Examiner Name	ABEL JALIL, NEVEEN
Attorney Docket Number	P5296US00

U.S. PATENT DOCUMENTS

Examiner initial *	Cite No.	Document Number Number - Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear
/SC/	1	US-2002/0055924 - A1	05-09-2002	Liming, R.	
/SC/	2	US-2004/0110515 - A1	06-10-2004	Blumberg et al.	
/SC/	3	US-2004/0162830 - A1	08-19-2004	Shirwadkar et al.	
/SC/	4	US-2008/0301092 - A1	12-04-2008	Jayanti et al.	
/SC/	5	US-2010/0145976 - A1	06-10-2010	Higgins et al.	
/SC/	6	US-2010/0241663 - A1	09-23-2010	Huang et al.	
/SC/	7	US-2011/0055203 - A1	03-03-2011	Gutt et al.	
/SC/	8	US-6693651 -	02-17-2004	Biebesheimer et al.	
/SC/	9	US-7853574 -	12-14-2010	Kraenzel et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial *	Cite No. 1	Foreign Patent Document Country[3] Code Number[4] Kind Code (if known)[5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
/SC/	10	WO 01/82556 - A2	11-01-2001	Realnames Corp		
/SC/	11	WO 01/82562 - A2	11-01-2001	Microsoft Corp		
/SC/	12	KR 2007-0061024 - A	06-13-2007	Korea Electronics Telecomm	Eng. Abst. incl	
/SC/	13	WO 2010/016989 - A2	02-11-2010	Yahoo! Inc.		

Examiner Signature	/Te Chen/	Date Considered	07/08/2012

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not Considered. Include copy of this form with next communication to applicant. 1. Applicant's unique citation design number (optional). 2 See Kinds Codes of USPTO patent Documents. at www.uspto.gov or MPEP 901.04. 3. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786.9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /SC/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/09/2012								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000259

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	Art Unit
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
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	38	-								
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000260

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/09/2012								
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	48	-								
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000261

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	("20020055924" | "20040110515" | "20040162830" | "20080301092" | "20100145976" | "20100241663" | "20110055203" | "6693651" | "7853574").PN. and (context same sensitive)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:42
L2	2	l1 and query	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:42
L5	361	(context same sensitive) and query and (profil$4 or person$) and ((weight or scor$4) same (sum or total or average) same (order$4 or sort$4 or rank$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:47
L9	13	l5 and ((determin or verif$7 or identif) same (object or meta or hit or result or outcome) same (link or associat$6 or relation))	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:52
L10	13	l5 and ((determin or verif$7 or identif) same (object or meta or hit or result or outcome) same (link or associat$6 or relation)) and (weight or scor$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:52
L12	361	(context same sensitive) and query and (profil$4 or person$) and ((weight or scor$4) same (sum or total or average) same (order$4 or sort$4 or rank$4)) and ((weight or scor$4) same (sum or aggregat$4 or total or average))	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 14:59
L13	2	(context same sensitive) and query and (profil$4 or person$) and ((weight or scor$4) same (sum or total or average) same (order$4 or sort$4 or rank$4)) and ((weight or scor$4) same (sum or aggregat$4 or total or average)) and (determin$4 same (order$4 or sort$4 or rank$4) same (client or user or customer) same matrix same context)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 15:02
L14	2	(context same sensitive) and query and (profil$4 or person$) and ((weight or scor$4) same (sum or total or average) same (order$4 or sort$4 or rank$4)) and ((weight or scor$4) same (sum or aggregat$4 or total or average)) and (determin$4 same (order$4 or sort$4 or rank$4) same (client or user or customer) same matrix same (meta$4 or context or "URL" or "URI"))	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/08 15:03
L15	7	(context same sensitive) and query and	US-	OR	OFF	2012/07/08

		(profil$4 or person$) and ((weight or scor$4) same (sum or total or average) same (order$4 or sort$4 or rank$4)) and ((weight or scor$4) same (sum or aggregat$4 or total or average)) and (determin$4 same (order$4 or sort$4 or rank$4) same (client or user or customer) same matrix)	PGPUB; USPAT; USOCR; IBM_TDB			15:04

7/ 8/ 2012 3:26:57 PM
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	Art Unit
	SUSAN CHEN	2168

SEARCHED			
Class	Subclass	Date	Examiner
707	732, 726, 791	7/8/2012	tyc
706	45, 62	7/9/2012	tyc
715	811	7/9/2012	tyc

SEARCH NOTES		
Search Notes	Date	Examiner
Palm inventor search	7/8/2012	tyc

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000264

To: docket@dcpatent.com,,
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Application	Document	Mailroom Date	Attorney Docket No.
13172425	CTNF	07/12/2012	P5296US00
	CTNF	07/12/2012	P5296US00
	892	07/12/2012	P5296US00
	1449	07/12/2012	P5296US00

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya Raghavan Setlur *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Te Y. Chen
Filed:	June 29, 2011	Group Art Unit:	2168

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

RESPONSE UNDER 37 C.F.R. § 1.111

Dear Commissioner:

In response to the Office Action dated July 12, 2012, please amend and reconsider this application as follows.

AMENDMENT AND PRESENTATION OF CLAIMS 2

REMARKS 8

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000266

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims.

1. (Currently Amended) A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, ~~one or more contexts, or a combination thereof~~ associated with the at least one user device;

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.[[.]]

2. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

3. (Original) A method of claim 2, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000267

a determination of an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

4. (Original) A method of claim 3, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

5. (Original) A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

6. (Original) A method of claim 2, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

7. (Original) A method of claim 6, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000268

or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

8. (Original) A method of claim 7, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

9. (Currently Amended) A method of claim 1, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

10. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000269

11. (Currently Amended) An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, ~~one or more contexts, or a combination thereof~~ associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

12. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

13. (Original) An apparatus of claim 12, wherein the apparatus is further caused to:

determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000270

14. (Original) An apparatus of claim 13, wherein the apparatus is further caused to:

determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

15. (Original) An apparatus of claim 14, wherein the apparatus is further caused to:

cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

16. (Original) An apparatus of claim 12, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

17. (Original) An apparatus of claim 16, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

18. (Original) An apparatus of claim 17, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000271

19. (Currently Amended) An apparatus of claim 11, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

20. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

21-48. (Canceled)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000272

REMARKS

By this amendment, claims 1-20 are pending, in which claims 1, 9, 11 and 19 are currently amended. No new matter is introduced.

The Office Action dated July 12, 2012: **A)** objected to claim 1 for informalities; **B)** rejected claims 1-10 under 35 U.S.C. § 112, second paragraph, as being indefinite; and **C)** rejected claims 1-20 under 35 U.S.C. § 103 as being obvious based on *Jandhyala* (US 2010/0094904) in view of *Zeng et al.* (US 7,747,618) (hereinafter, *Zeng*). The objection and the rejections are respectfully traversed.

A. Objection to Claim 1

By this amendment, Applicants amend claim 1 to end with only one period. Therefore, reconsideration and withdrawal of the objection are respectfully requested.

B. 35 U.S.C. § 112, Second Paragraph, Rejection of Claims 1-10

The Office Action asserted that the phrase "and/or" renders claims 1-10 indefinite because the phrase leads to more than one interpretation of the claims. (Office Action, page 3). Applicants respectfully disagree with the Office Action's assertion.

MPEP 2173.05(h)(II) recites:

> Alternative expressions using "or" are acceptable, such as "wherein R is A, B, C, or D." The following phrases were each held to be acceptable and not in violation of **35 U.S.C. 112**, second paragraph in *In reGaubert*, 524 F.2d 1222, 187 USPQ 664 (CCPA 1975): "made entirely or in part of"; "at least one piece"; and "iron, steel or any other magnetic material."

Thus, according to MPEP 2173.05(h)(II), for example, a phase "A and/or B," which may be interpreted as "A, B, or A and B," is an acceptable expression and not in violation of 35 U.S.C. § 112, second paragraph.

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Further the Office Action cited to *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970) in support of the assertion. However, *In re Wilson* is unrelated to "and/or" with respect to 35 U.S.C. § 112, second paragraph, and, thus, lends no support for the Office Action's assertion.

Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

C. 35 U.S.C. § 103 Rejection of Claims 1-20

The Office Action asserted that *Jandhyala* teaches, "a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device," as recited by independent claim 1, and similarly recited by independent claim 11, in varying subject matter. (Office Action, pages 4 and 5).

Regardless of the validity the assertion, which Applicants do not concede, in an effort to expedite prosecution, and to reduce issues for potential appeal, Applicants amend independent claims 1 and 11 to even further distinguish the recited features. Specifically, Applicants amend independent claims 1 and 11 to recite, "a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device," in varying subject matter (emphasis added).

Jandhyala does not teach the claimed feature of "one or more personas, based, at least in part, on more than one person, associated with the at least one user device." *Jandhyala* merely teaches modifying a search process to become more specific to each user (e.g., based on a single user's browsing history). (*Jandhyala*, para. [0052]). However, there is no extra teaching of specifying **one or more personas,** based, at least in part, on more than one person, associated

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with the at least one user of the user device. *Jandhyala*'s search process is only specific to a single user rather than **more than one person**. Accordingly, *Jandhyala* does not teach the claimed feature.

For at least foregoing reasons, *Jandhyala* fails to teach all of the features recited in independent claims 1 and 11. Because *Zeng* does not cure *Jandhyala's* deficiency, and dependent claims 2-10 and 12-20 depend upon independent claims 1 and 11, it necessarily follows that this rejection cannot stand in view of the argument made above in favor of the parent claims 1 and 11.

Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

Therefore, the present application, as amended, overcomes the objection and rejections of record and is in condition for allowance. Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (703) 519-9952 so that such issues may be resolved as expeditiously as possible.

As Applicants' remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicants' silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, ability to combine references, assertions as to patentability of dependent claims) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such in the future.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

October 10, 2012
Date

/Kevin R. Gualano/
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000276

Electronic Acknowledgement Receipt

EFS ID:	13952664
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Tiffany Butler
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	10-OCT-2012
Filing Date:	29-JUN-2011
Time Stamp:	16:11:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		NC75185US_P5296US00_Response_filed10-10-12.pdf	141408 c1e16c27084411ea7701fe678c1218bf6ccc2af4	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	11
Warnings:			
Information:			
	Total Files Size (in bytes):	141408	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/172,425	06/29/2011	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
			TOTAL			TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT 10/10/2012

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $ =		OR	X $62=	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $250=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/KAREN VESTAL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Raghavan Setlur
Art Unit	2168
Examiner Name	CHEN, TE Y
Attorney Docket Number	P5296US00

U.S. PATENT DOCUMENTS

Examiner initial *	Cite No.	Document Number Number - Kind Code [2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US-2002/0188589 - A1	12-12-2002	Salmenkaita et al.	Corresponding to Cite Nos. 6 & 7
	2	US-2003/0036848 - A1	02-20-2003	Sheha et al.	Corresponding to Cite Nos. 6 & 7
	3	US-2009/0177386 - A1	07-09-2009	Haase	Corresponding to Cite Nos. 6 & 7
	4	US-2009/0228196 - A1	09-10-2009	Raab	Corresponding to Cite Nos. 6 & 7

FOREIGN PATENT DOCUMENTS

Examiner Initial *	Cite No. 1	Foreign Patent Document Country Code [3] Number [4] Kind Code (if known) [5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
	5	WO 2010/039459 - A2	04-08-2010	Yahoo! Inc.	Corr. to Cite # 6 & 7	

Examiner Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not Considered. Include copy of this form with next communication to applicant. 1. Applicant´s unique citation design number (optional). 2 See Kinds Codes of USPTO patent Documents. at www.uspto.gov or MPEP 901.04. 3. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assisstance in completing the form, call 1-800-PTO-9199 (1-800-786.9199) and select option 2.

PTO/SB/08b (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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Substitute for form 1449B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	2	of	2

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Raghavan Setlur
Art Unit	2168
Examiner Name	CHEN, TE Y
Attorney Docket Number	P5296US00

NON PATENT LITERATURE DOCUMENTS

Examiner initial *	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	6	Internationanl Search Report for PCT/FI2012/050468 dated September 6, 2012, pp. 1-6.	☐
	7	Written Opinion for PCT/FI2012/050468 dated September 6, 2012, pp. 1-9.	☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐

Examiner Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1. Applicants unique citation designation number. (optional) 2. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Cheif Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assisstance in completing the form, call 1-800-PTO-9199 and select option 2.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference NC75185WO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/FI2012/050468	International filing date *(day/month/year)* 15 May 2012 (15.05.2012)	(Earliest) Priority Date *(day/month/year)* 29 June 2011 (29.06.2011)
Applicant NOKIA CORPORATION et al.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☐ the text is approved as submitted by the applicant.

   ☒ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 3

   ☐ as suggested by the applicant.

   ☒ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000282

International application No.
PCT/FI2012/050468

Box No. IV **Text of the abstract (Continuation of item 5 of the first sheet)**

An approach is provided for providing an ordering metric for a multi-dimensional contextual query. An ordering platform determines a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device. The ordering platform further causes, at least in part, an execution of the multidimensional query on at least one context-sensitive database to generate one or more results. The ordering platform further determines at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device. The device may be a mobile phone running a navigation application for finding points of interest based, for example, on position, a user profile and other contextual information.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2012/050468

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F, G06Q

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

FI, SE, NO, DK

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

EPO-Internal, WPI, Internet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003036848 A1 (SHEHA MICHAEL A et al.) 20 February 2003 (20.02.2003) paragraphs [0011], [0031], [0062]-[0065], [0075]-[0076], [0081], [0093]; Figs. 2-4, 9-10, 12, 15-17, 19	1-28
X	WO 2010039459 A2 (YAHOO INC et al.) 08 April 2010 (08.04.2010) paragraphs [0018], [0025], [0030]-[0031], [0033], [0040]-[0041], [0043]-[0046], [0057]-[0058], [0063]-[0064], [0075]-[0077], [0083]; Figs. 1-7	1-28
X	US 2009228196 A1 (RAAB STEFAN BERNARD) 10 September 2009 (10.09.2009) the whole document, especially paragraphs [0074], [0081]	1-28
X	US 2002188589 A1 (SALMENKAITA JUKKA-PEKKA et al.) 12 December 2002 (12.12.2002) the whole document, especially Fig. 1G	1-28

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 September 2012 (04.09.2012)	06 September 2012 (06.09.2012)

Name and mailing address of the ISA/FI	Authorized officer
National Board of Patents and Registration of Finland P.O. Box 1160, FI-00101 HELSINKI, Finland	Janne Viljas
Facsimile No. +358 9 6939 5328	Telephone No. +358 9 6939 500

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000284

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2012/050468

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2009177386 A1 (HAASE ERIC) 09 July 2009 (09.07.2009) the whole document	1-28

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000285

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/FI2012/050468

Patent document cited in search report	Publication date	Patent family members(s)	Publication date
US 2003036848 A1	20/02/2003	US 2012011137 A1	12/01/2012
		US 2008076451 A1	27/03/2008
		US 2006229807 A1	12/10/2006
WO 2010039459 A2	08/04/2010	TW 201015475 A	16/04/2010
		US 2010088148 A1	08/04/2010
US 2009228196 A1	10/09/2009	WO 2009148653 A1	10/12/2009
US 2002188589 A1	12/12/2002	EP 2312476 A1	20/04/2011
		WO 02093422 A1	21/11/2002
		EP 1388093 A1	11/02/2004
		US 2003004937 A1	02/01/2003
US 2009177386 A1	09/07/2009	None	

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000286

International application No.
PCT/FI2012/050468

CLASSIFICATION OF SUBJECT MATTER

Int.Cl.
G06F 17/30 (2006.01)
G06Q 30/02 (2012.01)
G01C 21/34 (2006.01)
G01C 21/36 (2006.01)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000287

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
Nokia Corporation
IPR Department Jussi Jaatinen
Keilalahdentie 4
FI- 02150 Espoo
FINLAND

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*
06 September 2012 (06.09.2012)

Applicant's or agent's file reference
NC75185WO

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/FI2012/050468	15 May 2012 (15.05.2012)	29 June 2011 (29.06.2011)

International Patent Classification (IPC) or both national classification and IPC
See supplemental box

Applicant
NOKIA CORPORATION et al.

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [x] Box No. VII Certain defects in the international application
- [x] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/FI	Date of completion of this opinion	Authorized officer
National Board of Patents and Registration of Finland P.O. Box 1160, FI-00101 HELSINKI, Finland	04 September 2012 (04.09.2012)	Janne Viljas
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Form PCT/ISA/237 (cover sheet) (July 2011)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000288

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/FI2012/050468

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

   ☐ on paper
   ☐ in electronic form

   b. (time)

   ☐ in the international application as filed
   ☐ together with the international application in electronic form
   ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000289

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims		YES
	Claims	1-28	NO
Inventive step (IS)	Claims		YES
	Claims	1-28	NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations:

2.1 Reference is made to the following documents:

D1: US 2003036848 A1 (SHEHA MICHAEL A et al.) 20 February 2003 (20.02.2003)
D2: WO 2010039459 A2 (YAHOO INC et al.) 08 April 2010 (08.04.2010)
D3: US 2009228196 A1 (RAAB STEFAN BERNARD) 10 September 2009 (10.09.2009)
D4: US 2002188589 A1 (SALMENKAITA JUKKA-PEKKA et al.) 12 December 2002 (12.12.2002)
D5: US 2009177386 A1 (HAASE ERIC) 09 July 2009 (09.07.2009)

Documents D1-D4 represent the most relevant prior art, whereas document D5 represents the general state of the art.

2.2 Claimed invention

The invention relates to a method according to independent claims 1, 26, 27 or 28, apparatus according to independent claims 11 or 22, a computer-readable storage medium according to independent claim 24, and a computer program product according to independent claim 25.

Claim 1: A method comprising:
(F1) determining a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device;
(F2) causing, at least in part, an execution of the multi-dimensional query on at least one context sensitive database to generate one or more results; and
(F3) determining at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

Claims 11, 22, 24, and 25 are comprised of similar features, mutatis mutandis. The methods according to claims 26 and 28 additionally comprise features related to a user interface and the method of claim 27 additionally comprises features to facilitate processing of data and signals to execute the method of claim 1.

Some preferred embodiments are defined in the dependent claims 2-10 (method) and 12-20 (apparatus), which are equivalent, mutatis mutandis. Dependent claims 21 an 23 specify the apparatus to be a mobile phone.

The purpose of the invention is to provide a navigation service, where points of interest (attractions, services) are queried (searched) for based on contextual attributes like location, distance and preferences of a “persona” (user, profile), and where the search results are ordered (sorted, ranked, displayed) based on the degree of matching of the various attributes (dimensions). Below "ordering" is understood as referring not only to sorting a list, but to any internal ranking of search results and/or a

Continued to next page

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000290

Supplemental Box

Continuation of: Box V (1 / 3)

method of presenting to them to the user (e.g., the layout on a display). A "metric" is understood as any of several measures used in deciding how to do the ordering. Note that with these interpretations both the "ordering metric module" and the "analyzer module" of the application's description contribute to the "ordering metric".

2.3 Novelty under PCT Article 33(2)

2.3.1 Independent claims

Document D1 (paragraphs [0011], [0031], [0062]-[0065], [0075]-[0076], [0081], [0093]; Figs. 2-4, 9-10, 12, 15-17, 19) describes a navigation service that can be used to search for nearby points of interest (POI) according to specified attributes, order the results on screen, and to submit reviews. The device of D1 (Fig. 2) discloses all the features of independent claims 1 and 11:
(F1) Search queries are made based on multiple search dimensions, such as user preferences for the search type (305, Fig. 3) as well as device location (Fig. 3) and POI categories (Figs. 4, 9) (these two being examples of "contexts"). Thus the query determined by the user device is multi-dimensional. Authentication of a user ([0093]; Fig. 17) and the user preferences represent the determination of a "persona".
(F2) The query is executed in a database (Fig. 15). Since the query involves context-related information, the database is context sensitive.
(F3) The search results are ordered (indexed) either according to rating or to distance, for example, as chosen by the user ([0065]; Figs. 4, 9). The order can also be "route-enabled" (Fig. 12). The choice of ordering can be seen as one type of user contextual attribute on which the "ordering metric" (see Box VIII) is based. The position and the POI (i.e. object) category could also be seen as user contextual attributes of this kind. Note that it is unclear from the application what the distinction between a persona, persona information, context, contextual/situational information, user/device contextual attributes and dimensions is (see Box VIII).

Independent claims 22 (apparatus), 24 (storage medium) and 25 (computer program) and are similar to claims 1 and 11, mutatis mutandis, and so are claims 26-28, which only add some trivial features related to data and signal processing or user interfaces, which are implicitly present in D1.

Thus, the subject matter of independent claims 1, 11, 22, 24-25 and 26-28 is not novel in view of document D1.

Document D2 (paragraphs [0018], [0025], [0030]-[0031], [0033], [0040]-[0041], [0043]-[0046], [0057]-[0058], [0063]-[0064], [0075]-[0077], [0083]; Figs. 1-7) discusses a system for recommending shops and purchase items based on a shopping query ([0043]-[0046]; Fig. 3A). The recommended shops are sorted according to a "total purchasing cost" (cf. F3; see [0041], [0063]-[0064]) based not only on price, but quality, location, distance and similar factors (W4 data, metadata). Document D2 discloses all the features of independent claims 1, 11, 22, 24-25 and 26-28. In particular, there is a user profile (cf. F1; see [0018], [0033], [0043], [0046], [0064], [0075]), and the queries (which are at least implicitly present) are made to a database (cf. F2; see [0043]). The recommendation can also be partly based on what the user's social relationships (specified in the profile) have bought ([0075], [0076]), or on time ([0077]).

The subject matter of independent claims 1, 11, 22, 24-25 and 26-28 is therefore not novel based on document D2, either.

Documents D3 (the whole document, especially paragraphs [0074], [0081]) is an example of another navigation service, where points of interest can be searched for and rated. Document D3 can also be seen to disclose all the features of the independent claims 1, 11, 22, 24-25 and 26-28. The user's preferences ([0074]) constitute at the same time a persona (cf. F1) and user contextual attributes (cf. F3) affecting both the query and the ordering ([0081]) of the results. A database (cf. F2) is implicit in D3.

The novelty objection against independent claims 1, 11, 22, 24-25 and 26-28 can thus be based also on

Continued to next page

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000291

Supplemental Box

Continuation of: Box V (2 / 3)

document D3.

Document D4 (the whole document, especially Fig. 1G) presents a further method for context-sensitive searching. However, it does not seem to be clear from D4 what determines the ordering of the search results (cf. F3; see Fig. 1G) and therefore all the features of the independent claims are not disclosed.

Document D5 (the whole document) is similar to D3, but does not appear to discuss information relating to a persona or the user contextual attributes (cf. F1, F3). Thus, D5 does not disclose all the features of the independent claims.

2.3.2 Dependent claims

Document D1 discloses also the features of the following dependent claims:
- Claims 2 and 12: The results of the query are chosen according to attributes characterizing the POIs (i.e. ,objects), such as location, rating, POI category, and sub-category (see [0064]). These are a type of object contextual attributes, and they also affect the indexing order (for example if they are ordered by rating) and hence the ordering metric.
- Claims 3 and 13: The rating percentages (see [0076], [0081]; Figs. 10, 12, 16) in displayed together with the search results represent accuracy, precision, and/or resolution of the rating-type object contextual attributes.
- Claims 4 and 14: The rating percentages are based on survey and/or user update information (see [0011]; Figs. 10, 12, 16). Device location or distance data is also based on sensor (GPS) information (see [0031]). They are "determined" by the device, since the device obtains information about them from the database, the user, or from sensors.
- Claims 5 and 15: The device can update the rating information (a type of object contextual attribute) on the database by submitting a new rating provided to the device by the user (see [0011]).
- Claims 10 and 20: The device determines contextual information, e.g. position (Figs. 2, 3), and interaction information from its user interface (Figs. 2, 9-10, 12, 16, 19), such as the selection of the abovementioned indexing order (see feature (F3)).
- Claims 21 and 23: The device can be a cell phone ([0031], [0062]-[0063], [0075]), and it has user interface and a display (Fig. 2).

Thus, also the subject matter of dependent claims 2-5, 10, 12-15, 20-21 and 23 is not novel with respect to document D1.

Document D2 discloses the features of the following claims:
- Claims 2 and 12: The results are clearly based on object contextual attributes such as the prices, locations, and routes shown in Figs. 4, 5 .
- Claims 3 and 13: The prices of the separate purchase items, displayed in the results with a precision of $0.01 (Fig. 5) represent accuracy, precision, or resolution. So do the locations and routes represented on the maps with a very crude resolution (Figs. 4, 5).
- Claims 6 and 16: The query results are ordered based partly on the weights of some dimensions selected by the user ([0057]-[0058]; Fig. 3C). The term average is sufficiently vague that any process by which the total purchasing cost is calculated using these dimensions and weights can seen as being based, "at least in part", on a weighted average of the dimensions.
- Claims 7 and 17: The type of the shopping query (Fig. 3A) is a contextual dimension, distance or any of the dimensions in Fig. 3C are contextual relation dimensions. An inclusion dimension is represented for example by the "Accept" function or the checkmarks for individual purchase items (Figs. 4, 5).
- Claims 8 and 18: The contextual relation dimensions of Fig. 3C specify weighting information.
- Claims 9 and 19: The meaning of these claims and the location in the description to which they are referring is unclear (see Box VIII). However, ordering weights can be affected by the selected user profile ([0018]).
- Claims 10 and 20: Interaction information and a some user contextual attributes are determined when the user sets the weights via the user interface, as shown in Fig. 3C.
- Claims 21 and 23: The device of can be a cell phone ([0025], [0030]), and it has user interface and

Continued to next page

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000292

Supplemental Box

Continuation of: Box V (3 / 3)

a display (Fig. 7).

Therefore, the subject matter of dependent claims 2-3, 6-10, 12-13, 16-21 and 23 is also not novel with respect to document D2.

2.4 Inventive step under PCT Article 33(3)

The subject matter of claims 1-28 is not novel and therefore does not involve an inventive step, either.

In addition to objections arising from the lack of novelty, the subject matter of the following claims is obvious to a person skilled in the art based on document D1:

- Claims 6 and 16: Weighted sums or averages are not mentioned in D1. However, it is an obvious possibility (if not even a necessity) for a person skilled in the art to weight the different search dimensions (criteria) differently in an averaging process that ranks the search results in a certain order. However, the formulation of the claims and the corresponding location in the description are somewhat unclear (see Box VIII).
- Claims 7 and 17: In D1 there is a contextual dimension, because the query can be based on location or POI category and there is a contextual relation dimension, because the search can involve the distance from user to object (Fig. 9). Including only objects closer than a specified distance can be interpreted as an inclusion dimension (Fig. 9).
- Claims 8 and 18: These claims apparently refer to p. 10, lines 18-31, but the meaning of weighting and priority information remains unclear (see Box VIII). However, the ordering according to rating (Fig. 10) or distance and direction (Fig. 12), can be interpreted as involving priority information. It is obvious that some type of weighting can also be involved.
- Claims 9 and 19: The selection of a POI category (or the "selection" of the device's location) can be seen also as a selection of a context. It is an obvious design option to a person skilled in the art that the "ordering metric" depends on such a context.

Thus, the subject matter of claims 1-28 does not involve an inventive step over document D1.

The subject matter of the following claims is obvious to a person skilled in the art also based on document D2:

- Claims 4 and 14: It is clear that, for example, the route in Figs. 4, 5 would be shown from the present location, being based on the position and other sensors of the device ([0030]-[0031], [0040], [0037], [0083]).
- Claims 5 and 15: The results are also partly based on quality ratings (Fig. 3C). It is an obvious option to allow the user to affect the quality ratings of the objects by submitting their own rating after purchase.

Thus, the subject matter of claims 1-28 does not involve an inventive step over document D2.

All the additional features of the dependent claims appear to be obvious to a person skilled in the arts of context-sensitive databases and navigation devices. Thus none of claims 1-28 involve an inventive step based on document D3, either.

Ordering the search results in the method of D4 (Fig. 1G) based on user contextual attributes is an obvious design option to a person skilled in the art and, therefore, claims 1-28 do not seem to involve an inventive step compared to document D4, either.

2.5 Industrial applicability under PCT Article 33(4)

The subject matter of claims 1-28 is considered industrially applicable.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000293

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Contrary to the requirements of PCT Rule 5.1(a)(ii), no relevant prior art is indicated in the description, nor are the documents reflecting such art identified therein.

The claims are not drafted in the two-part form in accordance with PCT Rule 6.3(b), which in the present case would be appropriate, with those features known from the prior art placed in the preamble (PCT Rule 6.3(b)(i)) and the remaining features included in the characterising part (PCT Rule 6.3(b)(ii)).

The features of the claims are not provided with reference signs placed in parentheses (PCT Rule 6.2(b)).

Possible minor typographical or grammatical errors (page/lines):
- 13/28: associated the users -> associating the users
- 15/12: points of interests -> points of interest
- 16/17: weighted sun -> weighted sum
- 16/38: “to” missing after “wants”
- 17/16: “in” missing after “interested”

According to the requirements of PCT Rule 10.2, the terminology and the signs shall be consistent throughout the international application. This requirement seems not to be met with regard to the expressions persona, persona information, context, contextual/situational information, user/device contextual attributes and “dimensions” (cf. claims 1, 6, 7, 9, 10).

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000294

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The application does not meet the requirements of PCT Article 6 because the subject matter of at least the following claims is not clearly defined:

- Claims 1 and 11: The term "ordering metric" is non-standard and vague, and it leads to problems with interpreting the scope of several other claims as well. As already implied above in Box VII, similar problems arise from the unclear distinction between terms like persona, persona information, context, contextual/situational information, user/device contextual attributes and the various dimensions. For example, it is unclear how feature (F3) is related to feature (F1), because in (F1) a "context" is specified for the query, but (F3) uses "user contextual attributes" for ordering. Are they related?
- Claims 6 and 16: The claims refer to weighted sums or averages of search dimensions in the context of forming the ordering metric. However, weighted sums or averages are only mentioned on p. 10, lines 14-30 and p. 16, lines 14-19, where they have to do with updating and (re)calculating the rating of an object based on reviews of many users. It is not clear what the claim has to do with this, especially regarding the query dimensions. Ratings may be counted as query dimensions, but the scope of the claim is too broad, because the example concerns updating values in the database, while the claim appears to cover also sorting of objects on a screen. This is also related to the vagueness of the term "ordering metric".
- Claims 8 and 18: It is unclear how the terms weighting and priority information describe the subject matter for which protection is sought (i.e., apparently, what is explained on p. 10, lines 18-31).
- Claims 9 and 19: It is not clear what part in the description provides an example of what these claims mean.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000295

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**

Continuation of: International Patent Classification (IPC)

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: SYSTEM AND METHODOLOGY FOR RECOMMENDING PURCHASES FOR A SHOPPING INTENT

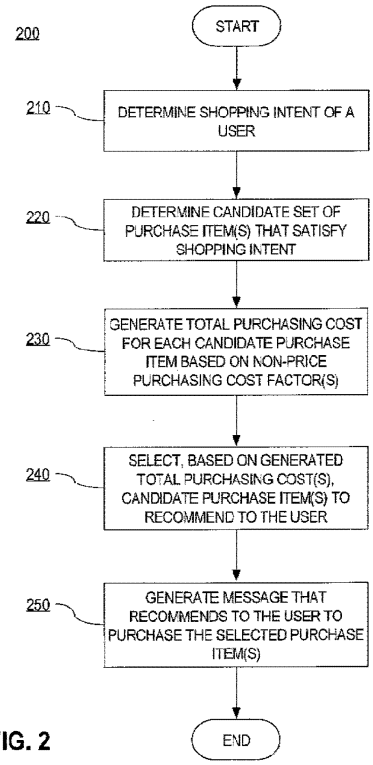


FIG. 2

(57) Abstract: Techniques are disclosed for optimizing online shopping. In one aspect, purchase items are recommended to a user based on the total purchasing costs of the recommended purchase items. In one embodiment, the total purchase cost includes not just the price of the purchase item but also includes weighted costs based on non-price purchasing cost factors. In another aspect, data is maintained that represents social relationships between members of a network of users and purchase recommendations are made to a user based on the relatedness between the user, the item and the other members of the network. In yet another aspect, purchase recommendations are made based on the best time to purchase a purchase item. In another aspect, item retailers can offer purchase item incentives to users based on the identity of and information about the shopper to whom the incentive is offered including bundling incentives with a unified redemption code.

WO 2010/039459 A2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000297

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— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

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SYSTEM AND METHODOLOGY FOR RECOMMENDING PURCHASES FOR A SHOPPING INTENT

FIELD OF THE INVENTION

[001] The present invention relates generally to shopping, and in particular, to a system and methodology for recommending purchases to shoppers in a manner that optimizes the shopper's experience.

BACKGROUND

[002] Many consumers make purchasing decisions based on more than just the amount of money that must be paid to the seller/vendor/retailer of a desired good or service. Non-price costs can affect a consumer's purchasing decision to the same extent or even a greater extent than price costs. Non-price costs include any proximate costs connected with a purchase of a purchase item (i.e., good and/or service) such as, for example, external, social, and psychological costs, other than the amount of money the purchaser gives to the seller in order to obtain the purchase item. For example, an environmentally conscious consumer may consider the pollution costs associated with a purchase that others may pay for in some way or at some time in the future but that are not included in the price of the good or service. As another example, a consumer may purchase a good or service from a retailer that is geographically closer to the consumer to save transportation and fuel costs even though the good or service can be obtained for a lower price from another more geographically remote retailer. As yet another example that reflects the psychological costs associated with a purchase, a consumer may be more willing to purchase a particular good or service that has also been previously purchased by a friend or family member.

[003] The advent of the Internet has led to development of online price comparison services that allow shoppers to compare prices for desired goods and services from various retailers. However, many current price comparison services are inadequate for recommending purchases to shoppers because they assume that a shopper is concerned almost exclusively with price when making purchasing decisions. Other deficiencies exist with current online price comparison services. For example, some online price comparison services offer a rating system whereby users can rate their level of satisfaction with a particular good or service or retailer. Often, however, any and all users of the online price comparison service are permitted to provide ratings. Thus, any given rating provides only a general indication of whether the good or service should be

recommended to a particular shopper. With many online price comparison services having tens of thousands of users, a rating for a good or service or a rating for a retailer can become so generalized that it becomes practically meaningless to individual shoppers and specific purchasing decisions. Further, many current online price comparison services offer only the ability to "buy now" and do not allow shoppers to time their purchases based on availability of rebates, coupons, etc. to get the most value for their money.

[004] Therefore, there exists a need for a shopping service that is effective for recommending purchases to a shopper in a manner that optimizes the shopper's shopping experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[005] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[006] FIG. 1 is a block diagram of an exemplary client/server environment and mobile network environment in which embodiments of the invention maybe implemented.

[007] FIG. 2 is a flow diagram illustrating a process for recommending purchases for a shopping intent.

[008] FIG. 3A is a block diagram of exemplary user interface components for selecting a shopping intent category and associated bundled purchase items according to an embodiment of the invention.

[009] FIG. 3B is a block diagram of exemplary user interface components for specifying purchase requirements according to an embodiment of the invention.

[0010] FIG. 3C is a block diagram of exemplary user interface components for specifying purchase requirements according to an embodiment of the invention.

[0011] FIG. 4 is a block diagram of graphical user interface window showing example purchase recommendations made to a shopper according to an embodiment of the invention.

[0012] FIG. 5 is a block diagram of a graphical user interface window that shows an example alternative recommended shopping plan according to an embodiment of the invention.

[0013] FIG. 6 is a flow diagram of a process for an item retailer to offer a customized incentive to a shopper according to an embodiment of the invention.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000300

[0014] FIG. 7 is a diagram of a computer system upon which embodiments of the invention may be implemented.

DETAILED DESCRIPTION

[0015] In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the present invention.

OVERVIEW

[0016] Systems and methods consistent with the present invention address the needs identified in the background and other needs by providing a shopping service that is capable of recommending purchases based on factors other than current purchase price.

[0017] According to one aspect of the invention, purchases are recommended to a shopper based on a calculated total purchasing cost of each recommended purchase item. The calculated total purchasing cost includes not just the price that the shopper must pay to the seller of the purchase item but also a cost value that reflects non-price purchasing costs associated with the purchase. Non-price purchasing costs, or "non-price costs", are costs associated with a purchase of a particular good or service other than the amount of money the buyer must pay a seller to receive the good or service. Examples of non-price costs include purchase costs to the buyer other than price (e.g., transportation costs to the place of purchase) and external, social, and psychological costs to the buyer and others (e.g., environmental costs).

[0018] Various techniques are provided for calculating total purchasing cost based on non-price costs. In one embodiment, the shopper uses a user interface to assign weights to non-price cost factors that the user considers relevant to purchasing decisions and purchase recommendations are made to the shopper based on the assigned weights. Because the shopper's preferences on non-price costs are considered when making recommendations, the recommendations are more relevant to the shopper's purchasing decision than those made by current online price comparison services. In another embodiment, the shopper's user profile is analyzed to derive a set of character attributes that are matched against the aggregated data of all network users to assign a set of default

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000301

weights for non-price cost factors based upon the weights applied by similar network users whose similarity to the shopper is above a threshold of certainty.

[0019] Instead of or in addition making recommendations based on non-price costs, recommendations may be based on discrete social relationships between network members whether explicitly designated by one or both users or derived based upon the number, type, length and topic of communications between the users. Specifically, a database of users is maintained that includes data that represents both explicit and implicit social relationships between the users and recommendations are made based on the data. For example, according to one embodiment, a recommendation to purchase a particular item is made to a shopper based on whether any of the shopper's friends, as indicated by social relationship data, have previously purchased the item. By making recommendations based on discrete social relationships between users, the recommendations can be more relevant to a shopper's purchasing needs than recommendations based on undifferentiated product ratings.

[0020] Additionally, techniques are described for making recommendations based on the best time to purchase. These techniques may be used instead of or in addition to the techniques described above for recommending purchases based on total purchasing cost and social relationships. In one embodiment, a message is sent to a shopper that recommends a future time period in which to purchase a recommended purchase item. The recommended future time period is based on the availability of coupons, sales, rebates and the like offered by item retailers. In contrast to the current online price comparison services that offer only the option to "buy now," the techniques described herein enable shoppers to time their purchases to get the best deals.

[0021] According to another aspect of the invention, techniques are disclosed that enable item retailers to offer customized incentives to shoppers in a manner that allows the item retailer to take into account the shopper to whom the incentive is being offered. User profile information about the shopper is presented to the item retailer so that the item retailer can take into account information about the shopper when proposing an offer of an incentive and conditions for obtaining the incentive. The item retailer then provides, based on the user profile information, an offer of an incentive on the purchase item to the user along with one or more incentive conditions that the user must fulfill before receiving the offered incentive. In one embodiment, an item retailer is alerted with a message when a shopper approves a purchase recommendation that includes a purchase item offered for sale by the item retailer so that the item retailer has an opportunity to offer a customized incentive to the shopper. In another embodiment, one or more

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000302

incentives provided by the item retailers may be bundled with a single unified redemption code.

[0022] In addition to other aspects and embodiments of the invention, the foregoing aspects and embodiments discussed in this section will now be described in greater detail.

EXEMPLARY CLIENT/SERVER ENVIRONMENT

[0023] FIG. 1 is a block diagram illustrating an exemplary client/server environment 100 in which embodiments of the invention may be implemented. Environment 100 includes one or more clients 110, data network 120, and one or more servers 130. Client(s) 110 include shopping client(s) 111 and sensor client(s) 112. The one or more server(s) 130 implement shopping service 140. Shopping service 140 offers a network accessible interface for receiving and responding to shopping service request(s) 121 from shopping client(s) 111, sending shopping service message(s) 122 to shopping client(s) 111, and receiving sensor data 123 from sensor client(s) 112.

[0024] In environment 100, the server(s) 130 and the client(s) 110 are all coupled to data network 120. The data network 120 facilitates communications between client(s) 110 and server(s) 130. Data network 120 may be any computer network capable of delivering bytes of data, e.g., messages, from one computer, e.g., server 130, to another computer, e.g., client 110. The data network 110 may be a local area network ("LAN"), wide area network ("WAN") (e.g., the Internet), a telecommunications network, a wireless network, or other functionally equivalent data transfer network system. Further, data network 110 may be comprised of one or more networks that are coupled together to form a single logical network and that supports appropriate network protocol (e.g., TCP/IP for the Internet).

[0025] Server(s) 130 may be any combination of software and hardware capable of handling server computer functions, for example, the computer system 700 of FIG. 7. As mentioned above, one or more servers 130 implement shopping service 140. Shopping service may be implemented on a single server 130 or multiple servers 130. Further, in the spirit of distributed computing system architectures, a portion of the functionality provided by shopping service 140, for example service logic 141 or data storage 142, may be implemented on a subset of server(s) 130. Additionally, server(s) 130 may be co-located in a single data center or amongst several, geographically distributed data centers. Further, server(s) 130 may implement other online services such as web page services, messaging services, e-mail services and the like.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000303

[0026] Like server(s) 130, client(s) 110 may be any combination of software and hardware capable of handling client computer functions such as the computer system 700 of FIG. 7. Client(s) 110 may include mobile device(s) capable of handling client computer functions within a communications network such as cell phones, smart phones, personal data assistants (PDAs), mobile computers, and the like. Generally, however, mobile device(s) include virtually any portable computing device capable of receiving and sending a message over a network, such as network 120. Mobile device(s) may also be described generally as client devices that are configured to be portable and include virtually any portable computing device capable of connecting to another computing device and receiving or sending information. Thus, one or more embodiments of the invention include a mobile network of online and offline actors and actions, all of which may be modeled to better match and refine purchase recommendations and users shopping at retail locations with the aid of a mobile device can realize the benefits of embodiments of present invention.

[0027] As mentioned above, client(s) 110 include shopping client(s) 111 and sensor client(s) 112. Users may employ shopping client 111 to submit shopping service requests 121 over data network 120 to shopping service 140 and to receive shopping service messages 122 from shopping service 140. Shopping service messages 122 refers to both data sent from shopping service 140 to shopping client(s) 111 in response to synchronous requests from shopping client(s) 111 (e.g., a response to a shopping service request 121) and to data that is sent *sua sponte* (i.e., not in direct response to a synchronous request) from shopping service 140 to shopping client(s) 111 or user(s) thereof (e.g., an e-mail message).

[0028] In one embodiment, shopping client 111 is configured with a web browsing application such as the commercially available Microsoft Internet Explorer browser or the Mozilla Firefox browser and the user uses the browsing application to submit requests 121 to and display messages 122 from shopping service 140. Requests 121 and messages 122 may be sent using any network communication protocol or in any data format suitable for sending data over data network 120 such as TCP/IP, Hypertext Transfer Protocol (HTTP), Hypertext Markup Language (HTML), Extensible Markup Language (XML), JavaScript™, Handheld Markup Language (HDML), Wireless Markup Language (WML), WMLScript, Standard Generalized Markup Language (SGML), and the like.

[0029] Sensor client(s) 112 each may comprise one or more sensors capable of detecting or measuring a physical quantity and converting the quantity to sensor data 123 which can be sent over data network 120 to shopping service 140. The one or more

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000304

sensors may be part of sensor client 112 or separate from sensor client 112. For example, road sensors for detecting traffic flow over a stretch of roadway may be installed near or on the roadway and connected via a communications link to a sensor client 112 relatively farther from the roadway which sends sensor data 123 about the roadway to shopping service 140 over data network 120.

[0030] A shopping client 111 may also be configured to operate as a sensor client 112 in some aspect. For example, a mobile device such as a cell phone may include a Global Positioning Satellite (GPS) sensor for determining the physical coordinates of the mobile device on the surface of the Earth, which typically outputs a location as latitude and longitude values. Thus, as evidenced by the GPS example, a shopping client 111 may also be a sensor client 112. In one embodiment, however, shopping client 111 may through other components, provide other information that may be employed to determine a physical location of the client, include for example, a MAC address, Internet Protocol (IP) address, or the like.

[0031] Sensor client(s) 112 periodically send sensor data 123 to shopping service 140. In one embodiment, shopping service 140 uses sensor data 123 to inform the calculation of a total purchasing cost of a recommended purchase item. For example, given a user's current geographic location as detected by a GPS sensor and the current traffic conditions on the roadways between the user's current location and a retail location as detected by road sensors, shopping service 140 can calculate a total purchasing cost of an item sold at the retail location based on what it would cost the user to drive, for example, in terms of fuel consumed and travel time, from his current location to the retail location.

[0032] As mentioned above, shopping service 140 is implemented on one or more servers 130, at least some of which are configured with software and/or hardware based service logic 141 for receiving and responding to shopping service request(s) 121 from shopping client(s) 111, sending shopping service message(s) 122 to shopping client(s) 111, and receiving sensor data 123 from sensor client(s) 112. Shopping service 140 also includes data storage 142 for storing sensor data 123 and storing other data, such as user profile data 143, W4 data 144, and purchase item data 145, which may be needed by service logic 141 to implement aspects of the invention described herein. Data storage 142 may be implemented using any volatile or non-volatile storage medium suitable for storing data.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000305

USER PROFILE DATA

[0033] Use profile data 143 may maintain and store, for each user that is a member of a network of users, social network information, including, but not limited to information about the user's personal network of friends, family, colleagues, co-workers, and subsequent connections within the online or offline community. A user's social network typically comprises the user's set of primary and/or indirect personal relationships with other users, including real and virtual privileges and permissions that the user may associate with those other users. Primary relationships are also known as first-degree relationships and usually include relationships with users that the user communicates with directly on a regular basis by telephone, by e-mail, by instant messaging, and the like. In one embodiment, user profile data 143 may maintain information about context-specific primary relationships such as, for example, a user's primary relationship at work and the same user's primary relationship outside of work, or in a social context. Indirect relationships typically include relationships through first-degree relationships to users with whom a user has only had limited direct contact or no direct contact at all. Indirect relationships may be characterized by a degree of separation between users. For instances, a friend of a friend can be characterized as two degrees of separation or a second degree relationship. Similarly, a friend of a friend of a friend can be characterized as three degrees of separation of a third-degree relationship.

[0034] In one embodiment, social network information may be obtained directly from a user's address book, buddy list, instant message contacts, or similar source. However, social network information may also be obtained indirectly through monitoring various interactions of a user. Thus, for example, social network information may be extracted based on content of messages between users of a network including, but not limited to e-mail messages, Short Message Service (SMS) messages, Instant Messaging (IM) messages, alerts, audio messages, phone calls, either received or sent by the user, or the like. For example, in one embodiment, the user and another user may include information about a third user in a message, or the like. Such third user information may be obtained, in one embodiment, and stored as part of user profile data 143.

[0035] In addition to containing social network information about users, user profile data 143 may also maintain current contact information and associated current location information including a current contact address at which to contact a user at the user's current physical location. The contact address and location information may also be associated with a contact name for the user such as an alias, a user name, or the like. The contact address may include an e-mail address, an IM address, SMS address, a telephone

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000306

number, IP address, or other information that may be used to establish communication with the user at the user's current physical location. Location information may be obtained from a sensor at the user's physical location such as, for example, a GPS sensor integrated into a mobile device carried by the user. Thus, in one embodiment, contact and location information for a user can be used by shopping service 140 to timely recommend to the user purchase items that are in close physical proximity to the user's current physical location. Alternatively, in another embodiment, if a user is currently at a retail location for which there is a dearth of available inventory information then shopping service 140 can contact the user at the location for an on-the-spot inventory analysis on behalf of another user.

[0036] Additionally, data associated with a user's past online or offline activities can be stored as part of user profile data 143 to inform the purchase recommendation process. Past user online activity data includes, for example, websites the user has visited, types of information searched for by the user (search history), types of content download, where the content is downloaded from, and the like. Past user online activity data may include data that reflects previous purchase items recommended to the user according to techniques described herein thereby maintaining a personal shopping history for the user. Past user offline activity data may include physical movements, location tracking, purchases at or visits to retail locations as well as social, temporal and topical metadata associated with those purchases.

W4 DATA

[0037] In addition to storing user profile data 143 to inform the process of recommending purchases, data storage 142 may also store W4 data 144. W4 data refers to metadata that indicates the where, when, who, and what properties associated with a real-word event. That is, W4 data 144 may include information about the real-world event which is spatial or geographic in nature (i.e., the "where), temporal (i.e., the "when), social (i.e., the "who"), and/or topical (i.e., the "what").

[0038] According to one or more embodiments, as real-world events occur sensors detect W4 properties associated with the event which are then transmitted by sensor client(s) 112 as sensor data 123 to shopping service 140. Shopping service 140 may then store the transmitted sensor data 123 as W4 data 144 in data storage 142 and associate the W4 data with one or more information objects. An information object refers to data that represents a real-world entity (e.g., a user, retailer, or purchase item) associated with the real-event described by the W4 data.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000307

[0039] In addition to receiving W4 data as sensor data 123, W4 data 144 may also be obtained from information contained in shopping service requests 121. For example, in one embodiment, a user may request 123 shopping service 140 to make purchase recommendations while at a particular retail location and shopping service 140 will take into account the user's current presence at the retail location when making recommendations. The user's current presence at the retail location may be detected by a GPS sensor integrated with the mobile device used by the user to make the request 123 of shopping service 140. In this example then, W4 data 144 may be stored that indicates the where (longitude and latitude of the retail location as indicated by the GPS sensor of the mobile device), when (time of request 123), who (the user making request 123), and what (a request for purchase recommendations) that describe the real-world event of the user shopping at the retail location at a particular time. The W4 data 144 may be associated with an information object such as, for example, data that represents the user and/or data that represents the particular retail location.

[0040] In general, spatial information may be determined with reference to, for example, location and/or proximity data associated with mobile devices, GPS sensors, Bluetooth and other sensing systems, etc. Temporal information is also widely available in the various systems in which the invention is implemented such as client(s) 110 and/or server(s) 130. Social information may be determined with reference to a wide variety of sources including user profile data 143, and may relate to the user currently enjoying the benefit of the invention such as a user making a request 123, as well as other users with whom the user is communicating, or with whom the user has some form of social relationship as indicated by, for example, user profile data 143. Topical information related to a real-world event is available from a variety of sources including, but not limited to, the content of the requests 123 and messages 122, the content of communications between users such as by e-mail or instant messaging, as well as explicit profile data (such as declared interests) expressed in user profile.

TOTAL COST CALCULATOR

[0041] According to one or more embodiments, purchase items are recommended to a user based on a total purchasing cost of each purchase item which includes non-price costs associated with the purchase item. FIG. 2 is a flow diagram which illustrates a high level process 200 for recommending purchase items to a user based on total purchasing cost. In one or more embodiments, process 200 is implemented by service logic 141 of shopping service 140.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000308

[0042] Process 200 begins after a start block, at block 210, where a user's shopping intent is determined by shopping service 140.

SHOPPING INTENT

[0043] A used herein, the term "shopping intent" refers to criteria used by shopping service 140 to determine purchase items to recommend to a user that meet the user's shopping needs, wants, and desires as expressed by the criteria. Shopping intent criteria may be specified in a user's request 121 to shopping service 140 and/or may be inferred by shopping service 140 from a user's specified shopping intent in a request 121, from user profile data 143 associated with the user and/or from W4 data 144.

[0044] In one or more embodiments, to specify a shopping intent, the user enters one or more words, terms, or keywords (i.e., "shopping query") into a user interface that is presented to the user by shopping service 140 at shopping client 111. The user then sends the shopping query in a request 121 to shopping service 140. Upon receiving a shopping query, shopping service 140 searches for one or more candidate purchase items that satisfy the shopping query in a purchase item database such as purchase item data 145 in data storage 142.

[0045] In addition to or instead of specifying a shopping intent with a shopping query, the user may specify a shopping intent by selecting a shopping intent category from a list of categories. Each shopping intent category may contain subcategories that each offers a suggested set of bundled purchase items. The user may select specific purchase items from the bundles and/or select one or more bundles in their entirety. The list of shopping intent categories and subcategories may be presented to the user at a shopping client 111 by shopping service 140. Data that represents the set of available shopping intent categories and subcategories may be maintained by shopping service 140 in data storage 142.

[0046] FIG. 3A is a block diagram of exemplary user interface components for selecting a shopping intent category and associated bundled purchase items according to an embodiment of the invention. A user interface that is caused to be presented to a user at shopping client 111 by shopping service 140 may include user interface component 310 for selecting a shopping intent category and user interface component 320 for selecting one or more bundled items from shopping intent subcategories 321 and 322.

[0047] In the example illustrated by FIG. 3A, the shopping intent category "Birthday Party" is selected from user interface component 310 which causes shopping intent subcategories "From Him" and "For Her" of shopping intent category "Birthday Party" to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000309

be presented to the user. Shopping intent subcategory 321 contains a list of selectable bundled purchase items related to shopping for a birthday party "for him." Shopping intent subcategory 322 contains a list of selectable bundled purchase items related to shopping for a birthday party "for her." The user may select one or more purchase items from the bundled purchase items presented in shopping intent subcategories 321 and 322.

[0048] The list of shopping intent categories, subcategories, and bundled purchase items available for selection in components 310 and 320 may be based on a predefined list of categories/purchase items and/or may be based on user profile data 143 and/or W4 data 144. For example, if a user has provided valid authentication credentials to shopping service 140 then the identity of the user may be ascertained by shopping service 140 when presenting user interface components 310 and 320 to the user. Shopping service 140 then may customize the lists of shopping intent categories/subcategories/bundled purchase items presented in components 310 and 320 based on the identity of the user to whom the list is being presented to. The lists may be customized based on user profile data 143 and/or W4 data associated with the user such as the user's social network information, current contact information, current location information, and past online or offline activity data, search history, past purchase recommendations, etc.

[0049] In addition to specifying shopping intent criteria through a shopping query and/or a shopping intent category, the user may specify purchase requirements as part of specifying a shopping intent. FIG. 3B is a block diagram of exemplary user interface components for specifying purchase requirements according to an embodiment of the invention. Graphical user interface window 330 includes a search field 331 for entering a shopping query and purchase requirement controls 332-335 which the user can selectively enable or disable by selecting the checkbox associated with the purchase requirement. In one embodiment, graphical user interface window 330 is a browser window that is caused to be displayed by shopping service 140 on the display of a shopping client 111.

[0050] Purchase requirement controls 332-335 may reflect virtually any price and/or non-price purchasing cost factor that may be relevant to users when making purchasing decisions. By specifying purchase requirements in a shopping intent, a user can constrain the types of purchase items that shopping service 140 recommends to the user. For example, the user may constrain purchase recommendations to purchase items that are available for purchase during a certain time period by specifying the time period when the purchase items are needed.

[0051] In addition to allowing the user to constrain the types of purchase items that shopping service 140 recommends to the user, shopping service 140 may use the purchase

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000310

requirements to calculate the total purchasing cost of a purchase item with respect to non-price purchasing cost factors. For example, FIG. 3B shows three example non-price purchasing cost factors: purchase item quality, purchase item time period, and purchase item location. In one embodiment, purchase item quality refers to a cost to the buyer of purchasing an inferior purchase item relative to the most superior purchase item in a class of purchase items. This cost may be measured in a number of ways including by comparing and quantifying the difference in purchase item rating between the highest rated purchase item in a class of purchase items with a particular purchase item that is a member of the same class of purchase items. For example, assume shopping service 140 maintains data that reflects purchase item ratings from users about high-definition televisions. The cost with respect to purchase item quality of a particular high-definition television from a particular vendor can be measured by quantifying the rating difference between the particular high-definition television and the rating of the highest rated high-definition television in the class of high-definition televisions of which the particular high-definition television is a member.

[0052] In one embodiment, purchase item time period refers to the cost associated with purchasing a particular purchase item during specified period of time (or now if no time period is specified). This cost may be measured relative to the cost to purchase the particular purchase item during other time periods such as, for example, when the purchase item is on sale.

[0053] In one embodiment, purchase item location refers to the cost associated with traveling to the retail location where a particular purchase item is sold. This cost includes transportation costs and travel time to the retail location.

[0054] Other non-price purchasing cost factors include purchase item sourcing and purchase item relatedness. In one embodiment, purchase item sourcing includes any data on the manufacturer and supply/retail chains of purchase items from creation to consumption by users and include business practices, social and political affiliations or policies, benefits given to employees, partners and their communities. Examples of purchase item sourcing data include data about which retailers give to political action committees or candidates that the user does or does not support, or which retailers are associated with child labor, etc.

[0055] In one embodiment, purchase item relatedness is in any dimension of spatial, temporal, social or topical data between the user and a purchase item including: proximity of the item to the user during the user's daily life (e.g. next door neighbor owns the same car), proximity of a known social relation who has purchased, research or considered the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000311

item, proximity of your interest to an attribute of the item and the proximity in time to any other influencing factor for its relation to the user.

[0056] Returning to the example illustrated by FIG. 3B, the user has entered the shopping query "birthday party" into the search field 331. Further, the user has selected two purchase requirements, price and the time period when the items are needed. The price purchase requirement control 332 indicates that the user is interested in purchase items that cost no more than $100. The time period purchase requirement control 334 corresponds to the non-price purchasing cost factor purchase item time period. The user has indicated for purchase item period a time period of June 8, 2008 to July 8, 2008. The user may then submit the shopping query and the purchase requirements in a request 121 to shopping service 140 by selecting the submit button 336.

[0057] In addition to or instead of specifying purchase requirements using the user interface controls illustrated in FIG. 3B, the user interface controls of FIG. 3C may also be used. FIG. 3C is a block diagram of exemplary user interface components for specifying purchase requirements according to an embodiment of the invention. FIG. 3C shows graphical user interface window 330 including search field 331 and purchase requirement controls 342, 343, and 344. Purchase requirement controls 342, 343, and 344 are slider controls which the user can slide in a direction to indicate the importance of the corresponding purchase requirement to the user when making purchasing decisions. For example, a user could slide purchase requirement control 334 labeled "environment" to the right to indicate that the user is interested in purchase items that are relatively more environmentally friendly.

[0058] Like purchase requirement controls 333, 334, and 335 of FIG. 3B, controls 342, 343, and 344 of FIG. 3C may reflect non-price purchasing cost factors that shopping service 140 may use to calculate a total purchase cost for recommended purchase items. Specifically, the user may use slider controls 342, 343, and 344 to assign weights to non-price purchasing cost factors. For example, in FIG. 3C, the user, by sliding control 344 farther to the right than control 343 has indicated that a relatively greater weight should be given to the environmental friendliness of purchase items rather than the quality of purchase items. In other words, when shopping service 140 calculates the total purchasing cost of purchase items that are equal in cost all other respects except quality and environmental friendliness, the incentive in cost of a purchase item that is relatively more environmentally friendly will be greater than the incentive in cost for the same relative superior quality. Once the user has set the purchase requirement controls 342, 343, and 344 and entered a shopping query into field 331, the user may submit the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000312

shopping query and submit the weights assigned to the purchase requirements in a request 121 to shopping service 140 by selecting the submit button 336.

[0059] The user interface controls and components depicted in FIGS. 3A, 3B, and 3C are exemplary only and embodiments of the invention are not limited to any particular type of user interface control. Further, embodiments are not limited to the number or arrangement of purchase requirement controls shown in FIGS. 3A, 3B, and 3C. Also, purchase requirement controls 333-335 and slider controls 342-344 may be presented to the user in the same window 330. For example, graphical user interface window 330 may contain purchase requirement controls 334 and 335 of FIG. 3B and purchase requirement controls 343 and 344 of FIG. 3C.

[0060] As well as specifying a shopping intent in a request 121 to shopping service 140, shopping service 140 may infer some or all of a user's shopping intent. A shopping intent inference by shopping service 140 represents a context based guess on the shopping intent of a user. The context may be provided by criteria specified in a request 121 that includes shopping intent criteria information such as a shopping query and/or purchase requirements. The context may also be provided by user profile data 143 and/or W4 data 144. For example, the user's current location information as indicated by user profile data 143 associated with the user can be used by shopping service 140 to infer a purchase item location purchase requirement such as, for example, that the user is interested in purchase items that are available for purchase within a certain distance from the user's current location.

[0061] Returning to FIG. 2, process 200 continues at block 220 where a candidate set of purchase items is determined by shopping service 140 that satisfy the shopping intent determined in step 210. In general, step 220 involves shopping service 140 evaluating the specified and inferred shopping intent criteria against purchase item data stored in a database of purchase items, such as purchase item data 145 stored in data storage 142, and selecting purchase items that match the criteria.

[0062] In step 230 of process 200, a total purchasing cost is calculated for each purchase item of the candidate set determined in step 220 and at block 240 one or more candidate purchase items are selected as purchase items to recommend to the user. In step 250, shopping service 140 generates a message that recommends to the user to purchase the selected purchase items.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000313

CALCULATING TOTAL PURCHASING COST

[0063] In one embodiment, the total cost of a purchase item is calculated as the "W4 distance" to a retail location where a particular candidate purchases item is available for purchase. In general, the W4 distance is the cost of traveling to a retail location modified by weighted non-price purchasing cost factors along spatial, temporal, social, and topical axes. Weighting factors can be positive or negative and the weighting factors themselves can be modified (or weighted) according to the source and their relation to the requesting user, but in effect, they either modify the W4 distance to increase it or decrease it.

[0064] In an embodiment, a route to a retail location is graphed against the W4 data 144 and/or user profile data 143 associated with the user and/or the retail location to create a W4 distance calculation to the retail location using spatial, temporal, social and topical data for those locations as well as associated or related data. The actual spatial distance is then modified by weighting factors for each of the other types of data: social, temporal and topical. The locations and/or routing can then be displayed in such a way to represent the W4 distance and not just the spatial distance between the locations and or users.

PURCHASE RECOMMENDATION EXAMPLE

[0065] FIG. 4 is a block diagram of graphical user interface window 400 showing example purchase recommendations made to a shopper according to an embodiment of the invention. In one embodiment, window 400 is displayed to a user at a shopping client 111 in response to the user specifying a shopping intent in a request 121 to shopping service 140. In the example, the user has submitted in the request 121 a shopping query of "birthday party" and further submitted in the request a purchase requirement that all purchase items be no more than $100 and a purchase item time period requirement that the purchase items be available for purchase from June 8, 2008 to July 8, 2008.

[0066] Upon receiving this request, shopping service 140 may infer additional purchase requirements such as, for example, the locations from which the user most likely will depart from on a shopping trip to purchase recommended purchase items. These locations may be determined, for example, from user profile data 143 and/or W4 data 144. Assume, for the purposes of explanation, that the user profile data 143 associated with the user contains information about the user's home address and the user's work address. In one embodiment, once shopping service 140 has determined the user's shopping intent including likely departure locations, shopping service 140 may select

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000314

purchase items to recommend based on which purchase items are available at retail locations close to the user's likely departure locations.

[0067] Accordingly, in FIG. 4, the purchase items 401 and 402 that are recommended to the user are available for purchase at "Store 1" and "Store 2" indicated on direction maps 403 and 404 respectively, direction map 403 providing directions from the user's home to "Store 1", and direction map 404 providing directions from the user's work to "Store 2". Furthermore, the purchase items 401 and 402 may be recommended to the user based on the W4 distance between, for example, the user's home and work and Store 1 and Store 2 respectively. As explained above, the W4 distance takes into account costs other than travel and price costs associated with purchasing items at a particular retail location. Thus, "Store 1", for example, may not be the closest retail location to the user's home where the recommended purchase items may be purchased but instead may be the purchase location that sells a recommended purchase item that satisfies a non-price and non-travel aspect of the user's shopping intent such as, for example, eco-friendliness.

[0068] Additionally, the purchase recommendations shown in window 400 provide suggested best times 405 and 406 to purchase the recommendation purchase items 401 and 402. The suggested times may be based on a variety of factors including such factors as when particular retail locations are conducting a sale of recommended purchase items and/or when conditions for traveling along the suggested routes are most favorable (e.g., historically low traffic times, etc).

[0069] In one embodiment, one or more purchase items are recommended in a purchase item bundle and the bundle is associated with a unified redemption code. The unified redemption code can act as a proxy for each of the bundled purchase items and may be used to refer to the bundle either at a retail location and/or online. In cases where a bundle contains purchase items offered by different retailers then the unified redemption code can refer to the purchase items at each retail location and/or at each retailer's web site. In one embodiment, the unified redemption code is a Universal Product Code (UPC) like symbology and alpha-numeric code that may be scanned at a retail location and/or input online to refer to the purchase items of a bundle. In one embodiment, the purchase items are associated with incentives from item retailers and the unified redemption code associated with a bundle refers additionally to the incentives associated with the purchase items of the bundle. As used herein, an "incentive" refers to monetary incentives from retailer such as price discounts, etc. and non-monetary incentives from retailers such as points, loyalty programs, etc.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000315

ACCEPTING A SHOPPING PLAN

[0070] In one embodiment, when presented with alternative purchase recommendations, the user may select one of the alternatives to accept as a shopping plan. The accepted shopping plan may then be stored as part of user profile data 143 associated with the user that accepted the shopping plan. The user then may view and edit accepted and stored shopping plans at a later time. Additionally, shopping service 140 may take various actions on stored shopping plans such as, for example, sending e-mail messages to the user reminding the user of upcoming best times to purchase recommended purchase items. Further, shopping service 140 may use the stored shopping plans of a user to infer the shopping intent of a user and/or to determine which candidate purchase items to select as purchase recommendations for the user.

[0071] Returning to FIG. 4, to accept a shopping plan, the user may select one or more purchase items 401 and 402, a travel route 403 or 404, and a time to purchase 405 or 406. In the example depicted in FIG. 4, the user has selected purchase items "Chips", "Dip", "Vegetables", and "Balloons" from the purchase item bundles 401 and 402. Further, the user has selected "Route 1" from the user's home to "Store 1" and selected "6/15/08" as a time to purchase the selected purchase items. Upon selecting accept button 407, the user's selected shopping plan is sent in a request 121 to shopping service 140 which, upon receiving the request 121, may store the user's accepted shopping plan in data storage 142.

ALTERNATIVE SHOPPING PLAN

[0072] As well as storing a user's accepted shopping plan, shopping service 140, in response to receiving a request 121 to accept a user's shopping plan may recommend an alternative shopping plan. The alternative shopping plan satisfies the user's shopping intent and may recommend purchase items with a lower total purchasing cost than the purchase items accepted in the user's current shopping plan. FIG. 5 is a block diagram of a graphical user interface window 500 that shows an alternative recommended shopping plan according to an embodiment of the invention. In the example depicted by FIG. 5, window 500 is displayed by shopping service 140 in response to the user accepting the shopping plan selected using window 400 of FIG. 4. The left side of window 500 shows the user's current shopping plan including selected purchase items 501, selected route 502, and selected purchase time 503. The right side of window 500 shows an alternative shopping plan including new recommended purchase items 504, new route 505, and new purchase time 506.

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[0073] In one embodiment, shopping service 140 determines the alternative shopping plan to recommend to the user based on the calculated W4 distances of the user's current shopping plan and the alternative shopping plan. In particular, once the user has accepted a shopping plan that includes a departure location, for example the user's home of the current shopping plan illustrated in FIG. 5, then shopping service 140 can determine alternative purchase locations from the same departure location that satisfy the user's shopping intent. For example, FIG. 5 shows an alternative shopping plan that includes a new purchase location, Store 3, at which the user can purchase the selected purchase items. The cost to travel to Store 3, as calculated by shopping service 140 according to the W4 distance calculation described above, is $2.00 more than the cost to travel to Store 1. However, the selected purchase items can be purchased at Store 3 for $7.00 less than at Store 1. Further, the user is informed that the selected purchase items can be purchased at Store 3 at the indicated prices throughout the time period specified by the user in the user's shopping intent. Thus, the total purchasing cost of the purchase items of the alternative shopping plan is lower than total purchasing cost of the purchase items in the user's currently accepted shopping plan as measured by the corresponding W4 distances. The user may accept the alternative shopping plan as a replacement to the currently accepted shopping plan by selecting the accept button 507.

[0074] Comparing an alternative shopping plan with the currently accepted shopping plan based on W4 distance is not limited to the factors in the example of FIG. 5 and may include other W4 distance factors along temporal, spatial, social, and topical axes. For example, shopping service 140 may recommend alternative purchase items that, based on a W4 distance calculation, are more environmentally friendly.

PURCHASE RECOMMENDATIONS BASED ON SOCIAL RELATIONSHIPS

[0075] In one embodiment, the W4 distance calculation includes modifying the actual spatial distance between a departure location and a purchase location based on a weighted social factor. The social factor may be based on data that represents discrete social relationships between the particular user to whom the purchase recommendation is being made and other users of a community of users of which the particular user is a member. Specifically, shopping service 140 may maintain social network information of user profile data 143 that represents social relationships between the users and shopping service 140 may make recommendations based on the social network information. For example, in one embodiment, a recommendation to purchase a particular item is made to

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a shopper based on whether any of the shopper's friends, as indicated by social relationship data, have previously purchased the item.

[0076] An indication that a friend of the user has purchased a particular recommended purchase item may be displayed to the user by shopping service 140 when making a purchase recommendation. For example, the indication may be displayed on window 400 of FIG. 4 or as part of an alternative shopping plan such as the one displayed in window 500 of FIG. 5. In one embodiment, the indication specifies whether the friend has a direct relationship or an indirect relationship with the user, and if an indirect relationship, the degree of separation between the user and the friend.

PURCHASE RECOMMENDATIONS BASED ON BEST TIME TO PURCHASE

[0077] In one embodiment, shopping service 140 makes purchase recommendations based on the best time to purchase a recommended purchase item at a particular retail location. Initially, shopping service 140 determines a shopping intent of a user as in step 210 of process 200. Then shopping service 140 identifies a purchase item that satisfies the shopping intent as in step 220 of process 200. Shopping service 140 then determines a first cost value that represents the cost of purchasing the purchase item from a particular retail location during a first period of time. In one embodiment, the first cost value is the W4 distance associated with purchasing the identified purchase item from the particular retail location during the first period of time. The first period of time may be a period of time specified in the shopping intent such as, for example, the purchase item time period specified by a user in the example illustrated by FIG. 4. Alternatively, the first time period may be a default time period such as a default time period that corresponds with a shopping intent to purchase immediately or as soon as possible.

[0078] After determining a first cost value, shopping service 140 then determines a second cost value that represents the cost of purchasing the purchase item from the particular retail location during a second period of time. In one embodiment, the second cost value is the W4 distance associated with purchasing the identified purchase item from the particular retail location during the second period of time. The second period of time may be any period of time that falls within the user's specified purchase item time period or within the default time period. For example, the second period of time may be a period of time during which the retail location is offering an incentive or sale on the identified purchase item.

[0079] After determining a second cost value, shopping service 140 then determines a recommend time period based on the first cost value and the second cost value. In

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general, if the first cost value is lower than the second cost value, then shopping service 140 recommends the first time period. If the second cost value is lower than the firs cost value, then shopping service 140 recommends the second time period.

[0080] After determining a recommend time period, shopping service 140 then sends a message 122 to the user recommending the user to purchase the particular purchase item from the particular retail location during the recommended time period. In one embodiment, the message is returned in response to the user specifying a shopping intent such as the best times to purchase message included in window 400 of FIG. 4. In another embodiment, the message is returned in response to the user accepting a shopping plan such as the alternative shopping plan shown in window 500 of FIG. 5. In yet another embodiment, the message is an e-mail message that is sent to the user to inform the user of the recommended time period.

[0081] In one embodiment, the recommended time period is a time period in the future relative to when the message containing the recommend time period was sent to the user. In this way, shopping service 140 can make a purchase recommendation based on the expected future availability of couples, sales, incentives, etc. offered by item retailers.

CUSTOMIZED INCENTIVES FROM ITEM RETAILERS

[0082] In one embodiment, shopping service 140 enables item retailers to offer customized incentives to shoppers in a manner that allows the item retailer to take into account the shopper to whom the incentive is being offered. User profile information about the shopper is presented to the item retailer so that the item retailer can take into account information about the shopper when proposing an offer of an incentive and conditions for obtaining the incentive. The item retailer then provides, based on the user profile information, an offer of an incentive on the purchase item to the user along with one or more incentive conditions that the user must fulfill before receiving the offered incentive.

[0083] In one embodiment, an item retailer is alerted with a message when a shopper accepts a shopping plan that includes a purchase item offered for sale by the item retailer so that the item retailer has an opportunity to offer a customized incentive to the shopper.

[0084] FIG. 6 is a flow diagram of a process 600 for an item retailer to offer a customized incentive to a shopper according to an embodiment of the invention. Process 600 begins at step 610 where a user accepts a shopping plan as described above. Process 600 then continues at step 611 where shopping service 140 messages selected item retailers about the user's acceptance of a shopping plan. Which item retailers shopping

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000319

service 140 messages can be based on a variety of factors including, for example, the types of purchase items the user accepted in the shopping plan. For example, shopping service 140 may notify a shoe retailer anytime a user accepts a shopping plan that includes a purchase item related to shoes. In one embodiment, shopping service 140 provides a registration service whereby item retailers can register their interest in accepted shopping plans. According to the embodiment, the item retailer specifies criteria that shopping service 140 compares to each accepted shopping plan and determines whether the criteria matches the accepted shopping plan. If there is a match, then shopping service 140 messages the item retailer about the match. The criteria can be based upon virtually any aspect of an accepted shopping plan such as the purchase items accepted and the purchase requirements of the shopping intent that corresponds to the accepted shopping plan. Additionally, the criteria may be based on user profile data 143 and/or W4 data 144 associated with the accepted shopping plan. Thus, for example, an item retailer could specify criteria to request a message when a user is within a certain proximity to the item retailer's retail location as indicated by, for example, GPS sensor data.

[0085] The message received by an item retailer may include any information about the accepted shopping plan including user profile information of the user that accepted the shopping plan. By including such information the item retailer can make an informed offer of an incentive to the user. While the item retailer would prefer more information about the user and the accepted shopping plan when formulating an offer of an incentive, the user may wish to prevent the item retailer from knowing certain information about the user and/or the accepted shopping plan. Thus, in one embodiment, shopping service 140 allows the user to configure what types of information are included and excluded from messages sent to item retailers informing the item retailers about the user's accepted shopping plans. The type of information that may be included or excluded include aspects of the user's user profile data 144 and/or aspects of the user's accepted shopping plan.

[0086] After an item retailer receives a message notifying of a user's accepted shopping plan, process 600 continues at step 613 where the item retailer submits an offer of an incentive to shopping service 140 on at least one of the purchase items accepted by the user in the shopping plan. The offer may be accompanied by one or more conditions that the user must agree to in order to accept the incentive. For example, the item retailer may offer an incentive on a purchase item as part of a bundle of purchase items and the user must purchase the bundle in order to receive the incentive.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000320

[0087] After an item retailer makes an offer of an incentive, process 600 continues at step 614 where the user is presented with the offer of an incentive by shopping service 140 and the user can either accept or reject the offer. If the user accepts the offer then the shopping plan is modified to reflect the accepted offer.

[0088] In optional step 615, shopping service 140 calendars aspects of the shopping plan that are scheduled to occur in the future such as purchase item periods and/or when time periods when the incentive is in effect or can be redeemed. Shopping service 140 may store calendaring data in data storage 142. In one embodiment, shopping service 140 sends e-mail remainders to users as calendared events approach.

BASIC HARDWARE IMPLEMENTATION (e.g., For Client and Server Computers)

[0089] Client(s) 110 and server(s) 130 may comprise a conventional or general-purpose computer system, such as an IBM-compatible personal computer (PC) or server computer. FIG. 7 is a very general block diagram that illustrates a computer system 700 in which software-implemented processes of the present invention may be embodied. Computer system 700 includes a bus 702 or other communication mechanism for communicating information, and a processor 704 coupled with bus 702 for processing information. Computer system 700 also includes a main memory 706, such as a random access memory (RAM) or other dynamic storage device, coupled to bus 702 for storing information and instructions to be executed by processor 704. Main memory 706 also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 704. Computer system 700 further includes a read only memory (ROM) 708 or other static storage device coupled to bus 702 for storing static information and instructions for processor 704. A storage device 710, such as a magnetic disk or optical disk, is provided and coupled to bus 702 for storing information and instructions.

[0090] Computer system 700 may be coupled via bus 702 to a display 712, such as a cathode ray tube (CRT), for displaying information to a computer user. An input device 714, including alphanumeric and other keys, is coupled to bus 702 for communicating information and command selections to processor 704. Another type of user input device is cursor control 716, such as a mouse, a trackball, or cursor direction keys for communicating direction information and command selections to processor 704 and for controlling cursor movement on display 712. This input device typically has two degrees of freedom in two axes, a first axis (e.g., x) and a second axis (e.g., y), that allows the device to specify positions in a plane.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000321

[0091] The invention is related to the use of computer system 700 for implementing the techniques described herein. According to one embodiment of the invention, those techniques are performed by computer system 700 in response to processor 704 executing one or more sequences of one or more instructions contained in main memory 706. Such instructions may be read into main memory 706 from another machine-readable medium, such as storage device 710. Execution of the sequences of instructions contained in main memory 706 causes processor 704 to perform the process steps described herein. In alternative embodiments, hard-wired circuitry may be used in place of or in combination with software instructions to implement the invention. Thus, embodiments of the invention are not limited to any specific combination of hardware circuitry and software.

[0092] The term "machine-readable medium" as used herein refers to any medium that participates in providing data that causes a machine to operation in a specific fashion. In an embodiment implemented using computer system 700, various machine-readable media are involved, for example, in providing instructions to processor 704 for execution. Such a medium may take many forms, including but not limited to storage media and transmission media. Storage media includes both non-volatile media and volatile media. Non-volatile media includes, for example, optical or magnetic disks, such as storage device 710. Volatile media includes dynamic memory, such as main memory 706. Transmission media includes coaxial cables, copper wire and fiber optics, including the wires that comprise bus 702. Transmission media can also take the form of acoustic or light waves, such as those generated during radio-wave and infra-red data communications. All such media must be tangible to enable the instructions carried by the media to be detected by a physical mechanism that reads the instructions into a machine.

[0093] Common forms of machine-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, a CD-ROM, any other optical medium, punchcards, papertape, any other physical medium with patterns of holes, a RAM, a PROM, and EPROM, a FLASH-EPROM, any other memory chip or cartridge, a carrier wave as described hereinafter, or any other medium from which a computer can read.

[0094] Various forms of machine-readable media may be involved in carrying one or more sequences of one or more instructions to processor 704 for execution. For example, the instructions may initially be carried on a magnetic disk of a remote computer. The remote computer can load the instructions into its dynamic memory and send the instructions over a telephone line using a modem. A modem local to computer system

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000322

700 can receive the data on the telephone line and use an infra-red transmitter to convert the data to an infra-red signal. An infra-red detector can receive the data carried in the infra-red signal and appropriate circuitry can place the data on bus 702. Bus 702 carries the data to main memory 706, from which processor 704 retrieves and executes the instructions. The instructions received by main memory 706 may optionally be stored on storage device 710 either before or after execution by processor 704.

[0095] Computer system 700 also includes a communication interface 718 coupled to bus 702. Communication interface 718 provides a two-way data communication coupling to a network link 720 that is connected to a local network 722. For example, communication interface 718 may be an integrated services digital network (ISDN) card or a modem to provide a data communication connection to a corresponding type of telephone line. As another example, communication interface 718 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN. Wireless links may also be implemented. In any such implementation, communication interface 718 sends and receives electrical, electromagnetic or optical signals that carry digital data streams representing various types of information.

[0096] Network link 720 typically provides data communication through one or more networks to other data devices. For example, network link 720 may provide a connection through local network 722 to a host computer 724 or to data equipment operated by an Internet Service Provider (ISP) 726. ISP 726 in turn provides data communication services through the world wide packet data communication network now commonly referred to as the "Internet" 728. Local network 722 and Internet 728 both use electrical, electromagnetic or optical signals that carry digital data streams. The signals through the various networks and the signals on network link 720 and through communication interface 718, which carry the digital data to and from computer system 700, are exemplary forms of carrier waves transporting the information.

[0097] Computer system 700 can send messages and receive data, including program code, through the network(s), network link 720 and communication interface 718. In the Internet example, a server 730 might transmit a requested code for an application program through Internet 728, ISP 726, local network 722 and communication interface 718.

[0098] The received code may be executed by processor 704 as it is received, and/or stored in storage device 710, or other non-volatile storage for later execution. In this manner, computer system 700 may obtain application code in the form of a carrier wave.

[0099] IBM-compatible personal computers and server computers are available from a variety of vendors. Representative vendors include Dell Computer of Round Rock,

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TX., Hewlett-Packard of Palo Alto, CA., and IBM of Armonk, N.Y. Other suitable computers include Apple compatible computers (e.g., Macintosh), which are available from Apple Computer of Cupertino, CA., and Sun Solaris workstations, which are available from Sun Microsystems of Mountain View, CA.

CONCLUSION

[0100] In the foregoing specification, embodiments of the invention have been described with reference to numerous specific details that may vary from implementation to implementation. Thus, the sole and exclusive indicator of what is the invention, and is intended by the applicants to be the invention, is the set of claims that issue from this application, in the specific form in which such claims issue, including any subsequent correction. Any definitions expressly set forth herein for terms contained in such claims shall govern the meaning of such terms as used in the claims. Hence, no limitation, element, property, feature, advantage or attribute that is not expressly recited in a claim should limit the scope of such claim in any way. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000324

CLAIMS

What is claimed is:

1. A computer-implemented method for recommending purchases, the method comprising:
   determining a shopping intent of a user;
   determining a candidate set of one or more purchase items that satisfy said shopping intent;
   based on a set of one or more non-price purchasing cost factors, generating a total purchasing cost for each purchase item in the candidate set;
   wherein the set of one or more non-price purchasing cost factors do not affect how much the user has to pay at the point of sale for the purchase items;
   based on the total purchasing costs generated for the purchase items in the candidate set, selecting one or more purchase items, from the candidate set of purchase items, to recommend to the user; and
   generating a message that recommends to the user to purchase the selected one or more purchase items.

2. The method of claim 1, further comprising:
   determining an indication of one or more weights assigned by the user to one or more non-price purchasing cost factors of the set of one or more non-price purchasing cost factors; and
   wherein the step of generating a total purchasing cost for each purchase item in the candidate set is based on the one or more assigned weights.

3. The method of claim 2, wherein the one or more non-price purchasing cost factors that are assigned weights by the user are selected from the group consisting of purchase item quality, purchase item time period, purchase item environmental impact, purchase item sourcing, purchase item relatedness, and purchase item location.

4. The method of claim 2, wherein at least one of the weights is assigned by a user through graphical user interface controls that are caused to be presented to the user at a client.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000325

5. The method of claim 1, further comprising:
receiving at least a portion of the shopping intent in a request from the user; and
wherein the request comprises data that indicates the user's physical location and
wherein determining a candidate set of purchase items that satisfy the shopping intent comprises determining a candidate set of purchase items based on the user's physical proximity to a candidate purchase item.

6. The method of claim 1, wherein the generated message that recommends to the user to purchase the selected one or more purchase items includes the total purchasing cost generated for each selected purchase item.

7. The method of claim 1, wherein one of the non-price purchasing cost factors in the set of non-price purchasing cost factors is purchase item location and wherein generating a message that recommends to the user to purchase the selected one or more purchase items comprises generating a message that includes, for at least one of the selected purchase items, a first map that indicates how to travel to a location where the at least one selected purchase item is sold.

8. The method of claim 7, wherein the message indicates, as a monetized value, a cost of traveling to the location where the at least one selected purchase item is sold.

9. The method of claim 7, wherein the message includes a second map that indicates how to travel to an alternative location where the at least one selected purchase item is sold.

10. The method of claim 1, further comprising:
maintaining data that represents degrees of social relationships between members of a network, the user being a member of the network; and
wherein selecting one or more purchase items, from the candidate set of purchase items, to recommend to the user is based on data that represents degrees of social relationships between the user and one or more other users that are also members of the network.

11. The method of claim 1, further comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000326

determining a first cost value that represents the cost of purchasing a purchase item from a particular source during a first time period;

determining second cost value that represents the cost of purchasing a purchase item from said particular source during a second time period;

determining a recommended time period based, at least in part, on said first cost value and said second cost value; and

wherein the message recommends that said user purchase the purchase item from said particular source during the recommended time period.

12. The method of Claim 11, wherein the recommended time period is in the future relative to the time in which the message is sent to the user.

13. The method of claim 1, further comprising:

storing information that reflects the user's selection of one or more of the selected one or more purchase items recommended to the user;

sending a notification message to an item retailer, wherein the notification message alerts the item retailer of the user's selection; and

receiving, from the item retailer, information that represents (a) an offer of an incentive to the user of at least one of the one or more purchase items selected by the user and (b) one or more conditions related to the offer of the incentive.

14. The method of Claim 13, further comprising:

sending a message to the user, wherein the message indicates (a) the offer of the incentive to the user and (b) the one or more conditions related to the offer of the incentive; and

receiving, from the user, information that indicates that the user accepts the offer.

15. A system comprising:

a network interface configured to couple to a data network;

one or more processors coupled to the network interface;

memory coupled to the one or more processors; and

logic encoded in one or more computer-readable media wherein execution by the one or more processors causes the processors to carry out the steps in any of the Claims 1 to 14.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000327

16. A computer-readable medium comprising one or more sequences of instructions which when executed by one or more computing devices cause the one or more computing devices to carry out the steps in any of the Claims 1 to 14.

17. A computer-implemented method for recommending purchases, the method comprising:

maintaining data that represents degrees of social relationships between members of a network;

determining a shopping intent of a user, the user being a member of the network;

generating a list of recommended purchase items based on the shopping intent of the user and data that represents degrees of social relationships between the user and one or more other users that are also members of the network; and

generating a message that recommends to the user to purchase the recommended purchase items in the list of recommended purchase items.

18. The method of claim 17, wherein the data that represents degrees of social relationships between the user and at least one of the one or more other users indicates that the user and the at least one other user have a primary relationship with each other.

19. A system comprising:

a network interface configured to couple to a data network;

one or more processors coupled to the network interface;

memory coupled to the one or more processors; and

logic encoded in one or more computer-readable media wherein execution by the one or more processors causes the processors to carry out the steps in any of the Claims 17 to 18.

20. A computer-readable medium comprising one or more sequences of instructions which when executed by one or more computing devices cause the one or more computing devices to carry out the steps in any of the Claims 17 to 18.

21. A computer-implemented method for recommending purchases, the method comprising:

determining a shopping intent of a user;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000328

identifying a purchase item that satisfies the shopping intent;

determining a first cost value that represents the cost of purchasing the purchase item from a particular source during a first time period;

determining second first cost value that represents the cost of purchasing the purchase item from said particular source during a second time period;

determining a recommended time period based, at least in part, on said first cost value and said second cost value; and

sending a message to the user, wherein the message recommends that said user purchase the purchase item from said particular source during the recommended time period.

22. The method of Claim 21 wherein the recommended time period is in the future relative to the time in which the message is sent to the user.

23. A system comprising:

a network interface configured to couple to a data network;

one or more processors coupled to the network interface;

memory coupled to the one or more processors; and

logic encoded in one or more computer-readable media wherein execution by the one or more processors causes the processors to carry out the steps in any of the Claims 21 to 22.

24. A computer-readable medium comprising one or more sequences of instructions which when executed by one or more computing devices cause the one or more computing devices to carry out the steps in any of the Claims 21 to 22.

25. A computer-implemented method for recommending purchases, the method comprising:

storing information that reflects a user's selection of one or more purchase items recommended to the user;

sending a message to an item retailer, wherein the message alerts the item retailer of the user's selection; and

receiving, from the item retailer, information that represents (a) an offer of an incentive to the user of at least one of the one or more purchase items selected by the user and (b) one or more conditions related to the offer of the incentive.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000329

26. The method of claim 25, further comprising:

sending a message to the user, wherein the message indicates (a) the offer of the incentive and (b) the one or more conditions related to the offer of the incentive;

receiving, from the user, information that indicates that the user accepts the offer of the incentive and the one or more conditions related to the offer; and

in response to receiving information that indicates that the user accepts the offer and the one or more conditions, modifying the information that reflects the user's selection of one or more purchase items recommended to the user.

27. A system comprising:

a network interface configured to couple to a data network;

one or more processors coupled to the network interface;

memory coupled to the one or more processors; and

logic encoded in one or more computer-readable media wherein execution by the one or more processors causes the processors to carry out the steps in any of the Claims 25 to 26.

28. A computer-readable medium comprising one or more sequences of instructions which when executed by one or more computing devices cause the one or more computing devices to carry out the steps in any of the Claims 25 to 26.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000330

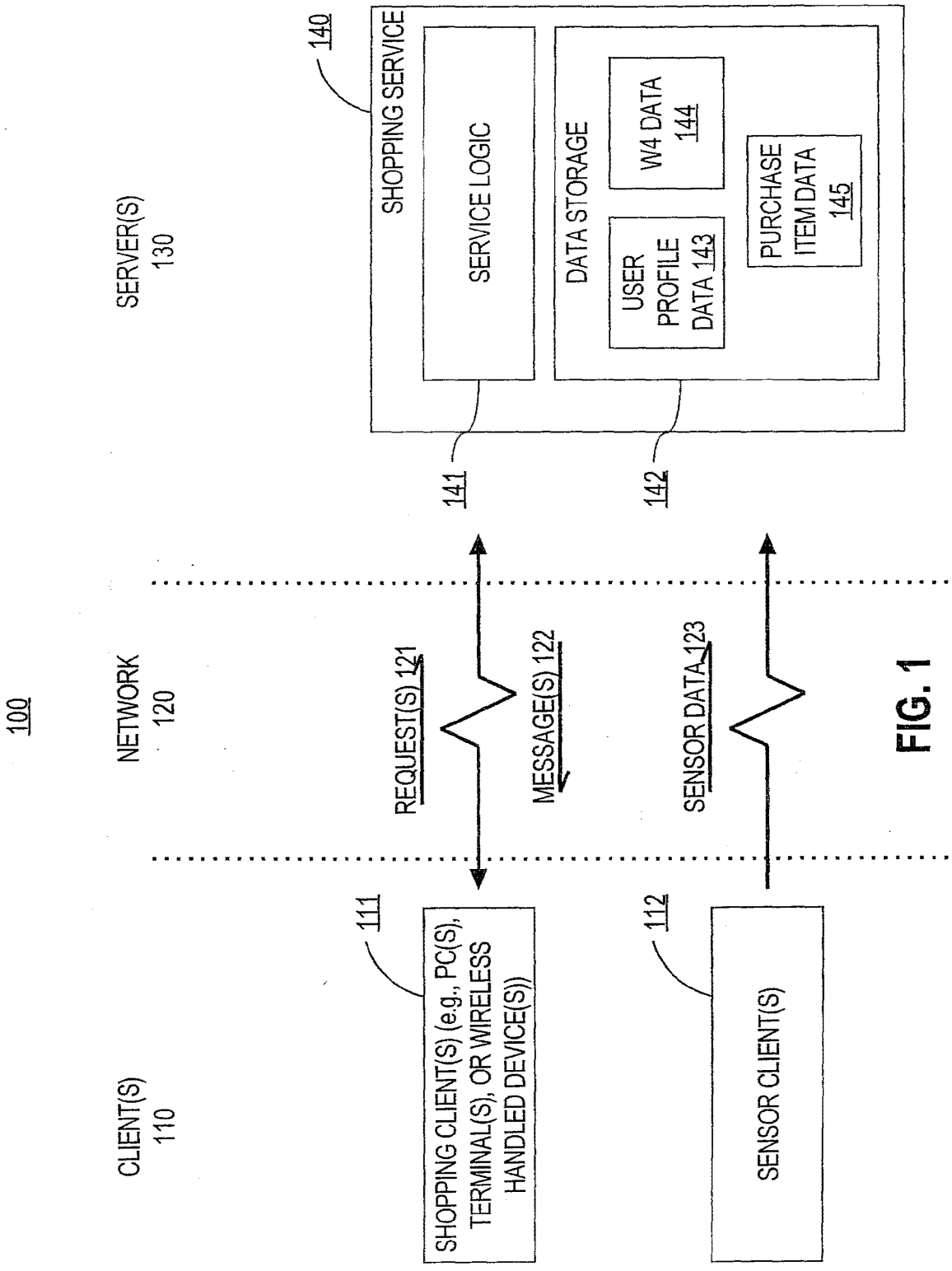


FIG. 1

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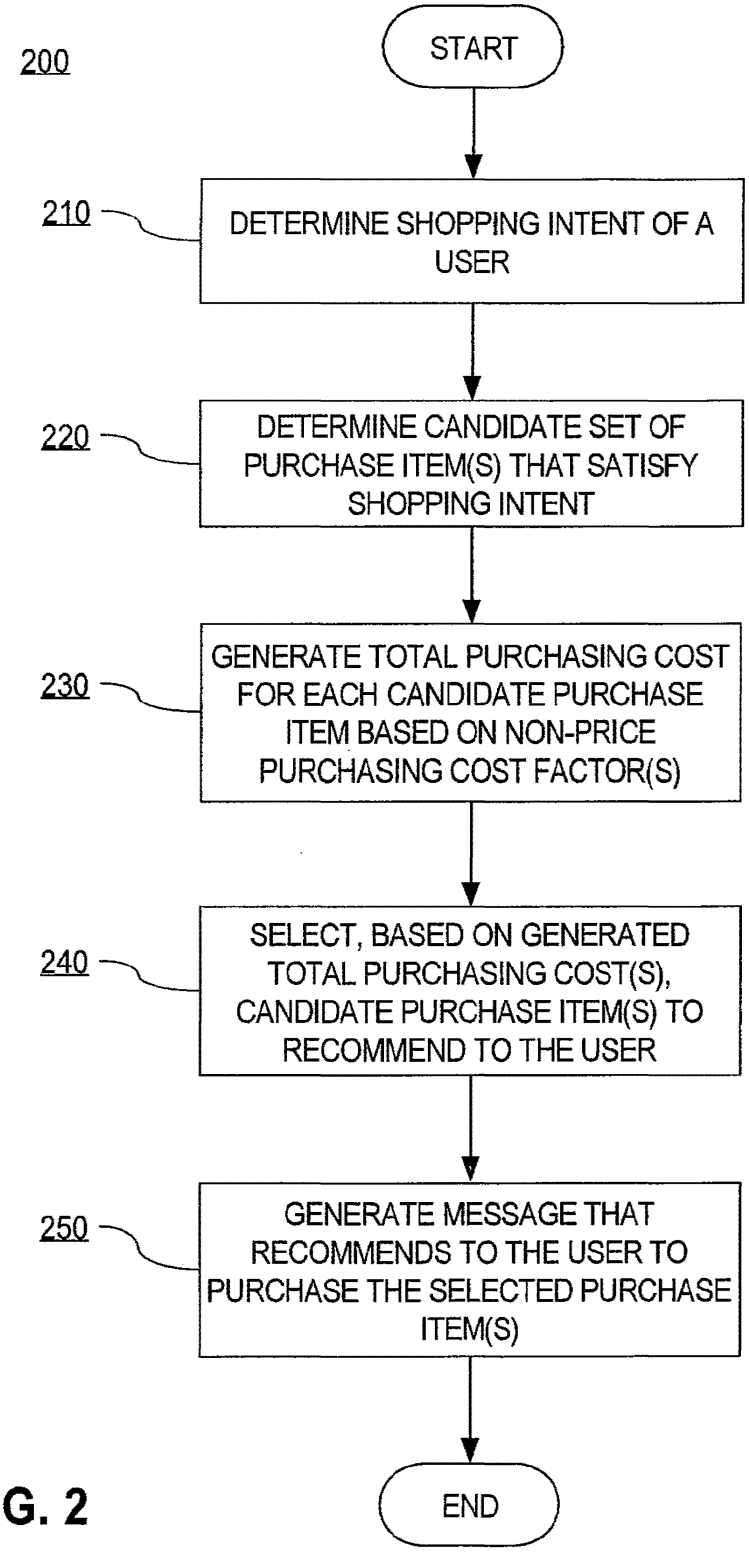


FIG. 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000332

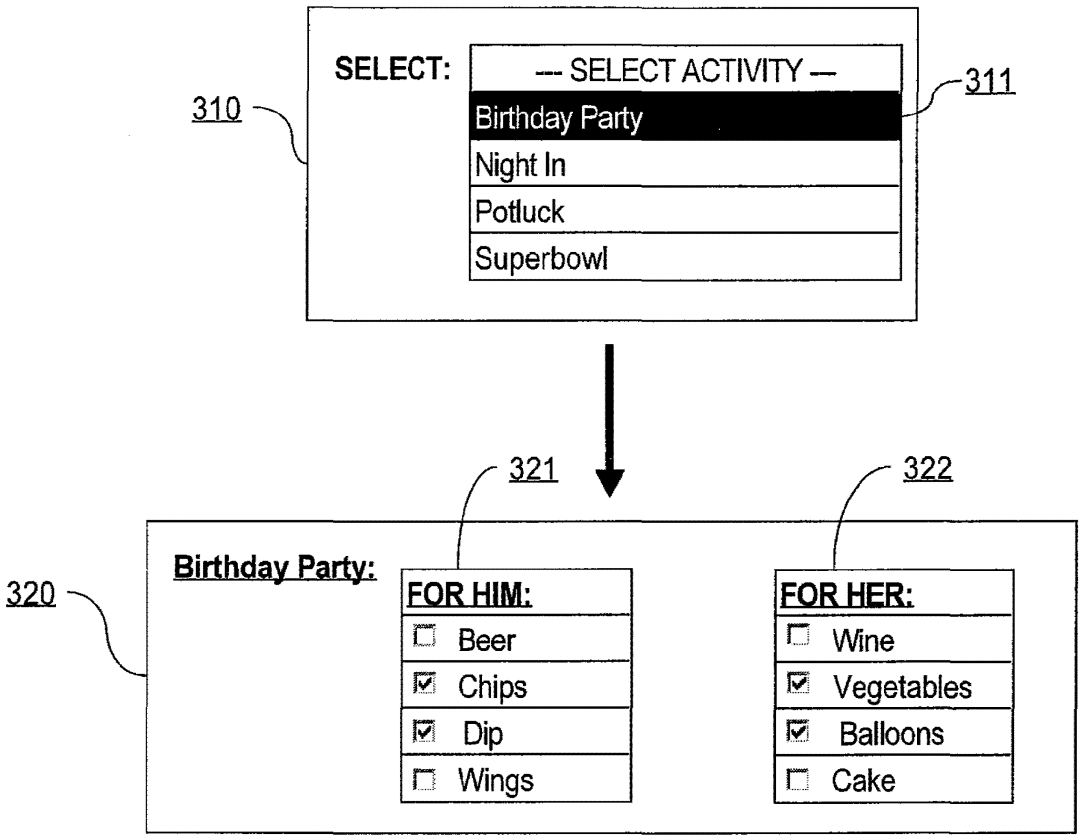

SELECT:
--- SELECT ACTIVITY ---
Birthday Party
Night In
Potluck
Superbowl
310
311
321
322
320
Birthday Party:
FOR HIM:
Beer
Chips
Dip
Wings
FOR HER:
Wine
Vegetables
Balloons
Cake

FIG. 3A

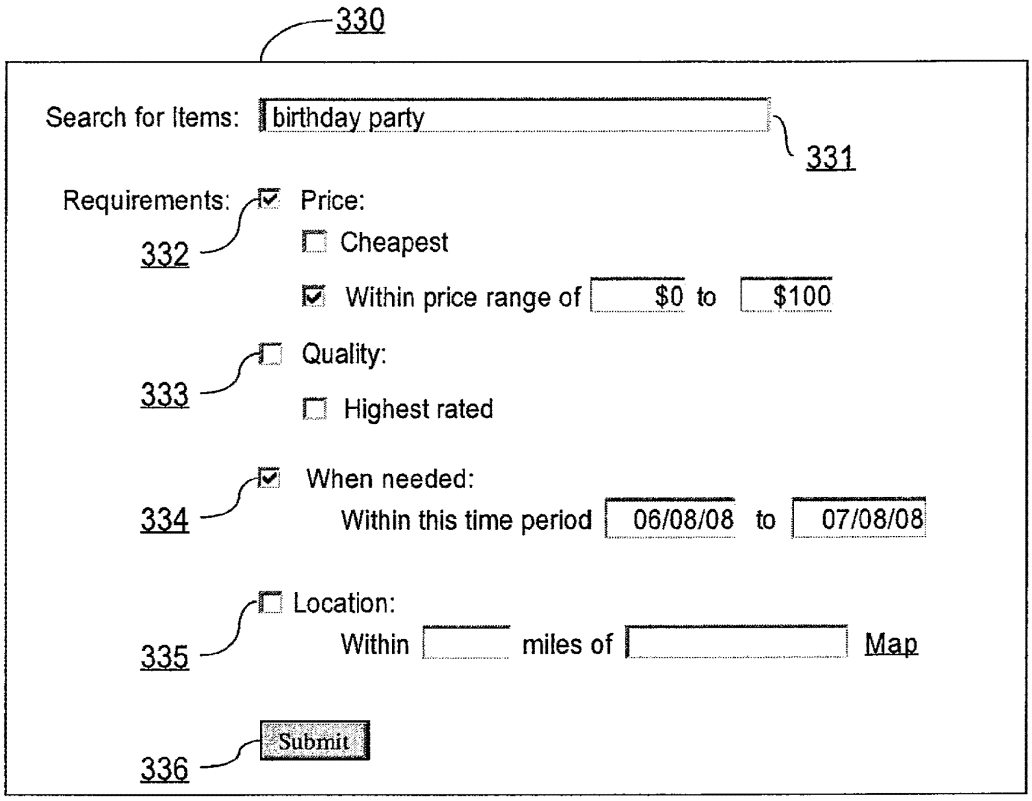

330
Search for Items: birthday party
331
Requirements:
Price:
332
Cheapest
Within price range of $0 to $100
Quality:
333
Highest rated
When needed:
334
Within this time period 06/08/08 to 07/08/08
Location:
335
Within miles of Map
Submit
336

FIG. 3B

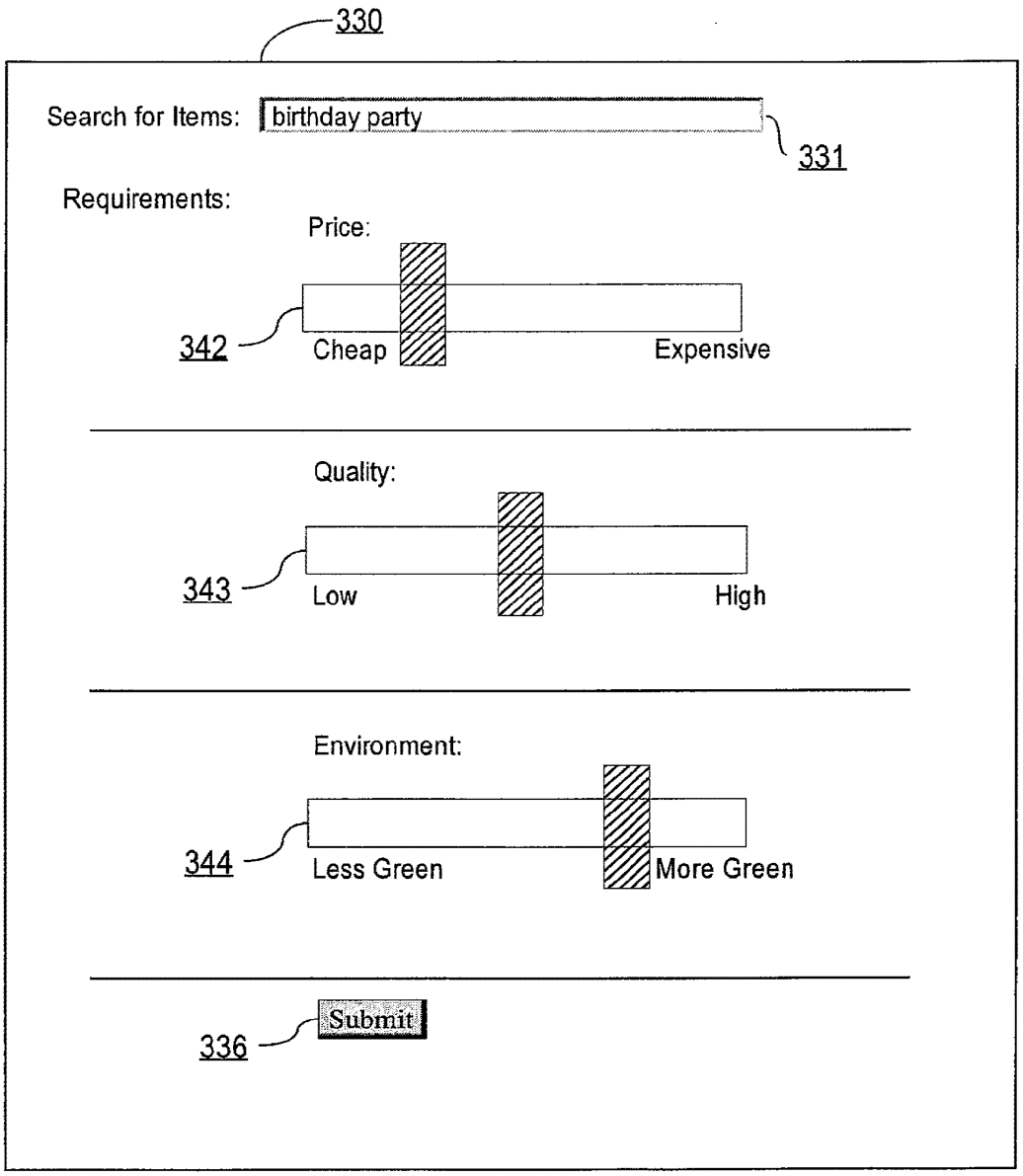

330
Search for Items:
birthday party
331
Requirements:
Price:
342
Cheap
Expensive
Quality:
343
Low
High
Environment:
344
Less Green
More Green
Submit
336

FIG. 3C

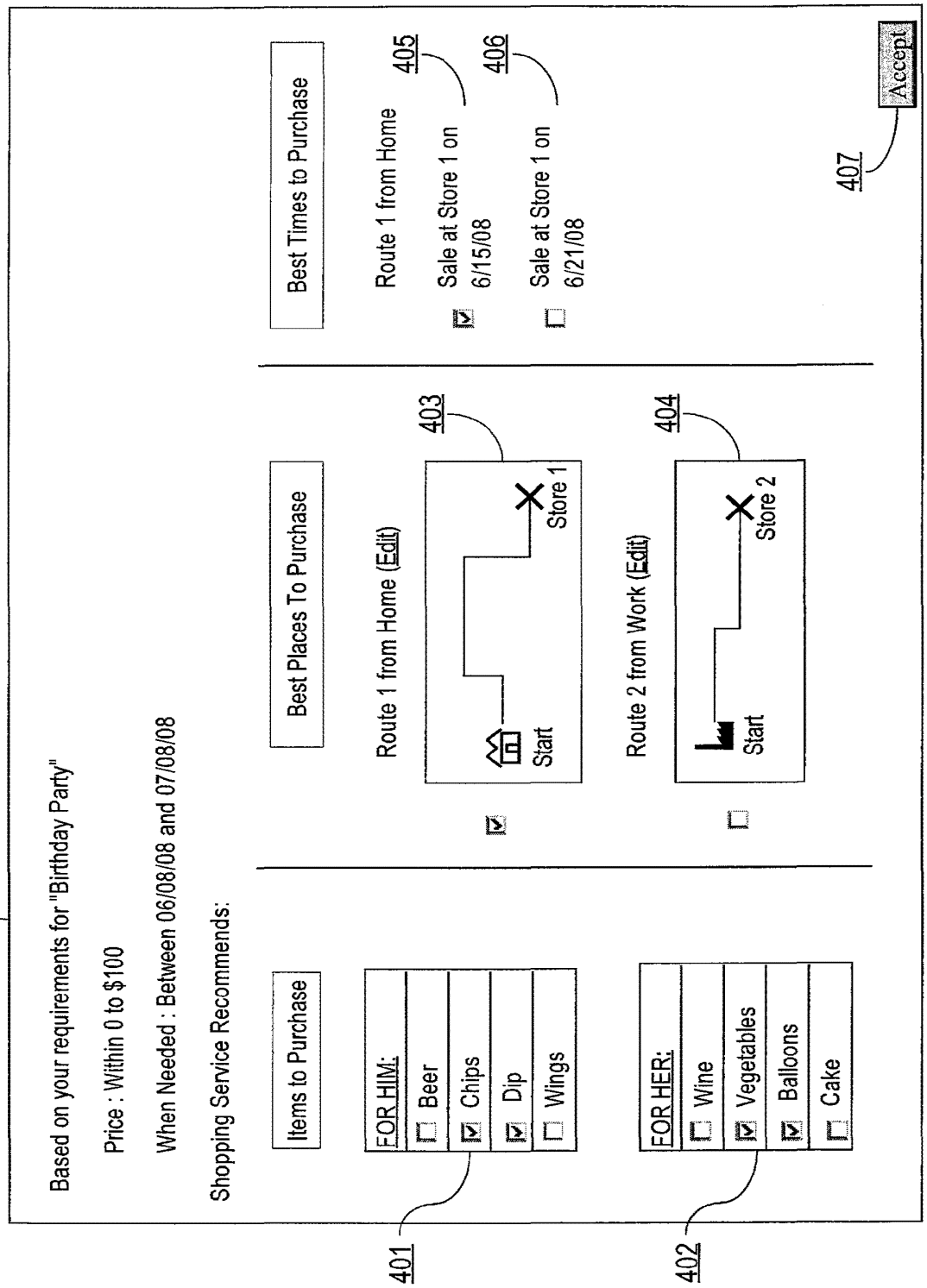
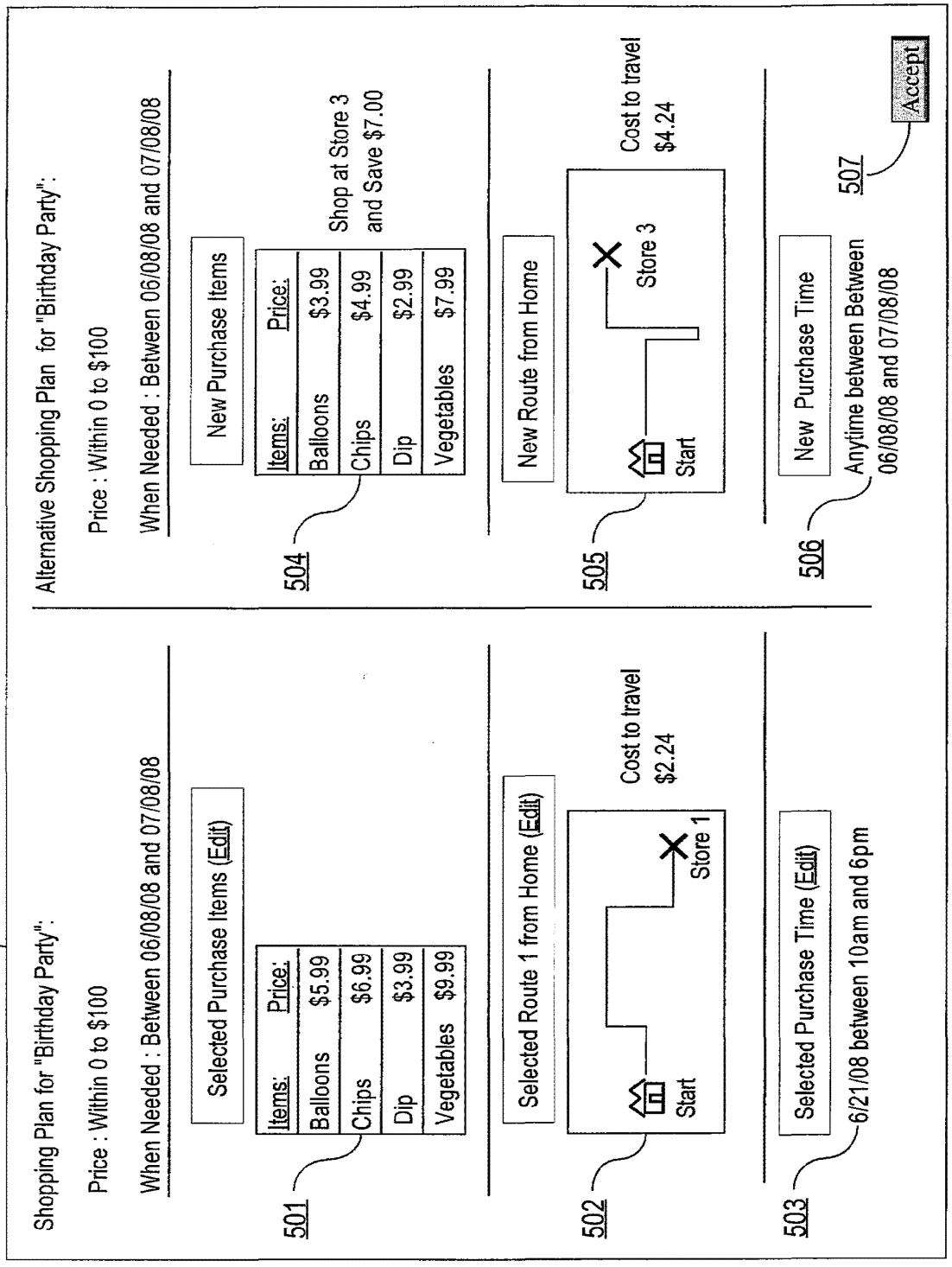


FIG. 4

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000336

FIG. 5



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000337

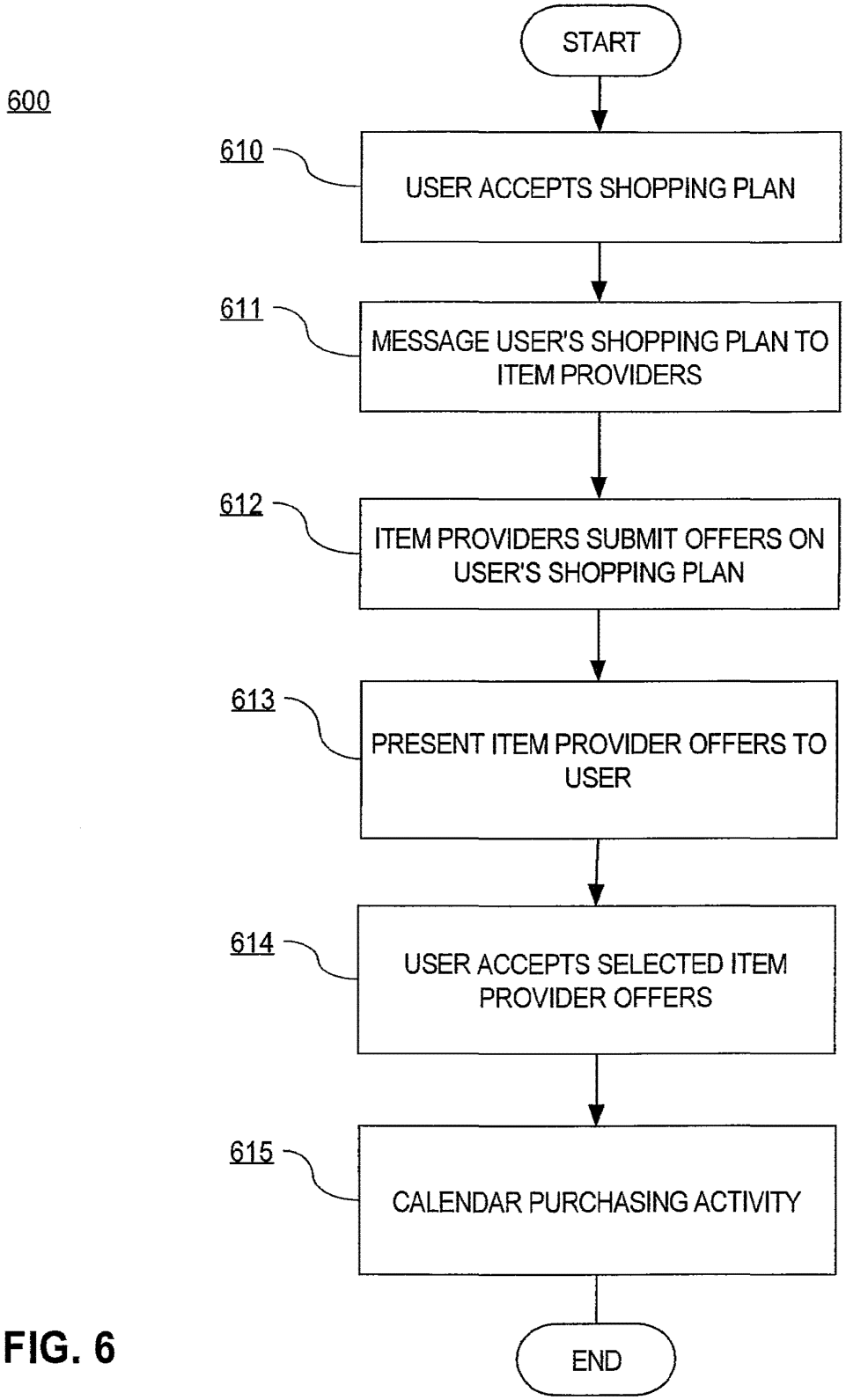


FIG. 6

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000338

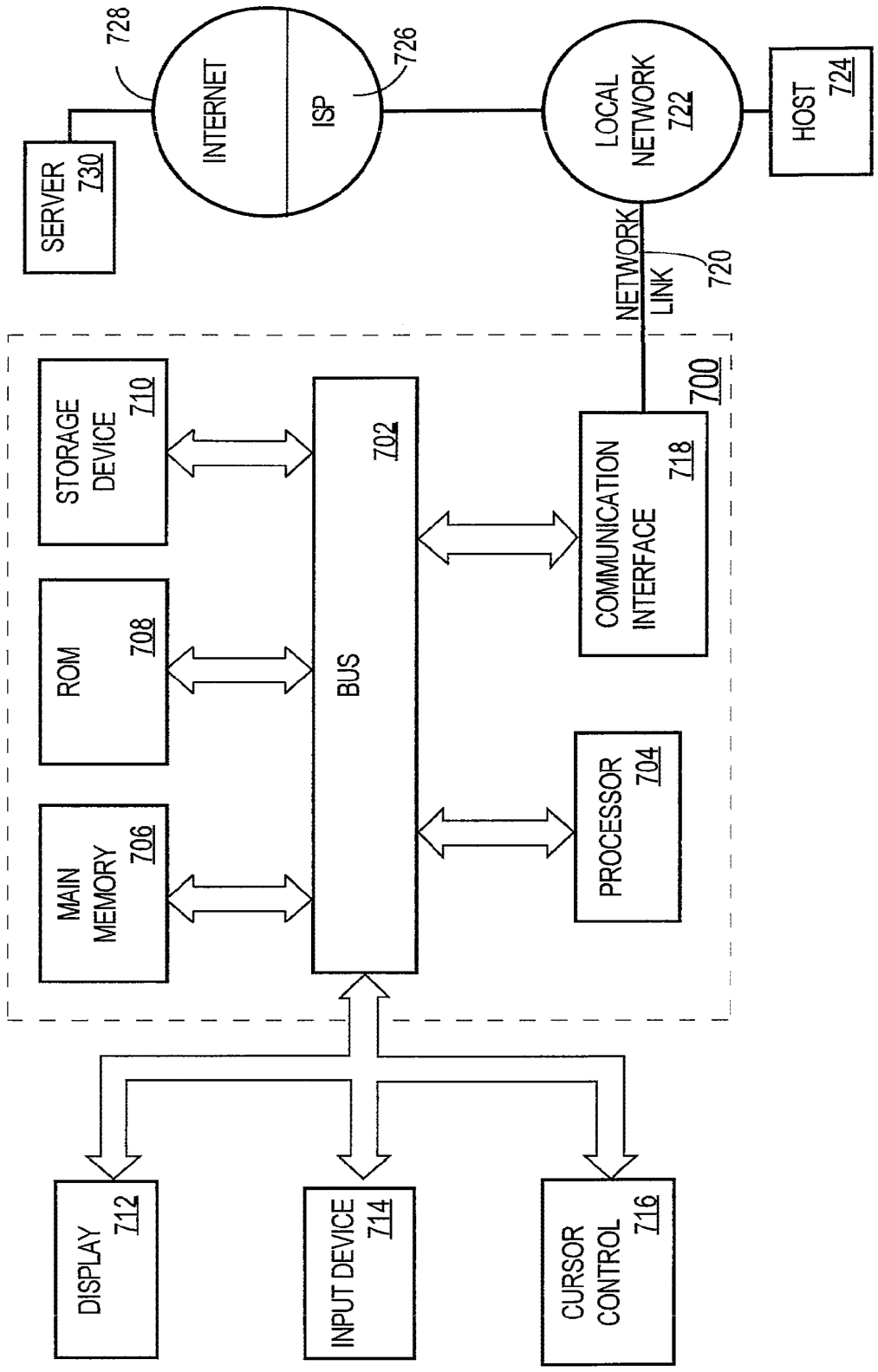


FIG. 7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000339

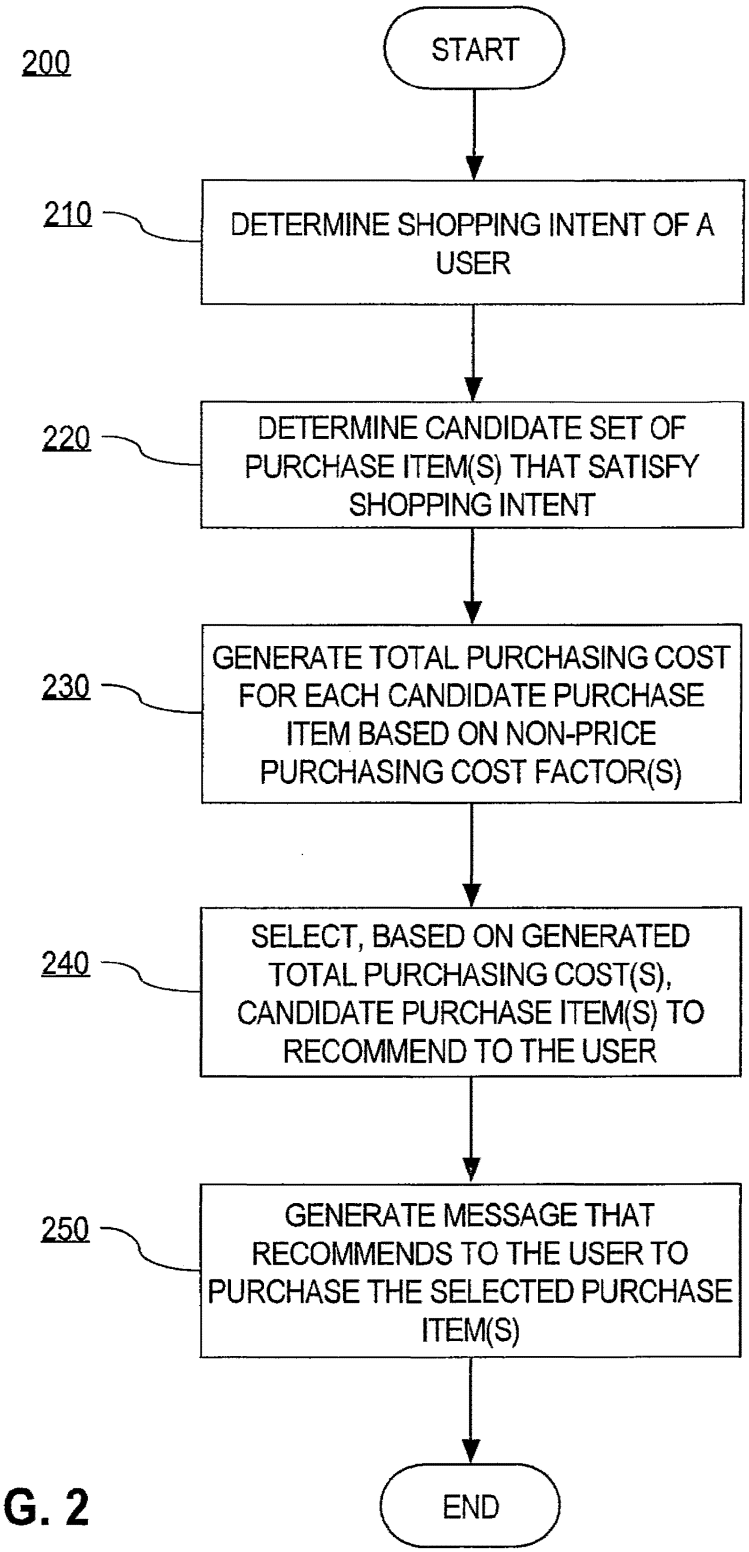

200
START
210
DETERMINE SHOPPING INTENT OF A USER
220
DETERMINE CANDIDATE SET OF PURCHASE ITEM(S) THAT SATISFY SHOPPING INTENT
230
GENERATE TOTAL PURCHASING COST FOR EACH CANDIDATE PURCHASE ITEM BASED ON NON-PRICE PURCHASING COST FACTOR(S)
240
SELECT, BASED ON GENERATED TOTAL PURCHASING COST(S), CANDIDATE PURCHASE ITEM(S) TO RECOMMEND TO THE USER
250
GENERATE MESSAGE THAT RECOMMENDS TO THE USER TO PURCHASE THE SELECTED PURCHASE ITEM(S)
END

FIG. 2

Electronic Acknowledgement Receipt

EFS ID:	14232165
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Noriko Benjamin
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	15-NOV-2012
Filing Date:	29-JUN-2011
Time Stamp:	19:32:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	NC75185US_P5296US00_IDS_Transmittal_filed_11-15-12.pdf	101043 62b35b55735732e8be9a815e0920f5c669fcac1e	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	NC75185US_P5296US00_IDS_SB-08_filed_11-15-12.pdf	682224 153df4d76b5b953f1ae3bc4800be1dd23813aad3	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	ISR_PCTFI2012050468_dated_09-06-12.pdf	660957 f17bae8ca8bdd7edcaac049514a978199136622a	no	6
Warnings:					
Information:					
4	Non Patent Literature	Written_Opinion_PCTFI2012050468_dated_09-06-12.pdf	1631051 20dda79accfac034206ef3d4cfa5e343c60de1f5	no	9
Warnings:					
Information:					
5	Foreign Reference	WO2010039459A2.pdf	1965150 15c07e414baeedfb55c34e8548d1bd4b940ddd41	no	44
Warnings:					
Information:					
		Total Files Size (in bytes):	5040425		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya Raghavan Setlur *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	CHEN, TE Y
Filed:	June 29, 2011	Group Art Unit:	2168

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Commissioner:

This Information Disclosure Statement is submitted:

☐ Under 37 CFR § 1.97(b): (1) Within three months of filing of national application; (2) Within three months of date of entry of the national stage as set forth in § 1.491 in an international application; (3) Before mailing of a first Office action on the merits; or (4) Before mailing of a first Office action after the filing of a request for continued examination under § 1.114.

☒ Under 37 CFR § 1.97(c): After the period specified in § 1.97(b) but before the mailing date of either a final action under § 1.113 or a notice of allowance under § 1.311, whichever occurs first, and accompanied by either:
- ☒ (1) A statement under § 1.97(e) as set forth below, or
- ☐ (2) A $180.00 fee under 37 CFR 1.17(p).

☐ Under 37 CFR § 1.97(d): After the period specified in § 1.97(c) but on or before payment of the issue fee, and accompanied by:
- ☐ (1) A statement under § 1.97(e) as set forth below; and
- ☐ (2) A $180.00 fee set forth in 37 CFR 1.17(p).

Statement under 37 CFR § 1.97(e):

☐ Not necessary, because this IDS is filed under § 1.97(b) or § 1.97(c)(2).

☒ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000343

counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1); or

☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

Form PTO/SB08 Information Disclosure Citation is attached with copies of patents, publications, or other information of which Applicants are aware, which may be material to the examination of this application, and for which there may be a duty to disclose in accordance with 37 CFR 1.56. This is not to be construed as a representation that a search has been made or that no better prior art exists, or that a reference is relevant merely because cited.

The Examiner is requested to initial the attached form PTO/SB08 and to return a copy of the initialed document to the undersigned as an indication that the attached references have been considered and made of record.

To the extent necessary, a petition for an extension of time under 37 C.F.R § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully submitted,

DITTHAVONG MORI & STEINER, P.C.

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Date: November 15, 2012

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000344

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/172,425	06/29/2011	Vidya Setlur	P5296US00

CONFIRMATION NO. 7264

11764
Ditthavong Mori & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

PUBLICATION NOTICE

OC00000058448211

Title:METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Publication No.US-2013-0007011-A1
Publication Date:01/03/2013

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000345

To: docket@dcpatent.com,ipadmin@dcpatent.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Jan 04, 2013 05:28:54 AM

Dear PAIR Customer:

Ditthavong Mori & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13172425	NTC.PUB	01/03/2013	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 01/11/2013

Ditthavong Mori & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2168	

NOTIFICATION DATE	DELIVERY MODE
01/11/2013	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com
ipadmin@dcpatent.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000347

Office Action Summary	Application No.	Applicant(s)	
	13/172,425	SETLUR ET AL.	
	Examiner	Art Unit	
	SUSAN CHEN	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/15/2012*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendment filed on 10/10/2012.

Claims 1-20 are pending for examination. Claims 21-48 have been canceled. Claims 1, 9, 11 and 19 have been amended.

Information Disclosure Statement

The information disclosure statement filed on 11/15/2012 are in compliance with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file, and the information referred thereto has been considered as to the merits, except those being line through.

Claims and only the claims form the metes and bounds of the invention. “Office personnel are to give claims their broadest reasonable interpretations in light of the supporting disclosure, In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claims are not read into the claims. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)” MPEP p 2100-8, c2, l 45-48; p 2100-9, c1, l 1-4). The examiner has full latitude to interpret each claim in the broadest reasonable sense. The examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

Response to Arguments

Applicant's arguments filed on 10/10/2012 have been fully considered but they are not persuasive.

Applicant argued that “Jandhyala does not teach the claimed limitation of “one or more personas, based, at least in part, on more than one person, associated with the at least one user device".

In response to applicant's arguments against the references individually, the Office first points out that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In addition, it is noted by the examiner that applicant failed to define the metes and bounds of the claimed “one or more persona” or "person" as such, they are widely open for prior art interpretations.

Furthermore, as cited in the following paragraphs and figures, Jandhyala specifically discloses his invention comprising a “PAGERANK ALGORITHM” based on “HELMHOLTZ WAVE EQUATION REPRESENTATIONS OF INTERNET

INTERACTIONS" (see Title and Fig. 4 with associated texts). Herein, Internet interactions are deemed to be open network interactions between users, such as per the communications between online communities, blogs, and social networks (e.g., S.: 0003-0004), these internet open communication are deemed to associated with a plurality of users/personas by more than one user devices.

Moreover, Zeng clearly disclosed an augmentation system which creates a three-dimensional matrix with the dimensions of users, queries, and documents, then performs a three-order singular value decomposition of the three-dimensional matrix to generate a three-dimensional core singular value matrix and a left singular matrix for each dimension. (e.g., Abstract). Wherein the users dimension are deemed to comprised the claimed more than one persons or personas.

Thus in contrary to applicant arguments, Jandhyala clearly disclosed the claimed limitations.

Based on the discussion above, because applicant does not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. Moreover, "The discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition

patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977)."

For the reasons set forth above, the examiner concludes that the prior art read on the claimed features and it is believed that the rejections should be sustained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2010/0094904 published by Jandhyala (hereinafter referred as '904) in view of U.S. Patent No. 7,747,618 issued to Zeng et al. (hereinafter referred as '618).

As to claim 1, '904 disclosed the claimed method [e.g., Abstract, Fig(s). 1-9 with associated texts], comprising:

a determination of a query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device [e.g., per the use of internet or other network user devices (e.g., Fig. 7 with associated texts) for determining adaptive Page Rank or other type of score for web pages using the techniques as shown by unit 40, Fig.(s) 4, 7-9 with associated texts & S.: 0001-0005, 0051-0054 & 0058-0062];

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results [e.g., per the use of Trust Rank and Customized PageRank schemas executed by the device of Fig. 7 in repose to a user query at S.: 0051-0054 & 0058-0062]; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device [e.g., S.: 0053-0054 & 0061- 0062 & Fig.(s) 6-7 & 8-9].

‘904 did not specifically detail that the query is a multi-dimensional query.

However, '618 disclosed the claimed limitations [e.g., Abstract, Fig(s). 3-4 with associated texts]

‘904 and ‘618 are analogous art [providing customized document ranking] over networks such as Internet and both in the same endeavor to create a reduced matrix to facilitate the user query processing by construct a reduced document matrix per page ranking and weighting schemas [e.g., '904: Abstract, S.: 0039, Fig.(s) 4 & 7; '618: Abstract, Fig. 4 & 7 with associated texts], hence, with the teachings of ‘904 and ‘618, in front of him/her, it would have been obvious for an ordinary skilled artisan at the time the invention was made to apply the multi-dimensional query techniques as disclosed by '618 into ‘904 invention, because by doing so, the combination invention of ‘904 and ‘618 will be upgraded to support an efficient query click-through processing to identify accurate ranked page results by the page ranking and weighting, smoothing and normalization schemas with reduced process cost via generating reduced matrixes in an user, queries and documents augmentation system.

As to claim 2, in addition to the limitations of claim 1, the combined invention of ‘904 and ‘618 further disclosed that:

a determination of one or more object contextual attributes associated with the one or more results, wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes [e.g., ‘904: per a search engine processing at S.: 0061].

As to claim 3, in addition to the limitations of claim 2, the combined invention of ‘904 and ‘618 further disclosed that:

a determination of a precision thereof of the one or more object contextual attributes [e.g.,’904: S.: 0037 & 0039]; and

a display of one or more representations of the precision thereof [e.g., ‘904: per the use of display (e.g., 258, Fig. 7) at S.:0061-0062 & Fig.(s) 8-9].

As to claim 4, in addition to the limitations of claim 3, the combined invention of ‘904 and ‘618 further disclosed that: a determination of the precision thereof based, at least in part, on user update information [e.g., ‘904 S.: 0052].

As to claim 5, in addition to the limitations of claim 4, ‘904 further disclosed that: an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined precision thereof [e.g., ‘904: per the use of database (e.g., 250, Fig. 7) & S.: 0052].

As to claim 6, in addition to the limitations of claim 2, the combined invention of ‘904 and ‘618 further disclosed that: wherein the at least one ordering metric is based, at least in part, on a weighted sum thereof of one or more dimensions of the multi-dimensional query [e.g., S.: 0039].

As to claim 7, in addition to the limitations of claim 6, the combined invention of '904 and '618 further disclosed that: wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes [e.g., '904 units: 304, 306, Fig(s). 8-9], (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes [e.g., '904 unit: 302, Fig. 8 or 312, Fig. 9], and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list [e.g., '904 per the density or relative number of inlinks and outlinks in a region of a web graph at S. 0044 & algorithms at S.0047. Please also refer to '618: col. 4, lines 1 - col. 5, lines 10].

As to claim 8, in addition to the limitations of claim 7, the combined invention of '904 and '618 further disclosed that: wherein the contextual relation dimension specifies weighting information for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof [e.g., '904 unit: 302, Fig. 8 or 312, Fig. 9].

As to claim 9, in addition to the limitations of claim 1, the combined invention of '904 and '618 further disclosed that: a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof [e.g., '904 S.: 0009-0010 & the setup steps: 44-48 of Fig 4],

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof [e.g., '904 S.: 0051-0052].

As to claim 10, in addition to the limitations of claim 1, the combined invention of '904 and '618 further disclosed that:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device [e.g., '904 S.: 0058-0061]; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes [e.g., '904: per unit: 240, Fig. 7 with associated texts].

As to claims 11-20, these claims recite similar subject matters as claims 1-11 in form of apparatus hence are rejected for the same reason.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN CHEN whose telephone number is (571)272-4016. The examiner can normally be reached on Monday - Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fred Ehichioya can be reached on 571-272-4034. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SUSAN CHEN/
Primary Examiner
Art Unit 2168

January 8, 2013

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Raghavan Setlur
Art Unit	2168
Examiner Name	CHEN, TE Y
Attorney Docket Number	P5296US00

U.S. PATENT DOCUMENTS

Examiner initial *	Cite No.	Document Number Number - Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear
/SC/	1	US-2002/0188589 - A1	12-12-2002	Salmenkaita et al.	Corresponding to Cite Nos. 6 & 7
/SC/	2	US-2003/0036848 - A1	02-20-2003	Sheha et al.	Corresponding to Cite Nos. 6 & 7
/SC/	3	US-2009/0177386 - A1	07-09-2009	Haase	Corresponding to Cite Nos. 6 & 7
/SC/	4	US-2009/0228196 - A1	09-10-2009	Raab	Corresponding to Cite Nos. 6 & 7

FOREIGN PATENT DOCUMENTS

Examiner Initial *	Cite No. 1	Foreign Patent Document Country[3] Code Number[4] Kind Code (if known)[5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
/SC/	5	WO 2010/039459 - A2	04-08-2010	Yahoo! Inc.	Corr. to Cite # 6 & 7	

Examiner Signature	/Te Chen/	Date Considered	01/07/2013

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not Considered. Include copy of this form with next communication to applicant. 1. Applicant´s unique citation design number (optional). 2 See Kinds Codes of USPTO patent Documents. at www.uspto.gov or MPEP 901.04. 3. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
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PTO/SB/08b (07-09)
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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	2	of	2

Complete if Known	
Application Number	13/172,425
Filing Date	06-29-11
First Named Inventor	Vidya Raghavan Setlur
Art Unit	2168
Examiner Name	CHEN, TE Y
Attorney Docket Number	P5296US00

NON PATENT LITERATURE DOCUMENTS

Examiner initial *	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/SC/	6	Internationanl Search Report for PCT/FI2012/050468 dated September 6, 2012, pp. 1-6.	☐
/SC/	7	Written Opinion for PCT/FI2012/050468 dated September 6, 2012, pp. 1-9.	☐
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Examiner Signature	/Te Chen/	Date Considered	/Te Chen/

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1. Applicants unique citation designation number. (optional) 2. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Cheif Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	Art Unit
	SUSAN CHEN	2168

SEARCHED			
Class	Subclass	Date	Examiner
707	732, 726, 791	7/8/2012	tyc
706	45, 62	7/9/2012	tyc
715	811	7/9/2012	tyc

SEARCH NOTES		
Search Notes	Date	Examiner
Palm inventor search	7/8/2012	tyc
Updated texts search on East DB	1/8/2013	tyc

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000362

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("707"/$ or "715"/$ or "717"/$ or "709"/$).ccls. and (page same (rank or weight or scor$4)) and ((context or topic) same sensitive) and (query same (dimension or cobic)) and (determin$4 same matrix)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2012/07/09 14:23

7/ 9/ 2012 2:53:30 PM
C:\ Users\ schen5\ Documents\ EAST\ Workspaces\ 12834733.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	"20100094904" or "7747618".pn.	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2013/01/08 16:44
L3	5757	"l1" and query and (user or users)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2013/01/08 16:47
L4	3	("20100094904" or "7747618".pn.) and (user or users)	US-PGPUB; USPAT; USOCR; IBM_TDB	OR	OFF	2013/01/08 16:48

1/ 8/ 2013 6:57:25 PM
C:\ Users\ schen5\ Documents\ EAST\ Workspaces\ 12834733.wsp

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000364

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	Art Unit
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/09/2012	01/08/2013							
	1	✓	✓							
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000365

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000366

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2168

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/09/2012	01/08/2013							
	45	-	-							
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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000367

To: docket@dcpatent.com,ipadmin@dcpatent.com,
From: PAIR_eOfficeAction@uspto.gov
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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
13172425	CTFR	01/11/2013	P5296US00
	1449	01/11/2013	P5296US00

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya Setlur *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	CHEN, TE Y.
Filed:	June 29, 2011	Group Art Unit:	2168

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

MAIL STOP AF
Commissioner for Patents
Alexandria, VA 22313-1450

RESPONSE UNDER 37 C.F.R. § 1.116

Dear Commissioner:

In response to the Final Office Action dated January 11, 2013, please reconsider the above-identified application based on the following:

PRESENTATION OF CLAIMS..... 2

REMARKS 8

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000369

PRESENTATION OF CLAIMS

The following is a list of the currently presented claims without amendments.

1. (Previously Presented) A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device;

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

2. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

3. (Original) A method of claim 2, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000370

a determination of an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

4. (Original) A method of claim 3, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

5. (Original) A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

6. (Original) A method of claim 2, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

7. (Original) A method of claim 6, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000371

or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

8. (Original) A method of claim 7, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

9. (Previously Presented) A method of claim 1, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

10. (Original) A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000372

11. (Previously Presented) An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

12. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

13. (Original) An apparatus of claim 12, wherein the apparatus is further caused to:

determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000373

14. (Original) An apparatus of claim 13, wherein the apparatus is further caused to:

determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

15. (Original) An apparatus of claim 14, wherein the apparatus is further caused to:

cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

16. (Original) An apparatus of claim 12, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

17. (Original) An apparatus of claim 16, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

18. (Original) An apparatus of claim 17, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000374

19. (Previously Presented) An apparatus of claim 11, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

20. (Original) An apparatus of claim 11, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

21-48. (Canceled)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000375

REMARKS

Claims 1-20 are pending, in which no claims are currently amended or added. Thus, no new matter is introduced.

The Final Office Action dated January 11, 2013, rejected claims 1-20 under 35 U.S.C. § 103(a) as obvious based on *Jandhyala* (US 2010/0094904) in view of *Zeng et al.* (US 7,747,618) (hereinafter, *Zeng*). The rejection is respectfully traversed.

The Final Office Action asserted that *Jandhyala* in view of *Zeng* would have rendered obvious the subject matter of independent claim 1. Final Office Action, pages 6-7. Applicants respectfully disagree. Independent claim 1 recites, "the multi-dimensional query specifies, at least in part, one or more **personas**, based, at least in part, on more than one person, associated with the at least one user device" (emphasis added). Independent claim 11 recites similar features in varying scope. *Jandhyala* and *Zeng* alone, or in combination, would not have rendered obvious the above recited features.

Jandhyala merely teaches determining a user's browsing history, favorite web pages, or localization information to provide a more specific search process. *Jandhyala*, paragraph [0052]. That is, *Jandhyala*'s search process is specific to only a single user rather than one or more personas based on **more than one person**. However, there is no extra teaching of a multi-dimensional query specifying **one or more personas, based, at least in part, on more than one person, associated with the at least one user device**. Accordingly, *Jandhyala* cannot teach the above-recited features of independent claims 1 and 11, which are based on personas based on more than one person.

In response to the above argument, the Final Office Action asserted that *Jandhyala's* "PageRank algorithm" is based on the "Helmholtz wave equation representation of Internet interactions" and the Internet interactions are deemed associated with a plurality of users or

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personas by more than one user device. Final Office Action, pages 3-4. Applicants respectfully disagree. Because the Internet interaction is associated with a plurality of users or personas with more than one user device, the Internet interaction cannot teach, for example, one or more persona, based on more than one person, associated with the at least one user device.

Further, the PageRank algorithm cannot teach a multi-dimensional **query** because the Page Rank algorithm is merely an algorithm for calculating relevance or importance scores for web pages that are returned for a search that is carried out in response to a query entered by a user. *Jandhyala*, paragraph [0027]. Thus, the PageRank algorithm is not a **query** but merely an algorithm that measures results of a query. Further, as the Final Office Action pointed out, the use of Internet or other network devices are merely for determining adaptive Page Rank or other types of scores for web pages. Final Office Action, page 6. Thus, the Internet interaction does not teach a query. The Final Office Action correctly acknowledged that *Jandhyala* does not disclose a multi-dimensional query but failed to further acknowledge that the PageRank algorithm does not even disclose a query. Final Office Action, page 7. Accordingly, *Jandhyala* cannot teach the above-recited features of independent claim 1.

Further, the Final Office Action asserted that *Zeng* cures the deficiencies of *Jandhyala* by disclosing a three-dimensional matrix with dimensions of users, queries, and documents, and the dimension of users is deemed to comprise more than one person or persona. Final Office Action, pages 4 and 7. However, the dimension of user comprising more than one persona cannot teach, for example, one or more persona based on more than one person. Therefore, *Zeng* fails to cure deficiencies of *Jandhyala*.

For at least foregoing reasons, and because *Zeng* fails to cure *Jandhyala*'s deficiencies, *Jandhyala* in view of *Zeng* would not have rendered obvious the subject matter of independent claims 1 and 11, including the above-recited features. Further, because dependent claims 2-10

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and 12-20 depend upon independent claims 1 and 11, it necessarily follows that this rejection cannot stand in view of the argument made above in favor of the parent claims 1 and 11.

Therefore, the present application, without amendments, overcomes the rejection of record and is in condition for allowance. Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (703) 519-9951 so that such issues may be resolved as expeditiously as possible.

As Applicants' remarks with respect to the Examiner's rejection are sufficient to overcome the rejection, Applicants' silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to the rejection (e.g., whether a reference constitutes prior art, ability to combine references, assertions as to patentability of dependent claims) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such assertions in the future.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

March 7, 2013
Date

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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000379

Electronic Acknowledgement Receipt

EFS ID:	15147315
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Vilavanh Ditthavong
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	07-MAR-2013
Filing Date:	29-JUN-2011
Time Stamp:	16:55:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		NC75185US_P5296US00_Response_filed03-07-13.pdf	137920 91316907b3482e5000f2a42380b4c40feea4a404	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment After Final	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	11
Warnings:			
Information:			
	Total Files Size (in bytes):	137920	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/172,425	06/29/2011	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
			TOTAL			TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT **03/07/2013**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $ =		OR	X $62=	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $250=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**0**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DEBRA R. WYATT/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 03/15/2013

Ditthavong Mori & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2168	

NOTIFICATION DATE	DELIVERY MODE
03/15/2013	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com
ipadmin@dcpatent.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000383

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 13/172,425	**Applicant(s)** SETLUR ET AL.
	Examiner SUSAN CHEN	**Art Unit** 2168

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 07 March 2013 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

(2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because

a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);

b) ☐ They raise the issue of new matter (see NOTE below);

c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☐ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.

12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

13. ☐ Other: _____.

STATUS OF CLAIMS

14. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: .

Claim(s) objected to: .

Claim(s) rejected: 1-20.

Claim(s) withdrawn from consideration: .

/SUSAN CHEN/
Primary Examiner
Art Unit: 2168

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Continuation of 11. does NOT place the application in condition for allowance because: applicant does not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the rejections made on record. Further, they do not show how the amendments avoid such references or objections. Moreover, "The discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430,433 (CCPA 1977).

To: docket@dcpatent.com,ipadmin@dcpatent.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Mar 15, 2013 05:27:10 AM

Dear PAIR Customer:

Ditthavong Mori & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13172425	CTAV	03/15/2013	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional)
P5296US00

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on _____

Signature _____

Typed or printed name _____

In re Application of: Vidya Setlur et al.

Application Number: 13/172,425

Filed: June 29, 2011

For: METHOD AND APPARATUS FOR PRO\

Art Unit: 2168

Examiner: CHEN, TE Y.

Applicant hereby **appeals** to the Patent **Trial and Appeal Board** from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800.00

☐ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is: $ _____

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 504213 .

☒ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/SB/22 or equivalent) is enclosed.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☒ attorney or agent of record.
Registration number 64888.

☐ attorney or agent acting under 37 CFR 1.34
Registration number if acting under 37 CFR 1.34 _____

/Kevin R. Gualano/
Signature

Kevin R. Gualano
Typed or printed name

703-519-9951
Telephone number

April 4, 2013
Date

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

*Total of _____ forms are submitted.

This collection of information is required by 37 CFR 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13172425
Filing Date:	29-Jun-2011
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Filer:	Phouphanomketh Ditthavong/Vilavanh Ditthavong
Attorney Docket Number:	P5296US00

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Notice of Appeal	1401	1	800	800
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**800**

Electronic Acknowledgement Receipt

EFS ID:	15435704
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Vilavanh Ditthavong
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	NC75185US_P5296US00_NoticeofAppeal_filed04-04-13.pdf	50807 36b2d03e6c82c84b3df2b0cc881248928ad09819	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30720 c75f9f2d5a8f945649fe4e4bec3077b6b8fe478b	no	2
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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

In re Application of:	Vidya SETLUR *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Te Y. CHEN
Filed:	June 29, 2011	Group Art Unit:	2168

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Commissioner:

This Appeal Brief is submitted in support of the Notice of Appeal dated April 4, 2013.

I. REAL PARTY IN INTEREST

The real party in interest is Nokia Corporation, a corporation organized under the laws of Finland and having a place of business at Keilalahdentie 4, FIN-02150 Espoo, Finland. The above referenced patent application is assigned to Nokia Corporation.

II. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention addresses problems associated with providing rich, situational-aware, context-sensitive datasets in a mobile environment. The claimed invention is generally related to providing an ordering metric for a multi-dimensional contextual query to provide context-aware querying, retrieval and presentation of results on, for example, a mobile interface. The claimed invention is directed to, for example, determining a multi-dimensional query

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000393

associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device.

Independent claim 1 recites:

A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following (*see, e.g.*, Specification, ¶¶ [0003], [0007]):

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device (*see, e.g.*, Specification, ¶¶ [0060]-[0061]; FIG. 3, step 305);

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results (*see, e.g.*, Specification, ¶ [0062]; FIG. 3, step 307); and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device (*see, e.g.*, Specification, ¶ [0062]; FIG. 3, step 309).

Independent claim 11 recites:

An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following (*see, e.g.*, Specification, ¶ [0004]),

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000394

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device (*see, e.g.*, Specification, ¶¶ [0060]-[0061]; FIG. 3, step 305);

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results (*see, e.g.*, Specification, ¶ [0062]; FIG. 3, step 307); and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device (*see, e.g.*, Specification, ¶ [0062]; FIG. 3, step 309).

III. ARGUMENT

A. CLAIMS 1-20 ARE NOT RENDERED OBVIOUS BY *JANDHYALA ET AL.* (US 2010/0094904) (HEREINAFTER, *JANDHYALA*) IN VIEW OF *ZENG ET AL.* (US 7,747,618) (HEREINAFTER, *ZENG*)

The Examiner bears the initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention under any statutory provision. In rejecting a claim under 35 U.S.C. § 103(a), the Examiner is required to provide a factual basis to support the obviousness conclusion. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967); *In re Lunsford*, 357 F.2d 385, 148 USPQ 721 (CCPA 1966); *In re Freed*, 425 F.2d 785, 165 USPQ 570 (CCPA 1970). Further, in rejecting a claim under 35 U.S.C. § 103(a) it is incumbent upon the Examiner to establish the requisite motivation. As maintained by the Supreme Court of the United States in *KSR Intern. Co. v. Teleflex Inc.*, 127 S.Ct. 1727 at 1741, an obviousness "analysis should be made explicit." *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be

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some articulated reasoning with some rational underpinning to support the legal conclusions of obviousness"). Indeed, the Examiner is required to make specific factual findings, not generalizations. *See* M.P.E.P. §2144.08(II)(A)(5). That initial burden required by procedural **due process of law** has not been discharged.

The Examiner (per pages 6, 7 and 10 of the January 11, 2013 Final Office Action) asserted that *Jandhyala* in view of *Zeng* would have rendered obvious the subject matter of independent claims 1 and 11. Appellants respectfully disagree and submit that the Examiner's assertion is misguided.

Independent claim 1 recites, "the multi-dimensional query specifies, at least in part, one or more **personas**, based, at least in part, on more than one person, associated with the at least one user device" (emphasis added). Independent claim 11 recites similar features in varying scope. The Examiner (per pages 6 and 10 of the Final Office Action) asserted that *Jandhyala* discloses the above-recited features in independent claim 1.

However, contrary to the Examiner's assertion, *Jandhyala* merely discloses determining a user's browsing history, favorite web pages, or localization information to provide a more specific search process. *See, e.g.*, *Jandhyala*, ¶ [0052]. That is, *Jandhyala*'s search process is specific to only a single user rather than one or more personas based on **more than one person**. There is no extra teaching of a multi-dimensional query specifying **one or more personas, based**, at least in part, **on more than one person, associated with** the at least **one user device**. Accordingly, *Jandhyala* cannot teach the above-recited features of independent claims 1, which include personas based on **more than one person**.

Further, the Examiner's remarks (per pages 3-4 of the Final Office Action) to Appellant's October 10, 2012 Response are misguided for following reasons.

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First, the Examiner asserted, "one cannot show nonobviousness by attacking references individually where the rejections are based on combination of references." While nonobviousness cannot be established by attacking references individually, a rejection of nonobviousness must first accurately reflect what is taught by the references before proposing the combination. *Jandhyala* and *Zeng* fail to teach claim features as alleged by the July 12, 2012 Office Action, much less the combination of the references. Any alleged attack in the October 10, 2012 Response was merely asserting that the July 12, 2012 Office Action was mischaracterizing the disclosure of the references. Based on the mischaracterization of the references, the combination of the references would not have rendered obvious the subject matter of the independent claims. Indeed, the October 10, 2012 Response addressed the failure of any of *Jandhyala* or *Zeng* to disclose the claim features, "the multi-dimensional query specifies, at least in part, one or more **personas**, based, at least in part, on more than one person, associated with the at least one user device" such that the combination of *Jandhyala* or *Zeng* necessarily could not disclose the features.

Second, the Examiner asserted, "[appellants] failed to define the metes and bounds of the claimed 'one or more persona' or 'person' as such, they are widely open for prior art interpretations." Contrary to the Examiner's assertion, Appellants defined the metes and bounds of the "one or more persona" by reciting "one or more persona**, based, at least in part, on more than one person, associated with the at least one user device**," as in independent claims 1 and 11. *See also* Specification, ¶ [0040] ("The personas represent the possible different combinations of users that can be associated with a specific UE 101. By way of example, a persona can represent the members of a family that are associated with the UE 101"). Further, a person of ordinary skill in the art would know what "person" means. Additionally, even considering a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000397

broad interpretation of the "one or more persona," the Examiner has not sufficiently asserted that the *Jandhyala* or *Zeng* teaches the "one or more persona."

Third, the Examiner asserted that *Jandhyala's* "PageRank algorithm" is based on the "Helmholtz wave equation representation of Internet interactions" and the Internet interactions are deemed associated with a plurality of users or personas by more than one user device. However, because the Internet interactions are associated with a plurality of users or personas with more than one user device, the Internet interactions cannot teach, for example, one or more persona, based on more than one person, associated with the at least one user device.

Further, the PageRank algorithm cannot teach a multi-dimensional **query** because the Page Rank algorithm is merely an algorithm for calculating relevance or importance scores for web pages that are returned for a search that is carried out in response to a query entered by a user. *See, e.g.*, *Jandhyala*, ¶ [0027]. Thus, the PageRank algorithm is not a **query** but merely an algorithm that measures results of a query. Also, as the Examiner (per page 6 of the Final Office Action) pointed out, the use of the Internet or other network devices is merely for determining adaptive Page Rank or other types of scores for web pages. Thus, the Internet interactions do not teach the claimed query. The Examiner (per page 7 of the Final Office Action) correctly acknowledged that *Jandhyala* does not disclose a multi-dimensional query but failed to further acknowledge that the PageRank algorithm also does not disclose a query.

Fourth, the Examiner asserted that *Zeng* cures the deficiencies of *Jandhyala* by disclosing a three-dimensional matrix with dimensions of users, queries, and documents, and the dimension of users is deemed to comprise more than one person or persona. Appellants respectfully disagree and submit that the Examiner's assertion is misguided. The dimension of users merely comprising more than one person does not inherently teach **one or more personas based on more than one person associated with one user device**.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000398

Fifth, the Examiner asserted:

> [Appellants do] not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. Moreover, 'The discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer.' . . . Thus, the claiming of the new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable.
>
> January 11, 2013, Final Office Action, pages 4-5.

In fact, the October 10, 2012 Response (per pages 9-10), in amending in reply to a 35 U.S.C. § 103(a) rejection of claims 1-20, clearly pointed out how the applied reference *Jandhyala* does not teach the amendments.

Further, the Examiner confuses the issues at hand in the present case. Appellants are not asserting that they have found a previously unappreciated property of a prior art composition, or a scientific explanation for the prior art's functioning that would otherwise render an old composition patentably new to the discoverer. Clearly, independent claims 1 and 11 are not directed to a composition of matter. Thus, any case law regarding compositions of matter is irrelevant and only further evidences the misguidance of the applied rejections.

Further, the apparent allegation of inherency asserted above has not been sufficiently established. Rather, the Examiner at best asserted the conclusion of inherency. Yet, even the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may

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result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The Examiner, by merely asserting 'inherency' has not met the above standards in supporting a rejection based on inherency. According to M.P.E.P. § 2112 (IV), the Examiner's assertion is misguided and conclusive without grounds because the Examiner failed to provide the extrinsic evidence that shows the alleged inherent features are necessarily present in the applied reference *Jandhyala* or *Zeng* and that would be recognized by persons of ordinary skill.

For at least foregoing reasons, and because *Zeng* fails to cure *Jandhyala*'s deficiencies, *Jandhyala* in view of *Zeng* would not have rendered obvious the subject matter of independent claims 1 and 11, including the above-recited features. Further, because dependent claims 2-10 and 12-20 depend upon independent claims 1 and 11 respectively, it necessarily follows that this rejection cannot stand in view of the argument made above in favor of the parent claims 1 and 11.

Accordingly, since the Examiner has erred in failing to present a *prima facie* case of obviousness with regard to the subject matter of independent claims 1 and 11, and therefore also dependent claims 2-10 and 12-20 that depend from and incorporate the subject matter of the independent claims, and rejection of these claims under 35 U.S.C. 103(a) is neither legally nor factually viable, reversal of this rejection by the Honorable Board is respectfully solicited.

IV. CONCLUSION AND PRAYER FOR RELIEF

Based on the foregoing, it is apparent that the Examiner's rejection under 35 U.S.C. § 103(a) is not factually or legally viable. Appellants therefore solicit the Honorable Board to reverse the Examiner's rejection.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

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including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

June 3, 2013
Date

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V. CLAIMS APPENDIX

1. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device;

an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

2. A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

3. A method of claim 2, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000402

a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

4. A method of claim 3, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

5. A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

6. A method of claim 2, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

7. A method of claim 6, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000403

8. A method of claim 7, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

9. A method of claim 1, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

10. A method of claim 1, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a determination of contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

11. An apparatus comprising:

at least one processor; and

at least one memory including computer program code for one or more programs,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000404

determine a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device;

cause, at least in part, an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

determine at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device.

12. An apparatus of claim 11, wherein the apparatus is further caused to:

determine one or more object contextual attributes associated with the one or more results,

wherein the at least one ordering metric is further based, at least in part, on the one or more object contextual attributes.

13. An apparatus of claim 12, wherein the apparatus is further caused to:

determine an accuracy, a precision, a resolution, or a combination thereof of the one or more object contextual attributes; and

cause, at least in part, a display of one or more representations of the accuracy, the precision, the resolution, or a combination thereof.

14. An apparatus of claim 13, wherein the apparatus is further caused to:

determine the accuracy, the precision, the resolution, or a combination thereof based, at least in part, on sensor information, survey information, user update information, or a combination thereof.

15. An apparatus of claim 14, wherein the apparatus is further caused to:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000405

cause, at least in part, an updating of the one or more object contextual attributes at the at least one context-sensitive database based on the determined accuracy, the determined precision, the determined resolution, or a combination thereof.

16. An apparatus of claim 12, wherein the at least one ordering metric is based, at least in part, on a weighted sum, a weighted average, or a combination thereof of one or more dimensions of the multi-dimensional query.

17. An apparatus of claim 16, wherein the one or more dimensions include, at least in part, (i) a contextual dimension for comparing the one or more user contextual attributes and the one or more object contextual attributes, (ii) a contextual relation dimension for evaluating one or more relations among the one or more user contextual attributes and the one or more object contextual attributes, and (iii) an inclusion dimension for determining whether to include respective ones of the one or more results in a result list.

18. An apparatus of claim 17, wherein the contextual relation dimension specifies weighting information, priority information, or a combination thereof for the one or more user contextual attributes, the one or more object contextual attributes, or combination thereof.

19. An apparatus of claim 11, wherein the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the apparatus is further caused to:

process and/or facilitate a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof,

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wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof.

20. An apparatus of claim 11, wherein the apparatus is further caused to:

determine contextual information, interaction information at a user interface of the at least one user device, or a combination thereof associated with the at least one user device; and

process and/or facilitate a processing of the contextual information, the interaction information, or a combination thereof to determine, at least in part, the one or more user contextual attributes.

21-48. (Canceled)

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International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Tiffany Butler
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National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Application Number: 13/172,425
Filing Date: 06/29/2011
Appellant(s): Vidya SETLUR et al.

_____
Kevin R. Gualano
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on June 03, 2013 appealing from the Office action mailed on January 11, 2013.

(1) Grounds of Rejection to be Reviewed on Appeal

Every ground of rejection set forth in the Office action dated January 11, 2013 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(2) Response to Argument

This examiner's answer is intended to address applicant's arguments in the order in which they appear in the appeal brief. Before responding to the arguments, examiner would like to provide an overview of the claimed invention.

The claimed invention describes a computing system which determines a user's personal multi-dimensional query, execute the query via corresponding network user devices and determine an ordered metric for the specific user's context query.

Appellant's Arguments: Independent claim 1 recites, "the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device" (emphasis added). Independent claim 11 recites similar features in varying scope. Jandhyala and Zeng alone, or in combination, would not have rendered obvious the above recited features.

In response to the above spurious arguments, the examiner first note that appellant failed to specify the metes and bounds of the claimed "one or more persona". Further, in view of claim 9 recited by appellant, it seems that the claimed "multi-dimensional query" is also ambiguous. For the purposes to facilitate appellant's review, these claims were relisted a following:

"1. (Original) A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device; an execution of the multi-dimensional query on at least one context-sensitive database to generate one or more results; and

a determination of at least one ordering metric for the one or more results based, at least in part, on one or more user contextual attributes of the at least one user device." and

"9. (Original) A method of claim 1, the multi-dimensional query specifies, at least in part, one or more contexts associated with the at least one user device, and the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following: a processing of the one or more user contextual attributes to select from among the one or more personas, the one or more contexts, or a combination thereof, wherein the at least one ordering metric is based, at least in part, on the selected one or more personas, the selected one or more contexts, or a combination thereof."

As set forth above, claims 1 and 9, have repeatedly used the phrases: "one or more" and "and/or", these indefinite phrases leads the claimed limitations having more than one interpretation and widely open for prior art interpretations. Specifically, for appellant's spurious argued limitations, the examiner would regard these limitations merely representing: a personal context (or keyword) query specified by at least one network user device including some abstract data or information.

Further, in view of Fig. 1 as submitted by appellant's specification, it seemed that the claimed "at least one user device" merely being disclosed as some general purpose user's equipment(s) [e.g., 101a-101n, Fig. 1] that were associated by a conventional communication network (e.g., 105, Fig. 1) and thereby executing some abstract applications (e.g., 111a-111n, Fig. 1) coupled to these user equipment(s) for determining an ordered personal results based on a specific client query.

To facilitate the reviewing of the prior art, the examiner further respectfully directed appellant's attentions to the following figures and excerpts in a combination as disclosed by the prior art of Jandhyala and Zeng:

For example, Jandhyala has clearly disclosed his invention comprises a "PAGERANK ALGORITHM" based on "HELMHOLTZ WAVE EQUATION REPRESENTATIONS OF INTERNET INTERACTIONS" (see Title and Fig. 4 with associated texts). Further, Jandhyala has clearly disclosed the Internet PageRank

interactions in his invention comprising the conventional on-line interactive communications among online communities, blogs and other social networks application services (e.g., S.: 0002 - 0004), these application services could be implemented by more than one internet or other networks user devices such as the physical and logical devices of 240 as shown by Fig. 7 and S.: 0058-0061.

Thus, by referring to Jandhyala's figure 7, he has clearly disclosed at least a network interface application (e.g., 242, Fig. 7) that could be used to associate the rest of physical devices for on-line interactive communications occurred on the internet or other networks devices (e.g., 260, Fig. 7). For example, Jandhyala has clearly disclosed the interactive communications happened among online communities, blogs and social network applications (e.g., S.: 0003-0004). Further, he has clearly disclosed that these interactive network communications could be a user context query (e.g., a user typed in keyword to a network search engine at S.: 0061) based on a plurality of operations processed by a plurality of corresponding network physical and logical user devices (e.g., 240, 242, 252, 254, 256, 258, 262, etc., Fig. 7 & 0058-0061) such as a laptop computer, a desktop computer, a personal data assistant (PDA) and a smart phone, etc. (e.g., S.: 0058 - 0060) for determining and returning query results ordered by Customized Personal PageRank or TrustRank of the web pages based on appropriate page scoring and ranking schemas (e.g., S.: 0051- 0052), or limited to user specific, or topic specific web page searches (e.g., S.: 0061).

Furthermore, Zeng has clearly disclosed an augmentation system for analyzing users click-through data with latent information present in the click-through data in order to create a three-dimensional matrix with the dimensions of users, queries, and documents, then performs a three-order singular value decomposition of the three-dimensional matrix to generate a three-dimensional core singular value matrix and a left singular matrix for each dimension to overcome the difficulties of modeling a personalized web page search (e.g., col. 2, lines 36-58, Abstract and Fig. 4 with associated texts). Wherein the users, queries and documents three dimensional matrix of Zeng's invention clearly comprised the claimed multi-dimensional queries and the claimed more than one person or personas.

In addition, as cited on record, because Jandhyala's and Zeng's inventions are analogous art that provide customized document ranking over networks or Internet and both in the same endeavor to create a reduced matrix to facilitate a user context query processing by construct a reduced document matrix per page ranking and weighting schemas [e.g., Jandhyala: Abstract, S.: 0039, Fig. (s) 4 & 7; Zeng: Abstract, Fig. 4 & 10 with associated texts], thus, in contrary to appellant's arguments, it would have been most desirable for an ordinary skilled artisan at the time the invention was made to combined the teachings of Jandhyala's and Zeng's together for constructing a successful, normalized and ranked three-dimensional users, queries and document core matrix for the purpose to facilitate more than one users online query services per a plurality of user devices that were associated by at least a network interface coupled to

the Internet or other networks as disclosed in Fig. 7 by Jandhyala's invention without to reinventing the wheel.

Based on the discussions set forth above, because appellant's arguments do not comply with 37 CFR 1.111(c), they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. In addition, appellant has been repeatedly reminded that the examiner is entitled to the broadest reasonable interpretations of the claims. However, appellant merely choose to ignore the rejections and examiner's advises.

For the above reasons, it is believed that the 35 U.S.C. 103(a) rejections set forth on record should be sustained.

Respectfully submitted,

/Susan Y. Chen/

Examiner, AU 2168

August 09, 2013

An Appeal Conference was held on August 01, 2013. Agreement was reached to proceed to the Board of Appeals and Interferences.

Conferees:

/FRED I EHICHIOYA/
Supervisory Patent Examiner, Art Unit 2168

/Hosain T Alam/
Supervisory Patent Examiner, Art Unit 2166

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Aug 19, 2013 05:22:00 AM

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Application	Document	Mailroom Date	Attorney Docket No.
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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

In re Application of:	Vidya SETLUR *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Te Y. CHEN
Filed:	June 29, 2011	Group Art Unit:	2168

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Commissioner for Patents
Alexandria, VA 22313-1450

REPLY BRIEF

Dear Commissioner:

This Reply Brief is submitted in response to the Examiner's Answer dated August 19, 2013.

I. STATUS OF THE CLAIMS

Claims 1-20 are pending in this Appeal. No claim is allowed. This Appeal is therefore taken from the final rejections of claims 1-20 in the Final Office Action dated January 11, 2013. The final rejections are sustained in the Examiner's Answer dated August 19, 2013.

II. GROUND OF REJECTION TO BE REVIEWED

Whether claims 1-20 are improperly rejected under 35 U.S.C. § 103(a) as obvious based on *Jandhyala* (US 2010/0094904) in view of *Zeng et al.* (US 7,747,618) (hereinafter, *Zeng*).

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III. ARGUMENT

Appellants maintain and incorporate the positions presented in the Appeal Brief filed June 3, 2013, but present further refutation of certain assertions presented by the Examiner in the Answer.

Regarding the 35 U.S.C. § 103(a) rejection of claims 1-20, the Examiner continues to assert that *Jandhyala* in view of *Zeng* would have rendered obvious these claims. Appellants respectfully disagree with the assertion.

As presented in the Appeal Brief, Appellants submit that the Examiner failed to demonstrate that *Jandhyala* teaches, "a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device," as recited by independent claim 1, and similarly recited by independent claim 11 in varying scope. Further, Appellants submit that *Zeng* does not cure the deficiency of *Jandhyala*.

First, the Examiner repeatedly asserted, "appellant failed to specify the metes and bounds of the claimed 'one or more persona,'" without providing any reasoning. Answer, page 4; Final Office Action, page 3. The M.P.E.P does not require Appellants to define the metes and bounds of each claimed feature, but rather metes and bounds of the invention. M.P.E.P § 2173.02. Regardless, as presented in the Appeal Brief (per page 5), Appellants define "one or more persona" in paragraph [0040] of the Specification, which recites, "[t]he personas represent the possible different combinations of users that can be associated with a specific UE 101. By way of example, a persona can represent the members of a family that are associated with the UE 101." A person of ordinary skill in the art would know what "one or more persona" means in light of the Specification. *See* Specification, ¶ [0040].

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000421

Second, the Examiner asserted, "the claimed 'multi-dimensional query' is [] ambiguous," without providing sufficient reasoning." Answer, page 4. In fact, there is no ambiguity about the multi-dimensional query because independent claims 1 and 11 recite that the multi-dimensional query is "associated with at least one user device" and "specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device." Further, dependent claim 9 recites that the multi-dimensional query "specifies, at least in part, one or more contexts associated with the at least one user device."

Further, the Examiner stated:

> For the purpose to facilitate appellant's review, these claims were relisted a following: "1. (Original) A method . . . wherein the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or a combination thereof associated with the at least one user device . . ."
>
> Answer, page 4.

However, independent claim 1 does not recite, "the multi-dimensional query specifies, at least in part, one or more personas, one or more contexts, or combination thereof associated with the at least one user device." Rather, independent 1 recites, "the multi-dimensional query specifies, at least in part, one or more personas, **based, at least in part, on more than one person**, associated with the at least one user device." Thus, the Examiner's rejection of independent claim 1 is based on previously recited independent claim 1 and is, therefore, improper. Also, it is assumed that **the entirety of the Answer is based on the Examiner's misunderstanding of independent claim 1.**

Third, the Examiner asserted, "claims 1 and 9, have repeatedly used the phrases: 'one or more' and 'and/or', these indefinite phrases leads the claimed limitations having more than one interpretation and widely open for prior art interpretations. Specifically, for appellant's [sic] spurious argued limitations, the examiner would regard these limitations merely representing: a

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personal context (or keyword) query specified by at least one network user device including some abstract data or information" (emphasis added). Answer, page 5. However, M.P.E.P. § 2173.05(h)(II) recites that, "[a]lternative expressions using 'or' are acceptable, such as 'wherein R is A, B, C, or D.'" Further, a phrase "A and/or B," which means "A, B, or A and B," is merely a form of alternative language similar to the alternative language explicitly recited in § 2173.05(h)(II). Thus, the phases "one or more" and "and/or" are not indefinite phrases. In addition, the Examiner cannot simplify the claimed features to "a personal context (or keyword) query specified by at least one network user device including some abstract data or information" because such an interpretation is unreasonable in view of the claim features, regardless of the alternative expressions.

Fourth, the Examiner asserted that *Jandhyala* discloses:

> "PAGERANK ALGORITHM" based on "HELMHOLTZ WAVE EQUATION REPRESENTATIONS OF INTERNET INTERACTIONS"; "the Internet PageRank interactions . . . comprising the conventional on-line interactive communications among online communities, blogs and other social networks application services"; "network interface application . . . that could be used to associate the rest of physical devices for on-line interactive communications occurred on the internet or other networks devices"; and "that these interactive network communications could be a user context query.
>
> Answer, pages 5-6.

However, mere statements that *Jandhyala* discloses such features do not provide any responses to the Appellant's arguments presented in the Appeal Brief.

Fifth, the Examiner asserted that *Zeng* discloses, "an augmentation system for analyzing user click-through data with latent information present in the click-through data in order to create a three-dimensional matrix with the dimensions of users, queries, and documents" and the users, queries, and documents teaches claimed multi-dimensional queries and the claimed one or more persona. Answer, page 7. However, as presented in the Appeal Brief (per page 6), the dimension

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of users, which is merely a plurality of users, does not teach the claimed one or more persona because the plurality of users is not necessarily different combinations of users that can be associated with a specific user device. The plurality of users may be separate and individual users who are not specifically combined into different groups.

Sixth, the Examiner repeatedly asserted, "appellant's arguments . . . do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections." Answer, page 8; Final Office Action, page 4. However, as presented in at least the June 3, 2013 Appeal Brief, the October 10, 2012 Response (per pages 9-10) pointed out how the applied reference *Jandhyala* does not teach the claimed features.

For at least the foregoing reasons, *Jandhyala* in view of *Zeng* would not have rendered obvious the subject matter of independent claims 1 and 11, including the above-recited features of, "a determination of a multi-dimensional query associated with at least one user device, wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device." Further, *Jandhyala* in view of *Zeng* would not have rendered obvious the subject matter of dependent claims 2-10 and 12-20 for at least the reasons presented for independent claims 1 and 11 from which they depend, as well as for the additional subject matter these dependent claims recite.

Accordingly, for the reasons presented in the Appeal Brief filed June 3, 2013, in addition to the reasons presented in this response, Appellants respectfully solicit the Honorable Board to reverse the rejection.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000424

IV. CONCLUSION AND PRAYER FOR RELIEF

For all of the foregoing reasons, Appellants request the Honorable Board to reverse the Examiner's rejection.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

October 21, 2013
Date

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Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000425

Electronic Patent Application Fee Transmittal

Application Number:	13172425
Filing Date:	29-Jun-2011
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Filer:	Phouphanomketh Ditthavong/Vilavanh Ong
Attorney Docket Number:	P5296US00

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Utility under 35 USC 111(a) Filing Fees

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Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Appeal Forwarding Fee	1413	1	2000	2000
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Extension-of-Time:				

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Electronic Acknowledgement Receipt

EFS ID:	17178854
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Vilavanh Ong
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	21-OCT-2013
Filing Date:	29-JUN-2011
Time Stamp:	14:24:50
Application Type:	Utility under 35 USC 111(a)

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Warnings:					
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2	Fee Worksheet (SB06)	fee-info.pdf	30484 7341d1efbb346cd99b25ea95cfada3ad4ba1fecb	no	2
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 11/08/2013

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SUITE 322
ALEXANDRIA, VA 22314

Appeal No: 2014-000963
Application: 13/172,425
Appellant: Vidya Setlur et al.

Patent Trial and Appeal Board Docketing Notice

Application 13/172,425 was received from the Technology Center at the Board on October 24, 2013 and has been assigned Appeal No: 2014-000963.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 01/04/2016

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ART UNIT	PAPER NUMBER
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NOTIFICATION DATE	DELIVERY MODE
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VIDYA SETLUR and AGATHE BATTESTINI

Appeal 2014-000963
Application 13/172,425
Technology Center 2100

Before DAVID M. KOHUT, LINZY T. McCARTNEY, and MELISSA A. HAAPALA, *Administrative Patent Judges*.

McCARTNEY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

ANALYSIS

Independent claims 1 and 11 each recite "wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device." The Examiner rejected claims 1 and 11 under 35 U.S.C. § 103(a) as obvious over a combination of Jandhyala (US 2010/0094904 A1; Apr. 15, 2010) and Zeng et al. (US 7,747,618 B2; June 29, 2010). Final Act. 6–7, 10. In particular, the Examiner construed the claimed "multi-dimensional query" as "a personal context (or keyword) query specified by at least one network user device including some abstract data or information" and found a combination of Jandhyala and Zeng teaches or suggests a "multi-dimensional query" under this construction. *See* Ans. 5–7; Final Act. 6–7;

Appellants contend the cited art does not teach or suggest a multi-dimensional query that specifies "one or more *personas*, based at least in part, *on more than one person*, associated with the at least one user device." *See* Br. 4–8; Reply Br. 3–5. Specifically, Appellants argue, among other things, that Jandhyala's search process and Zeng's three-dimensional matrix, either alone or combination, do not teach or suggest the recited "multi-dimensional query." *See* Br. 4, 6; Reply Br. 4–5.

We have reviewed the Examiner's rejection in light of Appellants' arguments, and we agree with Appellants that the Examiner erred. As an initial matter, the Examiner's construction of "multi-dimensional query" ignores that the claimed query "specifies at least in part, one or more personas, based, at least in part, *on more than one person*." *Compare* Ans. 5 *with* Br. 10. Moreover, as argued by Appellants, the cited portions of Jandhyala and Zeng respectively teach information that affects a PageRank

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algorithm based on a *single* user's data and a three-dimensional matrix used to augment click through data (*see e.g.,* Jandhyala ¶¶ 52, 61; Zeng 2:46–58), neither of which suggests the disputed limitation, alone or in combination, without adequate additional reasoning or evidence, which the Examiner has not provided. Accordingly, we do not sustain the Examiner's rejection of claim 1 and 11. Because claims 2–10 and 12–20 depend from either claim 1 or claim 11, we also do not sustain the Examiner's rejection of these claims.

DECISION

For the above reasons, we reverse the rejection of claims 1–20.

REVERSED

mp

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To: docket@dcpatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Jan 04, 2016 05:29:52 AM

Dear PAIR Customer:

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Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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Application	Document	Mailroom Date	Attorney Docket No.
13172425	APDR	01/04/2016	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

11764 7590 03/10/2016

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44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER
CHEN, TE Y

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 03/10/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/10/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

11764 7590 03/10/2016
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Alexandria, VA 22314

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/10/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHEN, TE Y	2154	707-748000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 03/10/2016

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 03/10/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/172,425	Applicant(s) SETLUR ET AL.	
	Examiner SUSAN CHEN	Art Unit 2154	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the BPAI decision made on 01/04/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/SUSAN CHEN/
Primary Examiner, Art Unit 2154

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000442

The present application is being examined under the pre-AIA first to invent provisions.

This office action is in response to the Patent Board Decision mailed out on 01/04/2016.

Allowable Subject Matter

Claims 1-20, are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-20, are allowable because: 1) In view of the patent board decision and 2) the prior art on record or that encountered in searching for the invention, fails to disclose or suggest the features of instant invention – “wherein the multi-dimensional query specifies, at least in part, one or more personas, based, at least in part, on more than one person, associated with the at least one user device" - in a combination with all the limitations as argued and recited by applicants.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN CHEN whose telephone number is (571)272-4016. The examiner can normally be reached on Monday - Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SUSAN CHEN/
Primary Examiner
Art Unit 2154

March 03, 2016

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"13529696"	US-PGPUB; USPAT	OR	ON	2016/03/03 11:22
L2	1	"13172425" and person$5	US-PGPUB; USPAT	OR	ON	2016/03/03 12:08
L3	1	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4)	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L4	0	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L5	0	(707/$ or 717/$ or 706/$ or 715/$).ccls. and ((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:19
L6	0	3 AND ((G06F17/30528).CPC.) and L4	US-PGPUB; USPAT	OR	ON	2016/03/03 12:20
L7	0	("20020055924" | "20040110515" | "20040162830" | "20080301092" | "20100145976" | "20100241663" | "20110055203" | "6693651" | "7853574").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:22
L8	0	("20100094904" | "20100223261" | "20110078159" | "7330849" | "7747618").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:23
L9	0	("20020188589" | "20030036848" | "20090177386" | "20090228196").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:24
L10	0	(707/748 or 707/732 or 707/735).ccls. and ((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:26

3/ 3/ 2016 12:27:14 PM
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BIB DATA SHEET

CONFIRMATION NO. 7264

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/172,425	06/29/2011	707	2154	P5296US00

APPLICANTS

INVENTORS

Vidya Setlur, Portola Valley, CA;
Agathe Battestini, San Francisco, CA;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
07/11/2011

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /SUSAN Y CHEN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	11	20	2

ADDRESS

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
UNITED STATES

TITLE

METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

FILING FEE RECEIVED		
1220	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2154

CPC						
Symbol					**Type**	**Version**
G06F		17	/	30528	F	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/SUSAN CHEN/ Primary Examiner.Art Unit 2154	03/03/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000451

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2154

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
707	732	G 0 6 F 7 / 00 (2006.01.01)	
		G 0 6 F 17 / 00 (2006.01.01)	
		G 0 6 F 17 / 30 (2006.01.01)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
707	748				
707	735				

NONE	Total Claims Allowed:
(Assistant Examiner) (Date)	20
/SUSAN CHEN/ Primary Examiner.Art Unit 2154 03/03/2016	O.G. Print Claim(s): 1 — O.G. Print Figure: 1
(Primary Examiner) (Date)	

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000452

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	**Art Unit**
	SUSAN CHEN	2154

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/SUSAN CHEN/ Primary Examiner.Art Unit 2154	03/03/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000453

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13172425	SETLUR ET AL.
	Examiner	Art Unit
	SUSAN CHEN	2168

CPC- SEARCHED		
Symbol	Date	Examiner
(G06F17/30528).CPC. and keyword searches	3/3/2016	tyc

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
707	732, 726, 791	7/8/2012	tyc
706	45, 62	7/9/2012	tyc
715	811	7/9/2012	tyc
707	all	3/3/2016	tyc
706	all	3/3/2016	tyc
717	all	3/3/2016	tyc
715	all	3/3/2016	tyc

SEARCH NOTES		
Search Notes	Date	Examiner
Palm inventor search	7/8/2012	tyc
Updated texts search on East DB	1/8/2013	tyc
Updated keywords and CPCs searches on East DB	3/3/2016	tyc
NPL- IEEE, ACM, Google	3/3/2016	tyc

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
707	732, 735, 748	3/3/2016	tyc

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000454

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"13529696"	US-PGPUB; USPAT	OR	ON	2016/03/03 11:22
L2	1	"13172425" and person$5	US-PGPUB; USPAT	OR	ON	2016/03/03 12:08
L3	1	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4)	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L4	0	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L5	0	(707/$ or 717/$ or 706/$ or 715/$).ccls. and ((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:19
L6	0	3 AND ((G06F17/30528).CPC.) and L4	US-PGPUB; USPAT	OR	ON	2016/03/03 12:20
L7	0	("20020055924" | "20040110515" | "20040162830" | "20080301092" | "20100145976" | "20100241663" | "20110055203" | "6693651" | "7853574").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:22
L8	0	("20100094904" | "20100223261" | "20110078159" | "7330849" | "7747618").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:23
L9	0	("20020188589" | "20030036848" | "20090177386" | "20090228196").PN. and L3	US-PGPUB; USPAT	OR	ON	2016/03/03 12:24

3/ 3/ 2016 12:24:12 PM
C:\ Users\ schen5\ Documents\ EAST\ Autosave\ Basic DB.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"13529696"	US-PGPUB; USPAT	OR	ON	2016/03/03 11:22
L2	1	"13172425" and person$5	US-PGPUB; USPAT	OR	ON	2016/03/03 12:08
L3	1	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4)	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L4	0	((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:18
L5	0	(707/$ or 717/$ or 706/$ or 715/$).ccls. and ((creat$4 or generat$4 or construct$4 or buil$4 or set$4) same (association or relationship or link$4) same ("UE" or "user interface" or "user environment") same ("contextual attributes" or "contextual characters" or "contextual fields") same "multi-dimensional" same quer$4).clm.	US-PGPUB; USPAT	OR	ON	2016/03/03 12:19
L6	0	3 AND ((G06F17/30528).CPC.) and L4	US-PGPUB; USPAT	OR	ON	2016/03/03 12:20

3/ 3/ 2016 12:21:28 PM
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Results for **sensitive context database, persona determination, user device, signal** (without quotes):

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A system configured to practice the method combines a first database of a ..... identifying potential pronunciations in a speech recognition context, and ..... Methods And Systems For Providing Location Sensitive Conference Calling ..... A computer implemented method is also disclosed for receiving at an end user device, ...

Client/server patent application class
www.patentsencyclopedia.com/class/000555113
The computer interface is a signal transmitting interface between the remote ..... The system also includes a database adapted to communicate with the remote user interface ..... The proxy server determines that the user device requires removal of ..... 20110202594, CONTEXT SENSITIVE, CLOUD-BASED TELEPHONY ...

48th week of 2011 patent application highlights part 63
www.faqs.org/patents/hgl/12-01-11/12-01-11_63
Dec. 1, 2011 - The system implicitly selects the set of resources based on context ... A method may include constructing a feature-object database of multiple objects. .... with a user interface operating on a user device is received over a network. .... the input signals being representative of surgical data associated with a ...

In order to show you the most relevant results, we have omitted some entries very similar to the 3 already displayed.
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From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Mar 10, 2016 05:46:32 AM

Dear PAIR Customer:

Ditthavong & Steiner, P.C.
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Alexandria, VA 22314
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Application	Document	Mailroom Date	Attorney Docket No.
13172425	NOA	03/10/2016	P5296US00

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 03/23/2016

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2154	

NOTIFICATION DATE	DELIVERY MODE
03/23/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com
Nokia.IPR@nokia.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000459

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 13172425
Applicant : Setlur
Filing Date : 06/29/2011
Date Mailed : 03/23/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

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/Janeen Saxer/
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Application No. 13172425

SPECIFICATION REFERS TO ITS OWN PAGE/PARAGRAPH NUMBER(S) AND/OR SPECIFICATION REFERS TO NONEXISTENT CLAIM(S)

☐ The patent will be printed in numbered columns with intercolumnar line numbers and without paragraph numbers. Any reference(s) within the applicant-filed specification to its own page number(s) or paragraph number(s) will have no meaning in the printed patent.

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See Page(s)/Paragraph(s) .

☒ The specification refers by number to one or more claims that are not present in the allowed application – that is, the claim number(s) mentioned in the specification are higher than the total number of allowed claims.

In response to this notice, the applicant either should file an amendment to the specification that removes the reference(s) to the nonexistent claim(s) or should submit a letter stating that the patent specification should be printed with the reference(s) to the nonexistent claim(s).

See Page(s)/Paragraph(s) Page 4, lines 2-3.

To: docket@dcpatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

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Dear PAIR Customer:

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Application	Document	Mailroom Date	Attorney Docket No.
13172425	M327	03/23/2016	P5296US00

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Commissioner for Patents
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P.O. Box 1450
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Application No. : 13172425
Applicant : Setlur
Filing Date : 06/29/2011
Date Mailed : 03/23/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

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The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

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/Janeen Saxer/
Publication Branch
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Application No. 13172425

SPECIFICATION REFERS TO ITS OWN PAGE/PARAGRAPH NUMBER(S) AND/OR SPECIFICATION REFERS TO NONEXISTENT CLAIM(S)

☐ The patent will be printed in numbered columns with intercolumnar line numbers and without paragraph numbers. Any reference(s) within the applicant-filed specification to its own page number(s) or paragraph number(s) will have no meaning in the printed patent.

In response to this notice, the applicant either should file an amendment to the specification that removes the reference(s) to the page number(s) or paragraph number(s) or should submit a letter stating that the patent specification should be printed with the reference(s) to the page number(s) or paragraph number(s).

See Page(s)/Paragraph(s) .

☒ The specification refers by number to one or more claims that are not present in the allowed application – that is, the claim number(s) mentioned in the specification are higher than the total number of allowed claims.

In response to this notice, the applicant either should file an amendment to the specification that removes the reference(s) to the nonexistent claim(s) or should submit a letter stating that the patent specification should be printed with the reference(s) to the nonexistent claim(s).

See Page(s)/Paragraph(s) Page 4, lines 2-3.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Vidya SETLUR *et al.*	Confirmation No.:	7264
Application No.:	13/172,425	Examiner:	Te Y. CHEN
Filed:	June 29, 2011	Group Art Unit:	2154

For: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

Dear Sir:

The following Amendment and Remarks are submitted in response to the Notice to File Corrected Application Papers dated March 23, 2016.

AMENDMENT TO THE SPECIFICATION 2

REMARKS 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000465

AMENDMENT TO THE SPECIFICATION

Please amend page 4, paragraph 12 by marked up replacement paragraph(s) as follows.

For various example embodiments, the following is applicable: An apparatus comprising means for performing the method of any of ~~originally filed~~ the claims ~~1-10, 21-30, and 46-48~~.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000466

REMARKS

On March 23, 2016, a Notice to File Corrected Application Papers was issued by the U.S. Patent and Trademark Office indicating that the specification referred by number to one or more claims that is not present in the allowed application. By this response and in compliance with 37 CFR 1.121, Applicants amend the specification to delete "originally filed" and "1-10, 21-30, and 46-48", and to add "the" in page 4 paragraph 12 of the specification.

Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (703) 519-9951 so that such issues may be resolved as expeditiously as possible.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG & STEINER, P.C.

May 19, 2016
Date

/Albert Du/
Albert Du
Attorney/Agent for Applicant(s)
Reg. No. 68,758

Phouphanomketh Ditthavong
Attorney/Agent for Applicant(s)
Reg. No. 44,658

44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
Tel. (703) 519-9951
Fax (703) 519-9958

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000467

Electronic Acknowledgement Receipt

EFS ID:	25825201
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Michelle Simmons
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	19-MAY-2016
Filing Date:	29-JUN-2011
Time Stamp:	17:27:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	NC75185US_P5296US00_NTFCAP_filed2016-05-19.pdf	129745 49d53258dc8fd8dd0433ed5b999cb23589e891b7	no	2

Warnings:	
Information:	

2		NC75185US_P5296US00_ResponseToNTFCAP_filed2016-05-19.pdf	143021 d337bfa137f9413a3755238c5a8f3f3b4dbe3108	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Response to Pre-Exam Formalities Notice	1	1
	Specification	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	3

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

11764 7590 05/24/2016

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2154	

NOTIFICATION DATE	DELIVERY MODE
05/24/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com
Nokia.IPR@nokia.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000470

Response to Rule 312 Communication	Application No. 13/172,425	Applicant(s)
	Examiner	Art Unit

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on *19 May 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

C. HILLIARD

PUBLISHING DIVISION

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, 000471

To: docket@dcpatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

May 24, 2016 05:37:18 AM

Dear PAIR Customer:

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

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Application	Document	Mailroom Date	Attorney Docket No.
13172425	N271	05/24/2016	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

11764 7590 03/10/2016
Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	06/29/2011	Vidya Setlur	P5296US00	7264

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	06/10/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHEN, TE Y	2154	707-748000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☒ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 DITTHAVONG & STEINER, P.C.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: NOKIA TECHNOLOGIES OY

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Espoo, FINLAND

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 is attached.
- ☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 504213 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Albert Du/ Date June 8, 2016

Typed or printed name Albert Du Registration No. 68758

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PTO/SB/47 (03-09)
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- OR -

Fax to:
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INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below**: If you have a Customer Number to represent the fee address. **When to check the second box below**: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 00197

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
	13/172,425

Completed by (check one):

☐ Applicant/Inventor — /Albert Du/ (Signature)

☑ Attorney or Agent of record 68758 (Reg. No.) — Albert Du (Typed or printed name)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) — 703-519-9951 (Requester's telephone number)

☐ Assignee recorded at Reel _____ Frame_____ — June 8, 2016 (Date)

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more that one signature is required, see below*.

☐ * Total of _____forms are submitted.

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1. 11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313- 1450. DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The information provided by you in this form will be subject to the following routine uses:

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13172425
Filing Date:	29-Jun-2011
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Filer:	Phouphanomketh Ditthavong/Zixiu Wu
Attorney Docket Number:	P5296US00

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt

EFS ID:	25999932
Application Number:	13172425
International Application Number:	
Confirmation Number:	7264
Title of Invention:	METHOD AND APPARATUS FOR PROVIDING AN ORDERING METRIC FOR A MULTI-DIMENSIONAL CONTEXTUAL QUERY
First Named Inventor/Applicant Name:	Vidya Setlur
Customer Number:	11764
Filer:	Phouphanomketh Ditthavong/Zixiu Wu
Filer Authorized By:	Phouphanomketh Ditthavong
Attorney Docket Number:	P5296US00
Receipt Date:	08-JUN-2016
Filing Date:	29-JUN-2011
Time Stamp:	15:38:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$960
RAM confirmation Number	2126
Deposit Account	504213
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	NC75185US_P5296US00_Issuefee_filed.pdf	175453 3d590d4bb6124ff37c71b63c16bb400c50c123fe	no	1
Warnings:					
Information:					
2	Maintenance Fee Address Change	NC75185US_P5296US00_FeeIndicationForm_filed.pdf	203232 266b096100b0839a1c81c07d355d8195c202a52c	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	31022 fb2338937b8174c4ee5dcebdbc27fdfd98754f1b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	409707		

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/172,425	07/12/2016	9390137	P5296US00	7264

11764 7590 06/22/2016

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 764 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Vidya Setlur, Portola Valley, CA;
Agathe Battestini, San Francisco, CA;

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To: docket@dcpatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 11764

Jun 24, 2016 06:06:04 AM

Dear PAIR Customer:

Ditthavong & Steiner, P.C.
44 Canal Center Plaza
Suite 322
Alexandria, VA 22314
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 11764 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

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Application	Document	Mailroom Date	Attorney Docket No.
13172425	ISSUE.NTF	06/22/2016	P5296US00

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

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